

st figure would correspond with a human dose of 180 g, that ill-effects need not be feared in therapeutic experiments in man

It should be noted that yeast does not actively favour necrosis it is merely poorly protective. Yeast is a good source of choline, and it possibly contains other unknown lipotropic principles (Gyorgy and Goldblatt, 1939, Rich and Hamilton, 1940). Yeast may therefore be expected to be a useful remedy in most forms of fatty infiltration of the liver due to dietary imbalance. Some of the B vitamins, particularly biotin, favour the deposition of fat in the rat's liver, this type of fatty liver is resistant to choline but responds to lipocain or inositol. In fact, the relation of the B vitamins to cirrhosis and necrosis of the liver has not yet been completely elucidated. Growing rats and mice have a high rate of metabolism, which affects their vitamin B requirements, and in larger animals the action of the B vitamins on the liver may be different (Fouts, 1943). On the present evidence it seems a justifiable conclusion that no ill effects on the liver are likely to accrue from massive dosage with yeast or other sources of the vitamin B complex in hepatic disease in man.

Diet and Resistance to Hepatitis

In view of the gross damage to the liver which may result from dietary defect it is not surprising that lesser deficiencies may impair the resistance of the liver to injury by poisons. It has been known for many years that animals which have been starved or been fed on an excessive proportion of fat develop fatty infiltration of the liver, and with this goes a diminished resistance to a number of hepatic poisons. It has also long been known that a damaged liver contains little glycogen, and that animals fed on high-carbohydrate diets are in general less susceptible to drugs which produce accumulation of fat in the liver than are those given high-fat diets (Rosenfeld, 1903). Not only does a high carbohydrate intake give some protection against poisoning by chloroform and phosphorus but it is also of value in the prevention of hepatic damage following experimental ligation of the common bile-duct, operation of Eck's fistula, partial hepatectomy, and experimental mushroom poisoning (Soskin and Hyman, 1939).

For carbohydrate to be effective it is probably necessary that glycogen should be deposited in the liver, that fat should be displaced, and that the ingested carbohydrate should spare the body stores of protein. It is an unfortunate error to think that the mechanical displacement of fat by glycogen is the whole story. The truth is rather that carbohydrate is the fuel for the hepatic cell in its work of fat transport, protein synthesis, and detoxication. The great value of carbohydrate may well be that it spares protein. Carbohydrate is not entirely comparable to the petrol in the internal combustion engine, as it may be used to neutralize poisons by forming conjugates with them, but its action is mainly as a source of energy which is quickly consumed. Carbohydrates cannot protect the liver unless the requirements of protein metabolism and total calories are satisfied. If these precautions are not observed an unbalanced carbohydrate regimen may actually favour the development of necrosis (Craven, 1931).

Attention was first concentrated on the part played by protein in maintaining the resistance of the liver when Davis and Whipple (1919) demonstrated that not only carbohydrate but also protein would protect the starved dog against chloroform poisoning. Much of the subsequent work of Whipple and his group has been done with dogs depleted of protein by special diets and sometimes by withdrawal of plasma as well. They have shown that injury to the liver from chloroform increases as protein stores decrease, and that a protein meal before anaesthesia is

beneficial (Miller and Whipple, 1940). They demonstrate that the sulphur-containing amino acids, methionine and cystine, are the specific protective factors and that methionine is more effective than cystine. Finally Brunschwig and his co-workers (1945) showed that equal protection was given by the non-nitrogenous compound thioglycollate, the only common factor was simple sulphhydryl group. While chloroform damaged the liver of the dog, with the organic arsenical the dog must first be depleted of protein, or the animal will die from the other toxic effects of the arsenic before the liver is attacked. Here again the protective action of protein has been demonstrated and traced to the methine level.

There are fewer experiments on the resistance of animals with choline deficiency, presumably because it has so long been known that the fatty liver is vulnerable and also because fatty infiltration may slowly disappear without specific treatment. Best and his co-workers (Best *et al.*, 1935, Barrett, 1939) have shown that when rats are maintained on a diet low in lipotropic factors and then poisoned with phosphorus or carbon tetrachloride the addition of choline to the diet has no effect on the degree of fatty infiltration or damage to the liver, but it speeds up the rate of disappearance of fat from the liver in the recovery phase.

This brings us to the time factor in protection experiments, which is of special importance when we come to apply the results to man, for man can rarely take action till exposure has occurred. Ethionine will give complete protection against chloroform if administered shortly before anaesthesia. It will give partial protection three to four hours after anaesthesia, but protection more than four hours after anaesthesia (Miller and Whipple, 1942). With mapharside protection has been obtained by the oral administration of methionine 24 hours before the injection of the arsenical, but only partial protection with intravenous injection just prior to mapharside injection. The latter failure may well be due to too small a dose—1 g per dog, instead of the 3 g used in the other experiments (Goodell *et al.*, 1944). Most of the work so far recorded has dealt with animals on defect diets. A variety of food factors, including methionine, glucose, para-amino-benzoic acid (Sandground and Hamilton 1943), liver extract, and sodium xanthine (Barrett *et al.* 1938), will enhance the normal resistance against certain poisons, but there is no evidence that choline can act in this way.

Dietary Treatment of Experimental Hepatitis

The lipotropic action of protein and the antinecretic action of the protein sulphur leads to expect that protein would be of great value in the treatment of hepatic injury, and at first sight it is puzzling to find that apparently it is not. Treatment is a different thing from prophylaxis. Much of the experimental assessment of therapy has been carried out on animals poisoned with carbon tetrachloride. Some of the factors affecting recovery from carbon tetrachloride poisoning have been carefully studied by Lamson, Minot and Robbins (1928). They found that dogs treated with carbon tetrachloride more commonly died from acute necrosis when they were on a lean meat diet than on a mixed diet containing bone meal. The addition of calcium to the preceding diet of lean rat reduced the mortality to normal. Acute necrosis after carbon tetrachloride in man is more common in children and in the malnourished, and they suspect that this is due to calcium deficiency. Lamson (1930) recalled that Whipple had found that a high-carbohydrate diet protects dogs against poisoning by chloroform, and he pointed out that such a diet usually takes the form of bread and milk, which is high in calcium and low in meat.

The high-calcium diet does not diminish the liver damage it merely diminishes the symptoms. These symptoms are attributed to a high blood level of guanidine, which leads to severe hypoglycaemia and peripheral circulatory failure. Calcium salts neutralize the guanidine, and glucose repairs the hypoglycaemia. On this argument death in hepatitis may be due to incomplete metabolites or products of autolysis, and if these can be neutralized spontaneous recovery may occur. Lamson (1930) further showed that the feeding of meat to susceptible animals causes a tremendous increase in blood guanidine, with a fall in blood sugar, tetany, convulsions, gastro-intestinal haemorrhage, and death. Guanidine has always been something of a will-o'-the-wisp in metabolic diseases, and this line of research has seemingly been held up by the necessity for studying its pharmacology. Certainly Bollmann and Mann (1936) found no excess of guanidine in the experiments described in the next paragraph. The relief of the symptoms of acute necrosis of the liver by calcium recalls recent work on adenosine triphosphate, which is believed to be an important factor in shock from tissue damage. Adenosine triphosphate is potentiated by magnesium, and magnesium and calcium are physiological antagonists (Green and Stoner, 1944).

Bollmann and Mann (1936) have experimented with diets in a variety of hepatic injuries in dogs. After performance of Eck's fistula a condition known as meat intoxication is liable to develop, though the name perhaps exaggerates the extent to which it is due to meat. After complete obstruction of the bile-duct a diet rich in carbohydrate becomes increasingly necessary for the maintenance of the animal. After two or three months a diet exclusively of meat will prove fatal within a week, but if the diet is high in carbohydrate life may be prolonged for at least a year. The animals are extraordinarily prone to develop ascites after feeding on meat. The active substance which induces ascites is probably not protein, because milk protein does not favour ascites, whereas meat extract produces results which are even more striking than those of meat. Comparable results were obtained with 16 dogs, each of which was given 10 ml of carbon tetrachloride daily by mouth. The four dogs that were given a high-fat diet all died within three weeks. Of the four dogs that were given an entirely meat diet, two died within three months, and the other two had ascites. The remaining eight dogs, which were given mixed diets, were all alive at the end of three months, though the four which had received their protein in the form of meat were not in such good shape as those which had received milk.

Bollmann (1943) has more recently determined the time of survival of rats which were exposed to carbon tetrachloride vapour for 30 minutes three times a week. On the ordinary mixed diet the rats lived from 36 to 42 days. In a second group of experiments half of this diet was replaced with isocaloric values of cracker-meal and sucrose, meat, or lard. Expressing the normal survival time as 100, the investigators obtained the following figures for survival: carbohydrate, 146; protein, 100; fat, 91. In another series three-fourths of the mixed diet was replaced with isocaloric values of the above foodstuffs, and the protective values were now: carbohydrate, 205; protein, 104; fat, 59.

Dietary Cirrhosis of the Liver in Man

A low intake of protein with insufficient supply of the vitamin B complex, including choline, is a prominent feature of the diet of persons addicted to alcohol. In the earlier stages of alcoholism fatty infiltration of the liver is said to occur, and there is a growing tendency to affiliate alcoholic cirrhosis with the cirrhosis produced in animals by lack of lipotropic factors. But alcohol is not the only

cause of cirrhosis in man, nor is it the commonest. All writers on tropical pathology have laid stress on the frequency of liver cirrhosis with ascites among native races where the influence of alcohol can be discounted (Manson Bahr, 1945).

References to cirrhosis in India, Ceylon, and China are given in Ratnoff and Patek's (1942) review. A striking feature of tropical cirrhosis is the high incidence in children and the relative frequency of recovery, even when the disease has reached the ascitic stage. The hepatic lesions have generally been attributed to the interplay of malnutrition and infection, and no clear line has been drawn between portal cirrhosis and postnecrotic fibrosis. In Jamaica where infantile cirrhosis of the liver is common, it has been noted particularly in the children of mothers who generally being unmarried, have to support themselves and their babies by working in the urban areas or on plantations or elsewhere. Breast-feeding, therefore, is scanty, and the infant's diet consists mostly of carbohydrate—e.g. arrowroot, cereal gruel, or even sugar and water. There is a suggestion that the disease is less frequent in fishing villages, where protein intakes may be higher (McFarlane and Branday, 1945; Platt, 1946).

Throughout Africa there occurs a condition known as infantile pellagra, or "kwashiorkor." It is found in infants and to a less extent in adults, who are fed on bulky vegetarian low-protein diets, and it is characterized clinically by oedema, pellagrous skin lesions, steatorrhoea, and macrocytic anaemia (Trowell and Muwazi, 1945). A necropsy or biopsy an extreme degree of fatty infiltration of the liver is found (Smith, 1943), and there is no doubt that this fatty liver is eventually followed by cirrhosis. Gill (1944) noted that cirrhosis and cancer of the liver are especially prevalent among South African negroes, and showed that cirrhosis and necrosis of the liver occurred in rats who were fed on the South African native diet. It concluded that recurrent attacks of malnutrition result in progressive hepatic damage. Subsequently the Gill (1945) showed by serial liver punctures of patients that fatty infiltration responded slightly to liver extract and was completely cured by desiccated stomach in a dosage of 10 g a day. It seems unlikely that the lipotropic action of desiccated stomach is entirely due to its choline content. With the technique of liver puncture and sternal puncture, and the introduction of pure factors such as choline, methionine, and folic acid, this whole field is now open to research, and we shall not have long to wait for the first harvest.

Dietary Protection Against Hepatic Disease in Man

It has been believed for many years, and probably with reason, that carbon tetrachloride and arsenicals are most likely to damage the liver when the patient is undernourished, but no precise data are available. Beattie (1943-4) has claimed that during antisyphilitic treatment with arsenical drugs the incidence of liver damage can be reduced significantly and the time of greatest liver damage can be postponed by the administration of casein, glycine, cystine, and methionine. Experiments of this kind are complicated by the virus of homologous serum jaundice and by the reduction of the antiprotozoal activity of arsphenamine by the sulphur compounds.

During the war the low incidence of infective hepatitis in coloured troops and native races was the subject of frequent comment, but less notice was taken of the high mortality they suffered. I have previously mentioned an outbreak in Belgian colonial troops, with a mortality of 4% (Witts, 1944). In 1943 a very high mortality was recorded in a small epidemic among some African labourers in Uganda who were in a state of

nutrition, of 14 cases admitted to hospital, all died¹ Figures on the incidence and mortality of infective hepatitis in India Command during 1944 were collected by Lieut-Col Stuart McDonald¹ These figures showed the usual difference between officers and other ranks In addition they showed that the incidence of jaundice was five times as high in British troops as in Indian troops, but, on the other hand, the mortality was five times as great in the Indians as in the British In the final issue British troops and Indian troops had an equal chance of dying of jaundice There is some evidence that while malnutrition favours bacterial infection it antagonizes infection by viruses (Foster *et al*, 1944) There was a good deal of anaemia and malnutrition among Indian troops^{2,3} One cannot say whether the low incidence in Indians was due to nutritional factors or to previous exposure, but there is a strong suggestion that the relatively high death rate was due to malnutrition

Discussion

A survey of the animal experiments leaves us in little doubt as to the importance of the lipotropic factors and the thio-amino acids to the health of the liver An excessive intake of fat will be harmful to the liver unless it is balanced by a corresponding increase in lipotropic factors, while a high-carbohydrate regimen helps by sparing the reserve stores of protein in the liver and providing easily available energy Proteins supply the essential methyl and sulphhydryl groups, but they may also contain harmful residues which are badly tolerated in acute and chronic liver disease Milk proteins appear to be innocuous in this regard, whereas meat and meat extracts are harmful Choline and lecithin are present in most animal and plant tissues, and the thio-amino-acids are particularly well represented in the proteins of milk

The most important lipotropic factors are those which provide the labile methyl groups for the manufacture of phospholipins, without which fat transport comes to a standstill Excess of fat in the liver leads to a gradual pressure atrophy of the cells and portal fibrosis, and it also accentuates the effect of the many toxic substances which are more soluble in fat than in water Tropical cirrhosis and alcoholic cirrhosis of the liver in man appear to be due mainly to a deficient intake of lipotropic factors, but in both disorders a toxic factor is still suspected by many people

The effects of a deficiency of protein sulphur are more subtle and profound The sulphhydryl groups are attached to the vital enzyme systems in the liver Protein starvation depletes the liver of these sulphur-rich components, and if the process goes far enough the cell must die Methionine and cystine are rapidly incorporated in the depleted liver to make good the deficiency Chloroform and arsenicals disturb the enzyme systems, presumably by combining with or neutralizing the sulphhydryl groups The disturbance is reversible within the first three or four hours of administration of the poison, but after that methionine is no longer effective, and it is clear that viable liver cells are essential for the rapid uptake of methionine Chloroform combines with the sulphhydryl groups to form the non-toxic mercapturic acids The action of arsenicals has been reviewed by Peters, Stocken, and Thompson (1945), who showed that they have a selective action upon the pyruvate enzyme system and that an essential sulphhydryl component of the protein constituent of the system is attacked As a result of their studies they introduced the dithiol compound

BAL, which prevents the toxic action of arsenic and some of the heavy metals if given before the administration of the poison and neutralizes it if the toxicity is not too long established

Himsworth and Glynn (1944b) in their paper on toxic pathic and trophopathic hepatitis have tried to integrate these data, and have suggested that in the final issue hepatic necrosis is always nutritional in origin, always due to a deficiency of essential factors This deficiency may be primary, or it may be secondary to the increased metabolism, the swelling of the liver, and the disturbance of the circulation which result from infection or poisoning of the liver The argument is an ingenious one, but it does not get us very far The liver can be protected against poisons such as chloroform and arsenic by simple chemicals such as sodium thioglycollate and BAL, which act as rather specific antidotes, and it is unlikely that the results obtained with chemical poisons can be transferred without change to the action of biological toxins and viruses In the latter conditions thio amino-acids may act, if they act at all, by providing sulphhydryl groups attached to the appropriate amino acid residue for re-synthesis of essential sulphur proteins which have been inactivated, rather than by neutralizing the noxious agent

[The second lecture, with a list of references, will appear in our next issue]

OBSERVATIONS ON PLAGUE MENINGITIS

BY

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AND

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Meningeal involvement in plague has occasionally been recorded, the earliest reports apparently being by the German Indian Plague Commission of 1897 and the Austrian Commission of the same year These are cited by Meyer, Connor, Smyth, and Eddie (1937) in their review of most of the recorded cases of plague meningitis up to that year, while they discuss in detail their own case of "chronic relapsing latent meningeal plague" in California occurring in a patient whose illness began with an axillary bubo Since then further cases have been reported, including one from Uganda by Burton and Hennessy (1940) of 'subacute or chronic plague terminating in haematogenous meningeal infection,' and four cases of plague meningitis complicating bubonic plague from South America by de Villafañe Lastra and Rodeiro (1942)

A particularly rare clinical form—primary plague meningitis—was reported from Dakar by Lafont Lecomte, and Heckenroth (1915) Williams (1934) had a similar case in East Africa, and Lewillon, Devignat, and Schoetter (1940) reported still another from the Belgian Congo These cases like the one described in this paper (Case VIII) presented the common clinical features of meningitis with no bubo formation In China Pollitzer (1946) has observed meningeal involvement in most recent outbreaks In this connexion, therefore, it seems worth while to record eight cases of meningitis in a series of 203 cases of plague admitted to the General Hospital, Chuanchow, South China, during the years 1943-5

Symptomatology

In all except one of our cases (No VIII) meningeal involvement was a complication of pre-existing bubonic plague, symptoms appearing at the earliest on the ninth and at the latest on the seventeenth day of the disease The clinical features closely resembled those of cerebrospinal fever or other acute meningitis Headache, painful stiffness of the neck, and Kernig's sign appeared early and prominently Special symptoms included convulsions (Cases III, VIII), cranial-nerve affections

¹ Unpublished reports to M R C Jaundice Committee

² Report on Investigations on Anaemia in the Indian Soldier from the Anaemia Investigation Team, G H Q, India, 1943-5, New Delhi, 1945

³ Proceedings of the Central Command Conference on Anaemia, held at Agra on Nov 20 and 21, 1944, Benares, 1945

(V), vestibulo cerebellar symptoms (VII), deep coma (II), vasomotor crisis (III). Case VIII, differing from the rest, presented as a pyrexial illness with signs of meningeal irritation, no buboes or other signs being found. There was a coincidental malarial infection. The clinical picture was that of primary plague meningitis.

In lumbar puncture the pressure of the cerebrospinal fluid was as a rule raised, the fluid was cloudy, and in some cases of canary-yellow colour. Other changes resembled those of acute suppurative meningitis: polymorphonuclear leucocytes, increased protein, and disappearance of sugar. *Past pestis* was found in the cerebrospinal fluid in some cases by smear and/or culture. Examination of the blood revealed a marked polymorphonuclear leucocytosis with a few eosinophil granulocytes. All the cases were fatal, the development of internal hydrocephalus being the probable cause of death. The longest period of survival was 29 days from the onset of the disease.

Pathology

Post-mortem examination in one case (No VIII) revealed the following:

Body wasted, no petechial or skin lesions.

Brain. Marked congestion, convolutions and sulci flattened, swelling of all brain tissue. Thick canary-yellow fibrino purulent exudate covering most of the external surface especially the parietal and frontal lobes, temporal pole, Sylvian fissure (spreading along the meningeal artery), base of brain (especially cisterna basalis) covering all the cranial nerves, roof of fourth ventricle (cisterna magna) and the inferior, posterior, and superior surfaces of the cerebellum in the midline. Ventricles, especially the lateral ventricle greatly dilated, with thinning of overlying brain tissue, containing a considerable quantity of yellow slightly turbid fluid—marked degree of internal hydrocephalus. Spinal Cord. Marked congestion, fibrino-purulent exudate less pronounced, but very thick in cauda equina region, matting together cord and nerve roots into a jelly-like mass (cf "dry" lumbar puncture).

Glands. Cervical, axillary, inguinal—reddish brown on section, congested, not enlarged. Spleen. Enlarged soft "septic" spleen, diffuent dark-red jam like cut surface. Liver. Soft slightly congested, noticeable cloudy swelling. Heart. Patchy congestion of epicardium, cloudy swelling of myocardium, fibrinous exudate adherent to contact margins of cusps of mitral valve (fibrinous endocarditis). Lungs. Pink, float in water, pleural surfaces smooth, shiny, patchy congestion. Section revealed general congestion, no consolidation or other pneumonic signs. Kidneys. Pale cloudy swelling of cortex, congestion of medulla. Suprarenal Glands. Pale cortex, moderately distinct pigment zone. Congested medulla. Testis, Epididymis (both sides). Marked congestion, large clear hydrocele on right, small hydrocele on left. Alimentary Canal. Outwardly normal, not specifically examined. Pancreas, Thymus. Pale apparently normal.

The presence of pericardial, pleural, and peritoneal fluids was unfortunately not looked for. In smears from the spleen numerous *Past pestis* were found. Only a few organisms were discovered in the meningeal exudate, while smears from the liver, blood, and fibrinous exudate on the cardiac valve were negative for *Past pestis*.

Diagnosis

The clinical diagnosis of meningitis occurring as a complication of bubonic plague ("secondary plague meningitis") presented little difficulty. Cases in which *Past pestis* was not found in the cerebrospinal fluid (V, VI, VII) were confusing, with the possibility in our minds of the meningeal process being allergic in nature, from initial serum administration. In contrast the other findings in the cerebrospinal fluid especially the absence of sugar, pointed almost certainly to acute infection with pathogenic organisms, these presumably being *Past pestis*. But the whole morbid process in these cases so closely resembled that found generally in the series that there was little reason to doubt their plague nature. Case VIII was not suspected of being plague until culture of the cerebrospinal fluid proved the presence of *Past pestis*.

Treatment

Bubonic Plague.—The mainstay in many cases in 1944 and most cases in 1945 was oral sulphathiazole. The total amount given to each patient was usually over 50 g. Anti plague serum was given in most cases in 1945—40 ml intravenously on each

of the first five successive days. Other treatment was mainly symptomatic.

Plague Meningitis.—With the onset of meningitis sulphathiazole was restarted if it had already been stopped. Anti-plague serum was injected intrathecally in most cases, but it was suspended or withheld in some others (III, IV, VI) where doubt existed at the time as to the nature of the morbid process. Daily lumbar puncture for drainage of the sub-arachnoid space was the rule, while cisternal puncture was performed in some instances if the former was unsatisfactory.

Discussion, with Special Reference to Pathogenesis

The thick fibrino-purulent exudate found over the brain and spinal cord during the necropsy on Case VIII may be presumed to be present in the other cases as well. A similar exudate and distribution were found by Meyer *et al* (1937) in their case but the lateral ventricles were involved while the spinal cord was free. Other similarities included the presence of internal hydrocephalus, the enlargement of the spleen, and the negative findings in the lymph nodes. It is possible that such an exudate would tend to hold back the organisms in its meshes, making difficult their recovery on examination of the cerebrospinal fluid. Negative findings in smear and culture were noted on initial lumbar puncture by Meyer *et al*, and also in another case reported by Rivoalen and Montagne (cited by Meyer *et al*). It is regrettable that no cultures could be made in two of our cases (V, VII) where the smear was negative or doubtful. In Case VII, while no typical plague bacilli were found in the smear, organisms having the appearance of Gram-negative diplococci were present. The possibility of mixed infection with meningococcus or of a secondary invasion of the meninges by this or other member of the *Neisseria* has to be taken into consideration, but such assumptions are not very likely. It is more probable that the organisms seen in this instance were atypical plague bacilli appearing in the "coccoid" form.

The pathogenesis of our own and other cases of primary plague meningitis is difficult to explain. That infection may be due not to invasion through the blood stream but to drop-let infection as in cerebrospinal fever is altogether unlikely. Our patient had not been in contact with pneumonic plague. Conversely, supposing the disease to be a variety of primary septicaemic plague, this latter disease, in China at least, is a rapidly fatal one so that there would be no time for localization in the meninges to take place even if that tendency were present.

Under such circumstances one is led to wonder whether these patients supposed to be suffering from primary plague meningitis have not in fact, at some stage of the disease, a bubo. According to Pollitzer (1945) there are really four varieties of bubonic plague: (1) *pestis minor*, (2) well-marked bubonic infection not leading to secondary septicaemia, (3) bubonic affection followed by secondary septicaemia, and (4) a form characterized by most serious general (septicaemia) symptoms combined with but slight affection of the lymph glands, which obviously have early failed in their attempt to hold back the invading organisms. One can conceive of the gland process being overlooked in this last variety (which incidentally represents a transition stage to primary septicaemic plague), especially if, as happened in our case, the patients are not under close observation throughout the course of the illness, in which circumstances, should meningitis develop, the clinical presentation of primary meningitis is obtained.

Factors which may have influenced the development of meningitis in our cases may thus be tabulated:

Case No	Age (years)	Sex	Localization of Buboes	Time of Appearance of Meningeal Process	Time of Death
I	4	M	Cervical	12th day of illness	12th day of illness
II	26	M	Axillary	9th	22nd
III	40	F		10th	22nd
IV	37	M		16th	19th
V	28	M	Inguinal	12th	14th
VI	16	M		17th	29th
VII	39	F	Epitrochlear and axillary	15th	17th
VIII	1 1/2	M	—	?	17th

So far as these figures go, males seem to be more susceptible, age appears to play no part. It should be noted in this connexion that bubonic plague in China is usually most frequent among young adults. Only two of seven patients with manifest bubonic plague had groin buboes, whereas this localization is present in at least 60% of plague sufferers in general. This is in keeping with the generally accepted view that inguinal bubonic plague is less dangerous than axillary or cervical forms.

The course of illness in all these patients was longer than is usual in plague, and symptoms of meningitis invariably appeared late in the disease. Bearing in mind that (1) the incidence of meningeal complications was much higher among our patients compared with that in other recent outbreaks in China, and (2) we were able to treat many of our patients more energetically than was possible elsewhere, we wonder whether our therapeutic measures did not facilitate meningeal involvement by prolonging the course of illness in those patients who would otherwise have died earlier. The accompanying table, showing the amount of "specific" drugs used in the treatment of plague during the years under review, supports this assumption.

Year	1943	1944	1945
Total No. of plague cases	88	46	69
No. of cases of secondary plague meningitis	1	2	4
Anti plague serum used (ml)			
Total (approx.)	920	1,530	6,330
Per patient	10	33	92
Aspn used (g)			
Total (approx.)	—	390	2,250
Per patient	—	8	33
Sulphapyridine (I.M. suspension) used (g)			
Total (approx.)	327	2	—
Per patient	4	—	—

Note.—Patients dying soon after admission received little or no specific treatment; this considerably lowers the figures for the average amount given per patient.

For the treatment of plague in general, including the prevention of meningeal complications, more effective means are called for. Wagle (1944) found sulphadiazine to be superior to sulphathiazole, our own recent experience agrees with this. Sodium sulphadiazine given parenterally should be still more effective during the initial stages of particularly severe infection. According to Pollitzer (1946), streptomycin is also a most promising new therapeutic agent. Whether and how far it will be advisable to combine these new methods of treatment with serum administration remains to be seen.

Finally, it should be stated that in Chuanchow the shortage of drugs was severe in 1943 and 1944, while the exigencies of wartime China made the clinical and pathological study of these cases obviously incomplete.

Case Reports

[The following is a key to the abbreviations used in the case notes below.—Aspn. Aspiration of bubo, with examination of smear. C. Culture. I.M., I.V., I.Th. Intramuscular, intravenous, intrathecal routes. L.P. Lumbar puncture, thecal drainage (cells in CSF per cmm, G globulin, S sugar). Serum. Anti plague serum. Sulphath. Sulphathiazole. Sulphap. Sulphapyridine. Sulphanil. Sulphanilamide. (These three drugs were given orally unless otherwise stated.) W.B.C. White blood cells per cmm. (N neutrophil granulocytes, E eosinophil granulocytes, B basophil granulocytes, L lymphocytes, M monocytes.)]

Case I Primary Skin Plague, Cervical Bubonic Plague, Secondary Plague Meningitis

Male aged 4, seen 3/7/43, giving a history of one day's high fever, diarrhoea, tender swelling rt side of neck. T 103°F (39.4°C), vesicle with raised dusky areola in rt parietal region, tender enlarged gland in rt posterior triangle. Aspn, *Past pestis* found ++. Parents refused treatment.

Patient admitted 13/7/43. T 105.2°F (40.7°C), P 140, R 40. Toxic, restless, large fluctuant swelling with surrounding brawny oedema whole rt side of neck. Blood WBC 25,500 (N 83%, L 14%, M 1%). The bubo was incised and drained.

Course.—14/7/43. T 105–106°F (40.6–41.1°C), neck rigidity +, Kernig's sign +, L.P. Smear of CSF. *Past pestis* found. Patient died shortly after.

Treatment.—150 ml serum (? route), 4 g sulphanil, 5–6 g sulphap, all before admission. After admission 30 ml serum I.M., 10 ml I.Th., sulphap, 0.5 g I.M.

Case II Axillary Bubonic Plague, Secondary Plague Meningitis

Male aged 26, admitted 12/6/45, with history of one day's high fever, delirium, painful swelling lt axilla. T 104.2°F (40.1°C) not found. Clinically, typical bubonic plague.

Course.—Bubo steadily enlarged, while general symptoms improved. 20/6/45. T 104°F (40°C), P 90, R 24, severe headache, neck rigidity +, Kernig's sign +, L.P. turbid yellow fluid, cells 530. G +, S —. Smear Gram negative bacillus (? *Past pestis*) found (few). C of CSF. *Past pestis* isolated 21/6/45. WBC 11,000 (N 83%, L 16%, M 1%). 22/6/45. T 100°F (37.8°C), P 80. Patient much improved, bubo subsided.

25/6/45. T 103°F (39.4°C), P 90, return of pyrexia. 27/6/45. T 102.6°F (39.2°C), P 90, severe headache, neck rigidity +, Kernig's sign +. 29/6/45. L.P. CSF. G +, S —. Smear organisms not found. Patient becoming comatose. 1/7/45. T 97°F (36.1°C), P 70, R 20, deep coma, pupils dilated, corneal reflexes absent, pulse, good volume. Cisternal puncture. 50 ml cloudy yellowish fluid, cells 280, G +, S —. Smear N predominate, organisms not found. Cisternal drainage repeated same day. 3/7/45. T 99.8°F (37.7°C), P 130, R 30, patient died (pre mortal). T 102°F (38.9°C).

Treatment.—Serum 200 ml (180 ml I.V., 20 ml I.M.) first 5 days onset of meningitis to death, 220 ml (180 ml I.Th., 40 ml I.V.) Sulphath 141 g, sodium sulphath I.M. 2 g.

Case III Axillary Bubonic Plague, Secondary Plague Meningitis

Female aged 40, admitted 23/6/45, with history of 3 days' fever, pain in lt axilla. T 102°F (38.9°C), P 108, R 24, tender swollen gland lt axilla. Aspn not performed. Clinically, typical bubonic plague.

Course.—24/6/45. Another bubo rt groin. 27/6/45. T 100°F (37.8°C), P 84, R 20, general condition improved, buboes larger. 30/6/45. T 104°F (40°C), P 100, R 24, headache, clouded mentality, neck rigidity +, Kernig's sign +, buboes much regressed, non tender. L.P. cloudy fluid, cells 800, G +, S —. Smear N predominate, organisms not found. 2/7/45. T 102°F (38.9°C), P 96, R 24. L.P. CSF. S —, C, no growth. Blood WBC 16,300 (N 91%, B 1%, L 8%).

10/7/45. Sudden attack of profuse sweating, flushing of face (T 95°F (35°C), P 80, R 24). Blood WBC 6,000 (N 80%, L 20%). 11/7/45. Sudden onset of coma, epileptiform convulsions, prolonged and generalized, controlled with general anaesthetic morphine, hyoscine. L.P. canary-yellow fluid under pressure. 12/7/45. T 100°F (37.8°C), P 124, R 30, pulse weakening, marked conjunctival congestion. Patient died. Post mortem cisternal puncture. C of CSF, *Past pestis* isolated.

Treatment.—Serum 320 ml (40 ml I.Th., 280 ml I.V.) in first 10 days. Sulphath 35 g in first 5 days, 54 g from 9th to 17th day. Sulphath suspension 8 g I.M. between 6th and 7th days.

Case IV Malaria, Axillary Bubonic Plague, Secondary Plague Meningitis

Male aged 37, admitted 25/6/45, with history of 3 days' chill high fever, one day painful swelling lt axilla. T 104.2°F (40.1°C), P 140, acute lt axillary adenitis. Aspn. *Past pestis* found ++++. Blood film *Plasmodium vivax* found (few). Spleen enlarged.

Course.—2/7/45. T 100°F (37.8°C), P 84, general condition much improved, bubo very large, marked perianitis. 5/7/45. Bubo softening. 8/7/45. T 103°F (39.4°C), P 96, bubo incised, drained. Blood WBC 26,400 (N 93%, L 7%). 10/7/45. T 103°F, P 100, patient wasted, drowsy, vomiting, facial palsy (no record which side). L.P. opalescent fluid, cells 350, G trace. S —. Smear N predominate, organisms not found. C, *Past pestis* isolated. 12/7/45. T 103°F, P 100, facial palsy disappeared, neck rigidity +. 13/7/45. T 100°F (37.8°C), P 100, comatose, subsultus tendinum, incontinence of urine, neck rigidity ++, Kernig's sign +. L.P. cloudy yellow fluid. Smear *Past pestis* found ++. C, *Past pestis* isolated. Blood WBC 17,000 (N 91%, L 9%). Patient died, with pre mortal rise in T and P.

Treatment.—Serum 200 ml, sulphath 127 g, quinine bisulphate 153 gr (10 g).

Case V Inguinal Bubonic Plague, Secondary Plague Meningitis

Male aged 28, admitted 10/7/44, with history of 4 days' high fever, painful swelling lt groin. T 105°F (40.6°C), P 110, R 40. Small atypical vesicle lt ankle, tender swollen gland in lt groin. Aspn. *Past pestis* found (few).

Course.—16/7/44. T 100°F (37.8°C), P 80, R 25, generally much improved, bubo dull red, indurated, non tender. 20/7/44. T 104°F (40°C), P 100, R 28, severe headache for 2 days.

frequent vomiting, sleepiness, dull mentality, neck rigidity +, Kernig's sign +, lt external rectus palsy Blood WBC 18,400 (N 97%, L 3%) LP canary-yellow cloudy fluid released under high pressure, cells 5,060, G +, S — Smear N predominate, no organisms found Patient passed into coma, with weakening pulse, sluggish pupils, general flaccidity, and died

Treatment—Serum 200 ml (195 ml IV, 5 ml IM) first 6 days, after onset of meningitis, 10 ml I Th, 20 ml IV Sulphath 29 g first 4 days, later 5 g

Case VI Inguinal Bubonic Plague, Secondary Plague Meningitis

Male aged 16, admitted 15/6/45, with history of 2 days' chill, fever, painful swelling rt groin T 103° F (39.4° C), P 120, R 25, tender swollen rt inguinal gland Aspn *Past pestis* found (few)

Course—General condition gradually improved, hubo steadily enlarged 24/6/45 T 103° F, P 90, R 24 commencing suppuration in bubo 27/6/45 T 103° F, P 90, R 24, hubo incised, drained 30/6/45 T 102° F (38.9° C), P 90, R 24, headache, clouded mentality, neck rigidity +, Kernig's sign + LP cloudy fluid, cells 1,000, G +, S — Smear N predominate, organisms not found 1/7/45 Neck more rigid, with head retraction, opisthotonos, deafness

2/7/45 Symptoms improved LP CSF cloudy, yellow, S —, C, no growth Blood WBC 9,000 (N 88%, L 12%) 3/7/45 T 98° F (36.7° C), P 90, R 24, further improvement 5/7/45 T 100° F (37.8° C), P 100, R 24 Patient insisted on leaving hospital, and died about a week later

Treatment—Serum 200 ml IV in first 5 days, onset of meningitis onwards, 60 ml I Th, 20 ml IV Sulphath 52 g in first 4 days, onset of meningitis onwards, 20 g

Case VII Epitrochlear and Axillary Bubonic Plague, Secondary Plague Meningitis

Female aged 39, admitted 28/7/44, with history of 2 days' high fever, painful swelling at lt elbow and lt axilla T 102.4° F (39.1° C), P 104, R 26, acute lt epitrochlear and axillary adenitis with peradenitis Epitrochlear gland aspn *Past pestis* found + Blood WBC 10,400 (N 84%, L 15%, M 1%) Urine moderate albuminuria, few pus cells

Course—Pyrexia maintained, buhoes increased in size, oedema of whole limb down to fingers 9/8/44 WBC 16,900 10/8/44 T 103° F (39.4° C), P 100, R 30, buboes and oedema subsiding Onset of painful stiff neck, headache, marked vertigo, relieved by keeping eyes shut, vomiting Neck rigidity +, Kernig's sign + Eyes fine rotatory nystagmus on looking to lt, coarse jerking nystagmus on looking to rt LP clear fluid, cells 210, G +, S — Smear N predominate, "Gram-negative diplococcus" (?) found Urine slight albuminuria 12/8/44 Clouded mentality, irritability, nausea, severe vertigo, tinnitus, nystagmus pronounced, jerking, especially on lateral deviation, limbs flaccid, incoordination in finger-nose test on lt LP clear fluid, cells 500, G +, S — Smear N predominate, no organisms found Patient passed into coma and died

Treatment—Serum 200 ml IV first 4 days Sulphath 37 g 7 days beginning 31/7/44 Onset of meningitis sulphath 4 g, sulphap 9 g, anti meningococcal serum 20 ml IM

Case VIII Malaria, Primary Plague Meningitis

Male one month old admitted 9/7/45, with history of 4 days fever and slight convulsive movements T 104.4° F (40.2° C), irritable fontanelle tense, slight neck rigidity, Kernig's sign equivocal Blood WBC 17,000, film *Plasmodium vivax* gametocytes found (few)

Course—LP attempted many times without success 12/7/45 T 103° F (39.4° C), slight jaundice, neck rigidity +, Kernig's sign — LP few ml turbid yellow fluid, cells 400 G +, S — Smear Gram negative bacillus found (? *Past pestis*) C *Past pestis* isolated 15/7/45 T 99 F (37.2° C) head retraction, Kernig's sign + 19/7/45 T 100° F (37.8° C), pale, wasted, epileptiform convulsions, especially rt face 21/7/45 T 101° F (38.3° C) LP bead of pus at end of needle Smear Gram-negative bacillus found (? *Past pestis*) (LP performed repeatedly from 12/7/45 onwards had only "dry" result) Convulsions generalized, frequent, patient died 22/7/45

Treatment—Sulphap 15 g first 3 days, repeated last 2 days Sulphath 8 125 g, commencing 4th day, for 7 days Serum 50 ml

Summary

Eight cases of plague meningitis are described occurring in a series of 203 cases of plague treated in South China during the years 1943-5

The occurrence of a rare clinical form—primary plague meningitis—is recognized, one case is described and its pathogenesis discussed

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"SULPHA-COMBINATION"—A NEW CHEMO-THERAPEUTIC PRINCIPLE

BY

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The commonly used sulphonamides—sulphathiazole, sulphadiazine, and sulphamerazine—have on the whole the same effect when employed clinically The two pyrimidine compounds, however, are less toxic than sulphathiazole, and are therefore better tolerated From the therapeutic point of view sulphonamide treatment might be regarded as more or less perfect if it were not attended by the risk of damage to the blood and kidneys Toxic effects on the blood are, however, extremely rare with the above-mentioned drugs Renal complications are more common they may have a toxic or allergic origin, but in most cases are due to a deposition of the sulphonamide compounds, or their acetyl derivatives, in the tubules from supersaturated solutions This risk can be reduced by the introduction of acid-binding media and the maintenance of a high diuresis With these precautions renal complications are rare, but the risk remains, and for this reason inadequate and ineffective doses are often given Thus the importance of reducing concretum formation is evident.

Provided that the sulphonamides do not affect each other's solubility but dissolve independently which is to be expected from the chemical point of view, the risk of concretum formation might be reduced if, for the attainment of a certain blood concentration or effect, not merely one compound but a mixture of several equivalent sulphonamides was employed From the clinical standpoint it cannot make any difference if several compounds are used instead of one when all the drugs are equally effective The risk of concretum formation will, however, be reduced in this case, since each drug in the mixture is present in a considerably lower degree of saturation than when a single compound is employed This new therapeutic principle we have named the "sulpha-combination principle"

In cases where it is desired to increase the dose beyond the normal limits, resulting in higher blood concentration and better therapeutic outcome, the same principle can be applied If in such cases a single compound is used the risk will be increased On the other hand when a mixture of several drugs is employed the risk will be reduced The method has been used in a preliminary form (a mixture of equal parts of sulphathiazole and sulphadiazine) in Sweden for more than three years in the treatment of gonorrhoea (Hagerman 1944, Herlitz, 1944, Werko, 1945) In spite of the very high dosage (12 g a day for four days) remarkably few renal complications occurred (Nilzen, 1946a)

The most important problem is how to avoid formation of renal obstruction with a normal dosage. A mixture of sulphathiazole and sulphadiazine, also suggested by Lehr (1945), is not, however, ideal. The chances of renal complications are admittedly reduced, but they are not eliminated, since some of the excretion products are still supersaturated. If this is to be avoided the two above mentioned compounds must be complemented with a third—for example, sulphamerazine.

In the following account we discuss all the questions connected with "sulpha-combination" and describe experiments showing the practicability of the method. We also give an account of our final mixture, prepared according to this principle—"sulphadital"—which contains the three compounds sulphathiazole, sulphadiazine, and sulphamerazine, equally active in clinical practice. The present article is a condensation of a larger work which has already been published in Swedish (Frisk *et al* 1946).

Solubility

The solubility of sulphathiazole, sulphadiazine, sulphamerazine, and the corresponding acetyl derivatives was determined in solvents saturated with the substances separately and with mixtures of from two up to all six compounds. The solvents used were 1/30 molar potassium sodium phosphate buffer and urine varying in pH. The substances were brought into solution by even mechanical shaking for twenty-four hours at constant temperature—37° C—and with the solutes present in excess. The concentrations were then determined in a photo

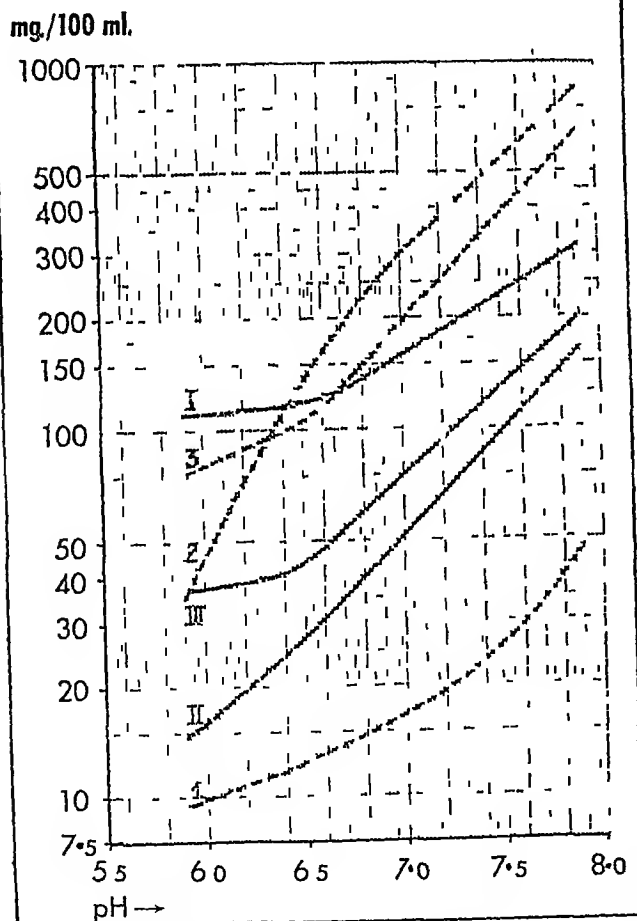


FIG 1—Solubility in urine at 37° C over the pH range 5.9–7.9
I=sulphathiazole II=sulphadiazine III=sulphamerazine IV=acetylsulphathiazole V=acetylsulphadiazine VI=acetylsulphamerazine

electric colorimeter according to Bratton and Marshall (1939). The solubility is given in mg of dissolved substance per 100 ml of solvent. The solubility curves are drawn to a logarithmic scale.

For reasons of space we give here only the solubility in urine. Figs 1 and 2 show the solubility at pH 5.9–7.9. From

these it appears that the three sulphonamides, their acetyl derivatives, and all six compounds are, as expected, dissolving independently of one another.*

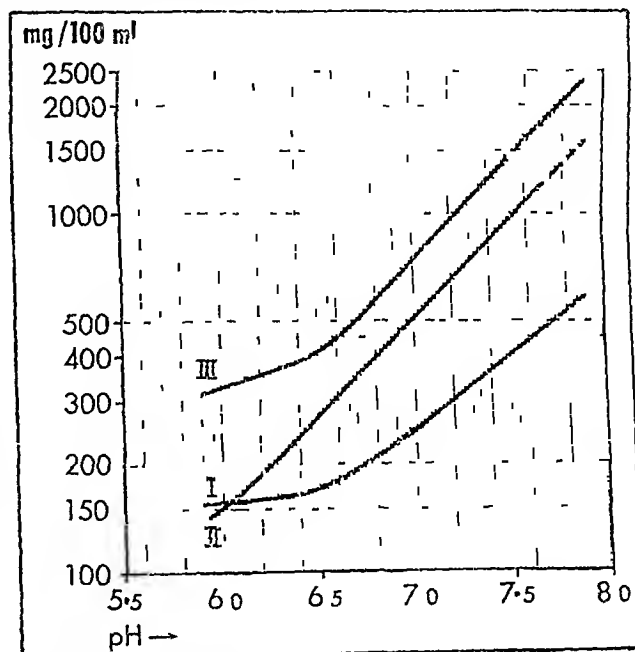


FIG 2—Solubility in urine at 37° C of different mixtures over the pH range 5.5–8.0
I=sulphathiazole II=sulphadiazine III=sulphamerazine

Concrement Formation

We do not propose to review here the comprehensive literature on renal complications during sulphonamide treatment clinically observed or studied in animal experiments. Two main types of injury to the kidney can be distinguished—namely, those of toxic or allergic origin, and those due to the formation of calculi. In the first-mentioned type, which is more uncommon, small areas of focal necrosis are found not only in the tubular cells of the kidneys but also in other organs as well as vascular changes, with fibrinoid degeneration of the media and voluminous intima proliferations.

The changes occurring after calculus formation are localized to the distal part of the kidney, and are characterized by distended tubules filled with masses consisting of protein precipitate, desquamated cells, and crystals of the sulphonamides or their acetyl derivatives. More detailed descriptions of the various anatomical changes have been given by Murphy *et al* (1944), Bergstrand (1946), and others.

In the present investigation the formation of renal calculi has been studied after the administration of sulphathiazole, sulphadiazine, and sulphamerazine. The dose and the blood concentration, as well as the time required to produce obstruction, have been determined for each compound. The composition of our mixture—"sulphadital"—was decided on the basis of these results, and with due respect to the solubility and pharmacological properties of the constituent compounds. This preparation was then subjected to the same investigation in order to ascertain whether the risk of concretum formation had been diminished by the combination.

Rabbits were used for the experiments. They were given a vegetable diet but no water. The urine was acid (pH 4–6). The compounds were administered intraperitoneally morning and evening (eight hours between the doses) every day except Sundays. The animals that did not die spontaneously were killed after about three weeks. Those dying spontaneously usually had concretions, which were the cause of death, but in some cases they died of injuries due to the injections. Twice a week free and total sulphonamide concentrations as well as non-protein nitrogen were determined.

* Further details to be published elsewhere, see also Nord Med 1946 29 639.

As soon as possible after death the kidneys were removed fixed by freezing drying according to Altmann, and then examined under a fluorescent microscope with the histological technique described by Sjostrand (1944) and Helander (1945). With this procedure it is possible to make detailed studies of the preparations without staining. The crystals thus remain *in situ* in the preparations. It is also easy to detect the calculi, as they fluoresce in a characteristic manner (blue fluorescence).

With the method employed it was easy to produce renal obstructions. Their localization and the anatomical picture fully corresponded with previous descriptions. By the polarizing microscope it was also possible to verify the crystalline nature of the concretions. Melting-point determinations in polarized light showed that the sulphathiazole concretions consisted mainly of acetylsulphathiazole, and those of sulphamerazine of the unacetylated compound. As regards sulphadiazine, it was not possible to decide whether the crystals consisted of free or acetylated compound, the melting-points being too close together.

The results have been summarized in Table I. A daily dose of 0.8 g of sulphadiazine per kg body weight during a period

TABLE I—Summary of Results of Experiments on Concretion Formation

Preparation	Daily Dose in g/kg	No of Experiments	Experimental Period in Days (mean)	Percentage of Concretion	Blood Concentration during Experimental Period in mg/100 ml (mean)	
					Free	Total
Sulphadiazine	0.8	5	9	100	18	38
	0.6	5	22	20	7	17
Sulphamerazine	0.6	5	10	100	6	28
	0.4	5	15	0	3	10
Sulphathiazole	0.8	6	16	67	6	11
	0.6	5	18	20	3	8
Sulphadital	2.0	10	12	40	41	63
	1.0	10	18	0	20	30

of nine days was necessary for provoking renal calculi in all the animals. A dose of 0.6 g/kg seldom gave rise to concretions. In the case of sulphamerazine concretions were obtained in all the animals with a dose of 0.6 g/kg in the course of only ten days, whereas a dose of 0.4 g/kg was tolerated without any renal injuries. Sulphathiazole required a daily dose of 0.8 g/kg for sixteen days (the blood concentration was remarkably low, presumably on account of the rapid excretion). In this series, however, only two-thirds of the animals died even though a certain risk attended a dose of 0.6 g/kg. We have therefore considered this dose to be on the whole comparable to the dose of 0.6 g/kg for sulphadiazine and 0.4 g/kg for sulphamerazine. From this it follows that the last-mentioned compound should be present in the mixture in a smaller proportion than the two others.

Finally it was possible with sulphadital to administer considerably higher doses without giving rise to concretions. With a daily dose of 2 g/kg 60% of the animals escaped concretion formation during an experimental period of twelve days, despite the very high blood concentration. If the dose was reduced to 1 g/kg no concretions appeared in any of the animals during an experimental period of eighteen days. The individual components of the mixture with this dosage gave rise to renal calculi in 100% of the cases.

Absorption and Excretion

With the dosage generally employed therapeutically the sulphonamides investigated here are absorbed almost completely, but with increasing oral doses the percentage absorbed becomes progressively less, as with other sulphonamides. The effect of the simultaneous administration of different sulphonamides on the absorption, excretion, and acetylation of the individual compounds was determined in the following way. Various single oral doses of sulphathiazole and sulphamerazine, separately and in a mixture, were administered to each of three healthy persons. The experimental procedure and method of determination earlier employed by Frisk (1943, 1945) were used.

Table II shows the mean blood concentrations in a typical experiment. A simultaneous administration of 2 g of sulphathiazole and 2 g of sulphamerazine gives a concentration that practically equals the sum of the separate values for the two compounds after a dose of 2 g.

TABLE II—Comparison between the Blood Concentrations after Single Oral Doses of Sulphathiazole and Sulphamerazine Separately and in Mixture

Time in Hours	Blood Concentration in mg per 100 ml							
	Found						Calculated	
	After 2 g Sulphathiazole		After 2 g Sulphamerazine		After 2 g Sulphathiazole + 2 g Sulphamerazine		After 2 g Sulphathiazole + 2 g Sulphamerazine	
	Free	Total	Free	Total	Free	Total	Free	Total
1	2.4	2.7	2.0	2.1	5.6	5.9	4.4	4.8
2	2.8	3.2	3.0	3.0	6.3	7.0	5.8	6.2
4	2.4	3.2	3.8	4.0	7.2	8.2	6.2	7.2
6	2.1	2.7	4.1	4.7	6.6	7.6	6.2	7.4
10	1.0	1.4	3.4	3.9	4.1	5.6	4.4	5.3
24	—	—	1.8	2.4	2.0	2.7	1.8	2.4

TABLE III—Comparison between the Excretions through the Kidneys after Single Oral Doses of Sulphathiazole and Sulphamerazine Separately and in Mixture

Time in Hours	Excreted Amount in Grammes (cumulative)							
	Found						Calculated	
	After 2 g Sulphathiazole		After 2 g Sulphamerazine		After 2 g Sulphathiazole + 2 g Sulphamerazine		After 2 g Sulphathiazole + 2 g Sulphamerazine	
	Free	Total	Free	Total	Free	Total	Free	Total
2	0.132	0.166	0.011	0.023	0.148	0.183	0.143	0.189
4	0.358	0.479	0.045	0.082	0.442	0.615	0.403	0.561
6	0.592	0.796	0.088	0.207	0.659	0.925	0.680	1.003
10	0.833	1.160	0.182	0.446	0.793	1.652	1.015	1.606
24	1.047	1.596	0.376	0.918	1.476	2.463	1.423	2.514
48	1.100	1.694	0.487	1.265	1.697	3.057	1.587	2.959
72	1.100	1.694	0.547	1.405	1.743	3.162	1.647	3.099

Table III shows the excretion of the drugs in the urine in one of these experiments. The excretion also takes place without the compounds influencing each other. Moreover, the acetylation is unaffected. For technical reasons these experiments were performed with only two drugs.

Composition of the Mixture, its Actions and Uses

Our results thus show that the sulphonamides examined, and their acetyl derivatives, do not affect each other's solubility, that a mixture of several compounds causes concretions to a considerably smaller degree than do the individual drugs at the same blood concentration, and that the compounds in a mixture are absorbed and excreted in the urine independently of each other. Since, as we have also been able to establish, the antibacterial effect of a mixture of several different sulphonamides is not affected but is the sum of the effects of the various compounds, the basis has been laid for the clinical use of the sulpha-combination principle.

A good mixture should contain a number of sulphonamides sufficient to maintain an adequate therapeutic concentration in the blood without risk of concretion formation. The compounds included in it must produce about the same antibacterial effect, be of low toxicity, and possess otherwise favourable pharmacological properties. In consideration of these factors, a mixture of sulphathiazole, sulphadiazine, and sulphamerazine is most suitable. The proportion of the different constituents depends upon their mode of absorption and excretion, their tendency to cause renal injuries, and the solubility of the compounds or their conversion products.

Sulphathiazole should not predominate in the mixture, as it is rapidly excreted and its acetyl derivative is not easily soluble. Sulphamerazine, owing to its slow excretion, gives rise to concretions in a somewhat lower dose than do sulphathiazole and sulphadiazine. The amount of sulphamerazine should therefore be less than that of the two others. The rapid excretion of sulphathiazole and the slow excretion of sulphamerazine can be compensated, however, if the drugs are present

in a certain proportion. We have sought for a mixture that has on the whole, the same pharmacological properties as sulphadiazine, which involves no risk of accumulation, and which it should be possible to administer at intervals of four hours.

The final mixture (sulphadital) was given the following composition: sulphathiazole 37%, sulphadiazine 37%, and sulphamerazine 26%. The normal daily dose in the treatment of pneumonia, for example, is for sulphathiazole 6 g, for sulphadiazine 5-6 g, and for sulphamerazine 4-5 g. A daily dose of 6 g of the above-mentioned mixture thus provides about one third of the otherwise normal daily dose of each constituent.

Figs 3 and 4 show the absorption, excretion, and acetylation of sulphadital after single oral doses of 2 and 4 g (average

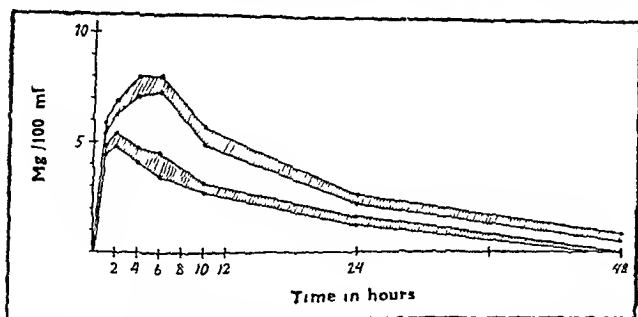


FIG 3—Blood concentration after single oral doses of sulphadital: the lower curves after 2 g, the upper curves after 4 g. The curve in each group shows the total amount of sulphadital, the lower curve the free sulphadital, the hatched area indicates the acetylated.

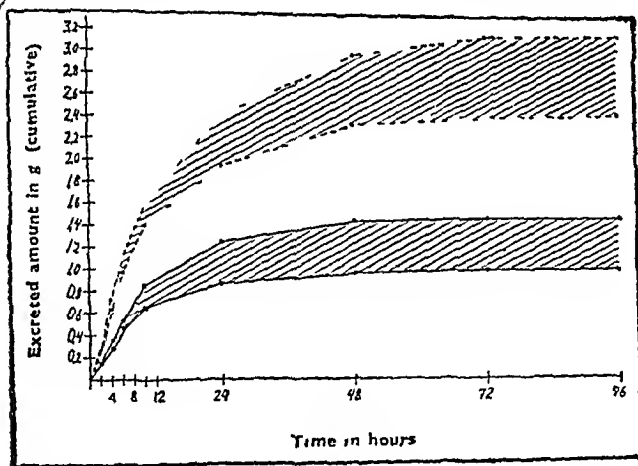


FIG 4—Excretion through the kidneys after single oral doses of sulphadital: the lower curves after 2 g, the upper curves after 4 g. In each group the upper curve shows the total amount of sulphadital, the lower curve that of free sulphadital, the hatched area indicates the amount acetylated.

of three experiments on the same persons). The blood concentration rises rapidly, reaching a maximum after 2-4 hours, whereafter it sinks slowly (Fig 3). The excretion in the urine takes place relatively slowly, and after 48-72 hours is practically concluded (Fig. 4). Of the total dose administered 75-80% has then been recovered, 50-60% in an unaltered form. Thus in the urine about one third of the amount excreted is present as acetyl derivatives.

With the following dosage—2 g at 6 p.m., 2 g at 10 p.m., and thereafter 1 g four-hourly, the first dose being given at 6 a.m. and the last at 10 p.m.—the mean blood concentration (15 cases) of free sulphonamides after 15 hours was 7.8 ± 0.5 mg per 100 ml and that of total sulphonamides 8.5 ± 0.4 mg, the values after 39 hours being 8.0 ± 0.6 and 9.3 ± 0.7 mg, and after 63 hours 8.4 ± 0.8 and 9.1 ± 0.8 mg, respectively. These values agree well with the blood concentrations obtained when the same amounts of sulphadiazine are administered at the same times.

If the dose of sulphadital is increased to almost twice the amount—i.e., 4 g 4 g, and thereafter 1.5 g four-hourly—

the means of the corresponding values (10 cases) are after 15 hours 11.5 and 12.7 mg, after 39 hours 10.8 and 12.0 mg per 100 ml, respectively. There is thus no risk of accumulation even with these high doses. Although the dose has been almost doubled the blood concentration does not increase by more than about 40%, owing to the fact that absorption is less complete when higher doses are given.

Calculation shows that the single sulphonamides at the usual pneumonia doses give such high concentrations of the free compounds and their acetyl derivatives in an acid urine that the compounds are always present in more or less supersaturated solutions. In a neutral urine this also holds for sulphathiazole, its acetyl derivative, and the free pyrimidine compounds, which may be present in concentrations two to three times greater than their solubility. At yet higher pH—e.g., 7.5—the risk is still less, but acetylsulphathiazole and free sulphadiazine may still be supersaturated. Considering these facts, it is surprising that renal complications appear in only a small percentage of the cases.

With the sulpha-combination drugs in the proposed normal dosage the risk of concrement formation is greatly reduced, as the components of the mixture are no longer excreted in the form of supersaturated solutions. This holds good if the reaction of the urine is neutral or approximately so. If, on the other hand, it is more acid the concentrations of two of the excretion products—acetylsulphathiazole and sulphadiazine—may exceed their solubility. For safety's sake a high diuresis should therefore be maintained and the patient should be given acid binding substances. We believe that if these precautionary measures are observed the risk of concrement formation in a normal kidney will be almost eliminated.

Hitherto the sulpha-combination in the form of sulphadital has been used in many hundreds of cases of acute pneumonia with good results and tolerance and without any known case of renal calculi, also with increased doses in many cases of gonorrhoea. Nilzén (1946b) has treated 105 cases of gonorrhoea with increased doses of sulphadital (9 g daily for three days). Although he did not use any acid-binding substances no concrements were observed in any of the cases.

Summary

"Sulpha-combination," a new principle for treatment with sulphonamide drugs, is discussed, and an account is given of sulphadital, a preparation made according to this principle and composed of sulphathiazole, sulphadiazine, and sulphamerazine.

The results are given of a number of experiments illustrating the practicability of the method.

The importance of "sulpha-combination" is twofold. First and foremost, it appears to eliminate the risk of concrement formation at a normal dosage. Secondly, in cases with more resistant bacteria the doses may be considerably increased without greater risk of calculus formation than is possible with a single compound.

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Medical practitioners who are asked to give vaccinations and inoculations to intending air passengers are particularly requested to use the "International Certificate of Inoculation and Vaccination" (Form 3150) when recording them. These forms can be obtained by the passenger from the agency from which he receives his ticket and flight information. The use of any other form of certificate is liable to lead to delays and possibly to quarantine in foreign countries where the international certificate is the only certificate officially recognized.

ENDOGENOUS DEPRESSION IN GENERAL PRACTICE

BY

C A H WATTS, MB, BS, DRCOG

In six years of practice before the war I diagnosed only one case of endogenous depression, and that after the patient had committed suicide. After psychiatric experience in the Army I have found the condition comparatively common in general practice. In six months no fewer than 20 cases have come under my care pointing to the prevalence of the complaint. Not many family doctors have the opportunity for postgraduate study of psychiatry and the result must be that a great many cases go undiagnosed. Only a small proportion of the cases, usually the most serious, come before a psychiatrist as the fear of mental-hospital stigma keeps the patient away from specialist help until either the case is certifiable or time itself has effected a cure.

This paper is a preliminary report to draw attention to the endogenous depression which is far more common than is generally realized. The term "endogenous" is used in preference to the term "psychotic" as the latter implies insanity, and few of the patients found in general practice could be certified as insane. Of the 20 cases in this paper only three were considered bad enough for electro-convulsive therapy (E.C.T.). All three stubbornly refused to go to a mental hospital for treatment. Two have recovered without it, but the third is showing no signs of improvement.

One seldom hears of a patient with cancer committing suicide. On the other hand suicidal ideas are common among the depressives. The desire to end things is some measure of the patient's suffering. Depression is probably the most unpleasant illness anyone can contract. With such deadly diseases as cancer or tuberculosis there is always some hope real or built on euphoria, but to the depressed patient, whose condition is far from hopeless, there is no hope and no future.

The mental hospital cases with a general retardation of the psychological and motor systems are fairly easy to diagnose, but for each classical case there are a score of mild depressives who eke out a miserable existence in their homes keeping their troubles to themselves or receiving the only treatment a family doctor can offer, which is often inadequate. Others are

wrongly diagnosed as neurotics, hypochondriacs, and other chronic forms of invalidism. An accurate diagnosis is important, as there is always the danger of suicide. The patient is often reluctant to talk about his feelings and is easily put off by unsympathetic handling. He is only too ready to attribute blame to himself. Thus to be scorned as a neurotic or simply told to "pull himself together" is both cruel and unfair. Frequently his relations have tried these "back-slapping" methods implying that he is either soft or weak-willed. No patient in practice deserves more sympathy. Good rapport, if it can be established between the patient and his doctor, is one of the most valuable weapons with which to treat the disease. Once adequate rapport has been created, such difficult subjects as suicide, the nature of the illness, and the possibility of mental hospital treatment can all be discussed with pleasing candour. The patient may show surprise when such subjects are broached but he is rarely upset by them, because in his heart he has already weighed up such possibilities. "I have thought of suicide, but I should never have admitted it if you had not asked me," is the typical reply to such a question.

Symptoms

The disease is largely symptomatic and it can simulate almost any functional or organic illness. There is an almost infinite variety of types. The following symptoms are the most important, and each will be considered in detail: (a) depression, (b) suicidal ideas, (c) changes in the sleep rhythm, (d) changes in habit and outlook, (e) obsessions and phobias.

Depression

In the type of case one deals with in general practice this is rarely profound, and one cannot always see it written on the patient's face. Close relations usually notice some difference. The patient as a rule complains of one or more somatic symptoms and admits of depression only when questioned directly. The varieties of early symptoms are shown in the accompanying Table.

The patient will usually admit that he is depressed and that his outlook on life has changed. His sense of humour is different from what it was and he rarely laughs. Life has become a burden and every molehill looks like a mountain. Problems and responsibilities he would once have taken in his stride now make him hesitate and hold back. He has lost confidence in himself and his ability. When asked if he or his

Table Showing Varieties of Early Symptoms

Case No.	Sex	Age	Previous Attacks	First Symptom	Sleep	Suicidal Urge	Habit Changes	Work	Length of Illness	Result
142	M	25	None	Patient had malaria	Normal	Present	Asocial	Put off work	3½ months	Recovered
143	F	47		Insomnia	Early waking and bad dreams	None		Carried on in a fish shop	5	"
144*	M	60	Recurr each spring	Depression	Early waking	"		A chronic invalid	2	
145	F	27	None		General insomnia		None of note	Kept at work	5 weeks	
146	F	46	One previous attack	Patient had cut flexor tendon	Difficulty in falling asleep sleep broken		Seeks company fears to be alone	Off work	10 months	LSQ
147	F	43	None	Fainting	General insomnia		Has stopped playing piano	Kept on at house-work	8	Improving
148	F	60		Pain in chest		Present	Weeping bouts			
149*	M	38		Indigestion	Difficulty in dropping off	Marked at times	Asocial	Off work	3 years	Recovered
151	F	51		Wind in stomach	Broken sleep and dreams	Present	Weeping bouts	Kept on at house work	2 years	ISQ
152	M	45			Early waking	None	Asocial	Work modified	3 months	Recovered
157	F	53		Depression	Broken sleep	Present	None of note	Kept on with house-work	3	ISQ
160	F	49		Indigestion	Nightmares	None	Could not write letters		2½ years	Recovered
161*	F	48		Bad taste in mouth	Broken sleep	Present	Lost interest in her hens		8 months	Improving
166	M	43		Fatigue	Early waking		Lost interest in hobbies	Off work	7	Recovered
167	F	42		Depression	Broken sleep wakes early		None of note	Kept on with house-work	2	Improving
170	F	40	In 1939 was in mental hospital	Fatigue	Broken sleep	None	Became irritable	Off work	1 year	Recovered
172	F	44	None	Dizzy bouts	Early waking		Weeping bouts	Work modified	4 months	Improve
176	F	45	"	Vaginal discharge	Broken sleep	Present		Carried on with work	1 month	ISQ
178	M	37		Cough	Difficulty in falling to sleep	None	Gave up rabbit breeding		8 months	Recovered
180	M	47		"	Cannot sleep for cough	Present	None of note	"	10	LSQ

* Case described more fully in text

environment has changed he will usually admit that the change lies in himself. He is a different man from what he used to be. He has difficulty in concentrating and in thinking things out. He has to drive himself to do his work. Even his hobbies have lost all attraction. Actual retardation may be difficult to demonstrate, but the sevens test is sometimes useful. The patient is asked to subtract 7 from 100, and then 7 from 93 and so on, until he has reached the lowest possible digit, which is 2 if his calculations are correct. The usual time for a brain-worker is about 30 seconds. The test can be repeated at intervals, and an improvement in the time is some indication of progress.

To the depressive the future looks very gloomy, if not hopeless, and reassurance is not readily accepted. Delusions, such as poverty or that something dreadful is going to happen either to the patient or to one of his near relations, are not uncommon. The patient is prone to get lost in his thoughts. He may sit for ten minutes before doing a job. One patient, at her worst, could not account for a whole day, but none of her relations had noticed any gross peculiarity during that time. Vertigo or fainting is a common symptom among women.

Suicidal Ideas

This subject must be approached with tact. One does not want to upset the patient or to put ideas into his head. If he admits depression one can inquire if he feels bad enough to wish he was out of it. Most of these patients admit that they have had such wishes. One can then ask if they had had any ideas about suicide. Some will agree, and others who may show surprise will say they have never reached such a pitch of depression.

Sleep Rhythm

Few depressives get off without some upset in their normal sleep habits. The classical story is that they get off to sleep fairly easily, but that the least noise awakens them and their sleep has gone. Others wake up in the early hours and can not get off again. It is during these early hours that they feel worst and suicide is most likely to occur. As the morning wears on they improve and by nightfall feel positively normal, only to waken early the next morning to start the same dismal rhythm again. Some few depressives enjoy good sleep. Others are afflicted with bad dreams and wake exhausted in the morning. Others have difficulty in dropping off to sleep, but such suggests an anxiety state. With some, no two nights are the same. If there is no upset in the sleep rhythm one must seriously question the diagnosis of endogenous depression.

Change in Habit and Outlook

This is often very striking. One patient mentioned that she had always been musical, but since her illness had started she could not bring herself to play the piano. An amateur comedian found himself unable to hold his audience and so gave up his work in the concert team. One patient gave up drinking when depressed. Others go to the opposite extreme.

Case 110—In August, 1945 this patient was admitted to a neuropsychiatric centre agitated and visually hallucinated. His tongue was red and atrophic, and knee jerks were absent. There was a history of heavy drinking to complete the picture of delirium tremens. On intravenous nicotinic acid and aureum he made a rapid recovery, being mentally normal in four days. His family and past history was almost completely negative. He had begun drinking heavily in the February because he could not sleep. Even a heavy dose of brandy could not keep him asleep after 4 a.m. His commanding officer and his wife were closely questioned as to the patient's habits. His wife admitted that since the February he had changed. He had lost all interest in his home and children, never doing the odd jobs about the place to which he was accustomed. He ate and slept badly. The depression appeared to have cleared up with his delirium tremens. Both the patient and his wife affirmed that he was back to normal before he was discharged in October, 1945.

It is well worth while bearing melancholia in mind when a man, previously known to be sober, suddenly starts drinking to excess for no apparent reason.

The social man may find himself shunning society. Others fear to be alone and seek company, but feel out of it when they get there, as they have nothing to say and are so different from what they used to be.

Case 149—This man, aged 38, first came to see me in February, 1946. He complained of stomach ache occurring at intervals, an occasional headache, and a listless feeling. Physical examination failed to reveal any abnormality. His knee jerks were sluggish, but it was felt that his symptoms were those of an anxiety state. During preliminary psychotherapy he admitted a morbid fear of tuberculosis, a disease which had killed his brother. He was reported to the local tuberculosis officer, who had him x-rayed, but no evidence of the disease was found. As he did not report back it was assumed he had been reassured, but towards the end of April his wife communicated with the surgery. She was very worried about him, as "he was a changed man." He was depressed and unhappy, and had dropped all his social activities. He was interviewed again, and it was found that he was very low, feeling that life had lost all its charm for him. Only the thought of his wife and family prevented him from taking his life. He was worried because, while he had earned good money during the war, he had saved nothing and the family ran the risk of poverty. His sleep was poor unless he took sedatives. By the middle of May he was worse, and had a bad suicidal urge. He was taken home one night in a state of depression, and stated that but for the presence of friends he would have finished it. He was persuaded to see a psychiatrist, who suggested he needed hospital treatment at once. The patient consented, but only because he knew if he did not agree he would never get away from the psychiatrist! This man who had been a local comedian and very sociable, became solitary and schizoid. Fortunately, soon after his visit to the psychiatrist he began to improve, and by the middle of July was back at work again.

Case 161—This woman, aged 48, said she had been ill for about a year. She complained of a nasty taste in her mouth and tight feelings round her neck. These symptoms were always most severe in the mornings. She suffered from insomnia and was given to bouts of weeping. She was prone to lose herself for ten minutes or so at a time. She had "nasty thoughts", these usually implied impending death to herself. When her son announced his engagement she had felt happy because she knew he would not have a mother much longer. She had wished she was dead, but when first seen that feeling had passed. She always felt better in company, which she sought, but was embarrassed when people said she was not the jolly soul she used to be.

Obsessions and Phobias

These may indicate an underlying depression. *Case 149* had a phobia about tuberculosis. Other patients reveal absurd consternation about some trivial mole or wart. Early in 1946 one of the local inhabitants hanged himself because of a tapeworm which had worried him for a few months. In the Army the V.D. obsession was particularly common.

Case 27—This man, aged 34, had an obsession about V.D. For over a year, while employed in the Middle East, he had seen every available urogenital surgeon and venereologist. He had twice submitted to cystoscopy. Before returning home he reported once more to yet another camp M.O., who took pity on the patient and threatened him with "You don't want to be sent to a psychiatrist do you?" He ended up at a neuropsychiatric centre, and was given psychotherapy as an obsessional case. He became much worse and made a strong negative transference with his therapist. When seen in March, 1945, there was no obvious cause for any anxiety. He talked too frankly about his sex life, which as Ross (1937) suggested was a pointer towards a psychosis. He had marked feelings of unworthiness, and was always comparing himself unfavourably with others. He was depressed and had suicidal ideas. He slept badly. He was given six E.C.T. treatments and rapidly lost his obsession for V.D. When seen seven months later he was back at work and apparently fully recovered.

Some innocent organ may be blamed for the patient's feelings of ill-health. A man may demand the removal of his testicles, or a woman who has had a prolapse for years suddenly begins to blame it for all her symptoms and is prepared to undergo any operation to have the offending organ removed. Such operations are obviously futile and do not touch the real problem.

On the physical side there is usually no evidence of organic disease. A moderate degree of hypertension is not uncommon. The knee-jerks, which as a rule are brisk in an anxiety state, tend to be sluggish (see *Case 149*). Many depressives are over-laid with a fair degree of anxiety, so that the sign is not of much significance. Depression can of course be coincident with an organic disease, which may make the diagnosis much more difficult.

Case 144—This man, aged 62, was an invalid from chronic emphysema. He had to spend most of his time sitting in a chair,

is the least exertion made him breathless. He was usually cheerful and philosophical about his complaint, but in March, 1946, he became very depressed. He kept to his own room and was solitary. He felt he was finished, and wished he was dead. He had no suicidal urge. His sleep rhythm was changed and he started waking at 3 or 4 a.m. His relations had noticed the change in him. He was given luminal at night and benzedrine in the mornings. In six weeks the depression passed and he resumed his place in the family circle feeling "his old self again."

Diagnosis

Any organic or functional disease can be simulated by the psychotic depression, but the most difficult differentiation is in the field of the psychoneurotic illnesses.

Anxiety State

The differentiation here is most important, because the deeper therapy which is applied to the neuroses is definitely contraindicated in the endogenous depression. Case 27 shows how deep therapy can aggravate the condition.

There are two main aids in the differential diagnosis. An anxiety state can be traced back to its origin in frustration or feelings of guilt. The endogenous depression comes "out of the blue." Secondly, the "feel" of the cases is different. A bereavement will make the normal individual depressed, but his poise should have returned to normal in two weeks. The neurotic may prolong the depressive state over weeks or months. The condition is then known as a reactive depression. It is in fact, a depression brought on by circumstances, and, like all neuroses, is an exaggeration of normal. Furthermore a reactive depression is motivated and serves a useful purpose. The motive lies below the level of consciousness and the purpose may be to get sympathy from the remainder of the family. Bereavement may set in motion an endogenous depression. It might be a factor, but could not be the sole cause of the illness. Much more frequently this disease comes "out of the blue." Wringing her hands, the patient exclaims "And I should be so happy. I have such a nice home and husband and I am so proud of my family." The illness is not engendered by circumstances and is not motivated like an anxiety state.

The second important point in the diagnosis is the "feel" of the case. It is quite different from any other illness, and the ability to feel out cases comes from the experience of handling them. The typical depressive oozes with depression—so much so that the physician himself feels depressed. This does not often happen in the mild cases described in this paper. The kind of rapport one establishes helps in the differentiation. The neurotic who is going to respond shows an intellectual interest in his treatment. The depressive allows talk to flow over him and only appears to be interested in going over his feelings. He is never tired of telling his story over and over again. Thus with the depressive the psychotherapy is more stereotyped and easier than with the neurotic. It consists of repeated encouragement and while the repetition may not appear to convince the patient it does not bore him. In the anxiety state there may be a hidden fear of mental illness. The patient would be very upset if this were suggested by the therapist. The depressive accepts, without resentment, the suggestion that his illness is mental although he will dig his heels in hard at the mention of a mental hospital. In his heart he knows the way he is heading. He is grateful for the diagnosis perhaps because he is glad to find someone who understands and can sympathize. He is so often misunderstood.

Prognosis

The one bright spot in this gloomy illness is that the prognosis is comparatively good especially in cases of involutional melancholia. The length of the illness varies from a matter of a few weeks to months or even years. Henderson and Gillespie (1944) suggest that when relatives press for an opinion it is best to state that the attack may last for a period of 3 to 6 months. Many cases are well in much less time, but others run a longer course—maybe of years. With ECT dramatic recovery is likely to occur in anything from 50 to 70% of cases of involutional states according to Sargant and Slater (1944). Henderson and Dalrymple (1943) in a review of ECT suggest 46% recovery in other types of depression. High-dosage insulin sometimes works where ECT has failed especially in the

depressive case with schizoid characteristics. The recovery figures do not appear startling when compared with the results in the appendicectomy operation, but they are very much better than those of older methods of treatment, and in successful cases the patient is relieved of weeks or months of suffering. With patients it is wise to take a very optimistic view of treatment, but one should give the relatives a more accurate statement as to the prognosis.

Treatment

The first step in the treatment of these cases is to establish a firm rapport. The illness may be a long one, and such a rapport may well carry the patient through the bad patches when everything else seems hopeless. So far as general practice goes, the treatment is threefold—psychotherapeutic, symptomatic, and occupational.

Psychotherapy

In his book *The Common Neuroses* Ross (1937) devotes an excellent chapter to the treatment of the mild depressive. The therapy consists largely of reassurance, and the same ground may be gone over again and again without the patient becoming bored by repetition. He should be told that his symptoms are due to an illness which is not uncommon, and which is well understood by the therapist. "I am not really ill" is a common apology offered by a patient, and it comes as a relief to know that his feelings are the expression of an illness and not due to his own peculiarity and failings. Surprise and satisfaction are often expressed when the therapist, in his pattern, is able to describe some of the patient's symptoms more clearly than the patient himself. The patient realizes that here at least is someone who understands, someone to whom he can talk without being laughed at or told to "pull himself together." The only consolation is that, if he can hang on, the illness will pass over. He must be reassured that, in spite of any feelings to the contrary, the illness is self-limiting. One cannot remove a delusion by argument, but this analogy sometimes gets home. The patient is told that his "dashboard instruments" are recording falsely, and he needs to be guided by those of his doctor and his relations until accuracy is restored. He must be told to measure his progress, not by days, but by weeks or months. Even when he is climbing out of a depression he must be warned against setbacks, which frequently occur. These may be accompanied by a strong suicidal urge. Nothing is more disappointing than to lose a patient who seems to be well on the road to recovery.

Symptomatic Treatment

Every effort should be made to promote sleep. In some cases 1-3 gr (65-195 mg) of phenobarbitone is adequate but usually 7½ gr (0.5 g) of medinal is more effective. The latter is taken dissolved in water and flavoured with sugar and fruit juice. Benzedrine sulphate is sometimes useful in dispelling the early morning depression, and creating "pep" and energy in the patient. One or two 5 mg tablets are usually given on waking. Another may be necessary by noon. To avoid creating insomnia at night none are administered later. Aspirin compounds may be given to relieve headaches and alkaline powders to allay dyspeptic symptoms. Stilboestrol is useful to abate menopausal symptoms, but does not in itself relieve the depression. There is no need to withhold any drug which promises to relieve discomfort merely because the pain is psychogenic but it is more important to promote reassurance and understanding than to give any form of medicine.

Occupational Therapy

This is most important. The patient is often quite unable to do any responsible work but to make him idle by merely putting him off work is to invite trouble. Time drags horribly with a depressive and anything which helps him to while away an hour is useful. He should be encouraged to do things with his hands, and to be sociable with his friends. He should be discouraged from lying idly on his bed or going for walks by himself with only his own wretched thoughts for company. Perhaps more important than the negative aspect of while away his time is the positive side of achievement. The patient feels useless and impotent and it is often an encouraging surprise to him to find he can do even small jobs.

Specialist Treatment

E.C.T., insulin shock, and in certain cases leucotomy require specialist attention. Few forms of treatment in the whole of medicine are more dramatic or more gratifying than E.C.T. in the depressive, especially the involuntal type, and here comes the rub. Very few cases found in general practice are certifiable. The patient does not resent the mental implication of the diagnosis, but he resents strongly any idea of being sent to a mental hospital for treatment. The bait of going in as a voluntary patient, of having a special ward, is quite ineffective. If the patient is suicidal the position is most embarrassing for the doctor. To send a patient in against his will would break a useful rapport. It is maintained by some psychiatrists that E.C.T. given to a resistant patient is less effective than to one who voluntarily submits.

The G.P. is looking after a large community. If every depressive were certified and sent to a mental hospital for treatment not only would his practice diminish but he would vitiate his own work. Few neurotics and depressives would have courage to confide in a man who was liable to lock them up. In any case, in America E.C.T. is given to out-patients, and the majority of mild depressives could well be treated in that way.

It is high time that every general hospital had a neuro-psychiatric wing where neurotics, depressives, and amenable psychotics could be treated without the stigma of the mental hospital to add to their misery. Such a cover has already been given to patients suffering from venereal disease but it is denied depressives, who are more deserving of such help. If all able cases were treated as out-patients that would save valuable hospital beds. Calling a lunatic asylum a mental hospital is a theoretical improvement, but it has not in any way allayed the public dread of such an institution. Furthermore any "nerve hospital," no matter what euphemism labels it, is doomed to similar unpopularity. Only by incorporating the centre into a big hospital will the stigma be avoided.

During the war psychiatry has made great strides, especially in the Armed Forces. Psychiatric facilities are urgently needed by the civilian population. It is estimated that one-third of all the cases seen in general practice are functional. Psychiatric specialist facilities are meagre in the extreme. Under the present system the vast majority of mild depressives, who are far from "insane," will have to get along as best they can with the inadequate treatment which the G.P. can offer. There will be a proportionate number of suicides, which with a better system would be avoided.

Summary

Attention is drawn to the prevalence of the endogenous depression in general practice. It is a diagnosis which is often missed.

The main symptoms, the diagnosis, and the domiciliary treatment of the condition are outlined.

The difficulty of procuring special treatment is pointed out.

An appeal is made for better psychiatric facilities in general hospitals, so that amenable patients can avoid the stigma of mental hospital treatment.

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SIR JOHN CONYBEARE'S *Textbook of Medicine* by various authors first appeared in January, 1929, and by April 1945 had gone into seven editions and four reprintings. Now it has reached an eighth edition (E. and S. Livingstone, 30s.) and the editor's skill in managing his team is no less evident than before. Most of the sections have needed only minor touching up. F. E. Lipscomb has largely rewritten the articles on malaria, blackwater fever, bacillary dysentery, and typhus and that on effects of heat has been rewritten and transferred to the section on tropical diseases. In the section on the endocrine system there is a new article on the menopause, and many changes have been made in those on thyrotoxicosis and diseases of the pituitary gland. Now that penicillin is more and more available and there is a large literature about its use, the editor has added a section on the subject. There is also an appendix on aviation medicine by R. H. Winfield. This textbook has won a firm place in the esteem of students and practitioners, and the new edition will maintain its well-deserved popularity.

SO-CALLED TRIPLE-SYMPATOM COMPLEX OF BEHCET

BY

E. W. PROSSER THOMAS, M.D.

In 1937 H. Behcet described what he believed to be a hitherto unrecognized morbid entity in which grave eye disease occurs in association with peculiar ulcers of the mouth and external genitals. Later he published other articles (Behcet, 1938, 1939, 1940). The clinical picture naturally is dominated by the eye lesions, which range from conjunctivitis and corneal ulceration to hypopyon uveitis, and may lead to total blindness. The eye involvement may precede, coincide with, or follow the oral and genital manifestations. Both eyes may be affected simultaneously, but more usually only one eye is involved for a while, after a variable interval the other eye shows similar changes. The ulcers of the mouth and genitals are small and discrete, either aphtha-like or nodular and necrotic, resembling perianthitis mucosa necrotica recurrens (Sutton). Other skin lesions may also occur, such as erythema nodosum or an acneiform eruption. The disease, which appears to affect men twice as often as women and to occur predominantly in the third decade of life, is essentially a relapsing one over a period of years, the symptoms at the three main sites recurring simultaneously or successively. Behcet believed the syndrome to be due to a filtrable virus.

A similar combination of symptoms had been reported earlier—for instance, by Whitwell (1934) and Nishimura (1935). Whitwell concluded that there is a relatively unexplored syndrome of ulcers in the mouth accompanied by "embolic lesions elsewhere," the syndrome may be partial—that is, mouth lesions alone—but at any time the skin and/or the vulva may be involved, eye lesions may also occur, as in one of the cases he cited. Nishimura's case was one of acute ulcer of the vulva with aphthoid changes of the oral mucosa and acute iritis.

Since Behcet's articles a number of other cases of the same complex have been reported (Weekers and Reginster, 1939, Bechgaard, 1940, Cavara, 1940, Franceschetti and Valerio, 1940, Mach *et al.* 1941 and Ephraim, 1944). The last-named author questioned whether *ulcus neuroticum oris et vulvae* (Loblewitz) *perianthitis mucosa necrotica recurrens* (Sutton), and aphthosis (Neumann) do not all belong to the same group. A case recorded by T. Jensen (1941) may be quoted as an example of the syndrome.

The patient was a man aged 22. The disorder began with aphthoid ulcerations of the mouth at the age of 9, the ulcerations healed spontaneously in a few weeks, then recurred. Ocular symptoms appeared at 12, lasted four or five days at first and then about three weeks, and recurred at intervals of one month. Vision decreased after each attack. Iritis, iritis and choroiditis total atrophy of the left and partial atrophy of the right optic nerve, and hypopyon were successively diagnosed. Six years later small painful ulcerations developed from time to time on the scrotum and penis. The patient gave a positive response to intra dermal tests with tuberculin, Frei antigen, and dmeclos vaccine. Non specific reaction was therefore suspected and confirmed by positive response to 0.1 ml. of a physiological salt solution. Superficial puncture of previously sterilized skin caused the appearance of a pustule the size of a pinhead and surrounded by a red somewhat infiltrated zone having a diameter of 5 mm. The pustule disappeared in four to five days, leaving some epidermal scarring. Behcet inclusion bodies were not found in the secretion of the regular ulcerations.

A case recorded by Berlin (1944) is of especial interest because, in addition to the classical eye, mouth, and genital lesions, the central nervous system was involved. Berlin's patient whose eye disease began three and a half years after the oral and genital signs, eventually developed headache, giddiness, and fits, which culminated in coma and death. At necropsy small multiple foci of inflammation and softening were found in the brain.

The subject has been fully reviewed recently by Curth (1946) and Katzenellenbogen (1946). Curth describes the first American case of the disease. The patient was a young man with typical recurrent hypopyon which led to the enucleation

of one eye and to blindness of the other, with recurrent genital ulceration and oral aphthae. Other symptoms were attacks of arthritis of the ankles and fibrositis of the back. The patient also suffered from facial acne, recurrent boils and multiple abscesses in the axillae. There was no response to a number of different treatments, including systemic penicillin and sulphoamides. Bacteriological and other studies gave no clue to the aetiopathogenesis.

Katzellenbogen reports three cases in male Arabs. There were recurrent aphthous ulcers in the oral mucosa and in the skin of the root of the penis and scrotum which left scars on healing. The ulcers were associated with eye disease of the character of hypopyon iritis and with haemorrhages in the retina and vitreum. These haemorrhages, which have not been stressed by other authors contributed most to the loss of sight in two of the cases. Other lesions noted were nodules resembling erythema nodosum on the extremities and an acneiform eruption on the face, extremities, and back. Relapsing epididymitis was found in two of the cases. All cases had a peculiar sensitivity of the skin. Puncture was at all times followed by pustule formation, and any injection, of whatever material, produced focal erythema and swelling. In his cases Katzellenbogen found no evidence to support Behcet's belief in a virus causation, and failed to discover any grounds for suspecting tuberculosis. He thought, however, that the disease had qualities reminiscent of those of herpes.

The following appears to be the first case of Behcet's syndrome as such to be reported from this country.

Case Report

A married man aged 29 came under observation at St Mary's Hospital in June, 1940 on account of a relapsing iritis in the right eye. He was employed in a munitions factory as an inspector of shells. Previously he had worked for five years as a paint sprayer. His father, mother, one sister, and one brother were alive and well. One sister had died of pulmonary tuberculosis. He had had scarlet fever at the age of 11. Before the onset of his eye disease his general health had been fair, but for eight years—that is from the age of 21—he had suffered from ulcers of the tongue, roof of the mouth, and inside of the cheeks. These ulcers recurred irregularly, each lesion taking three or four days to mature and about the same time to subside. They were generally painful. Some were small and superficial resembling simple aphthae but others formed more solid nodules which broke down centrally and left scars (cf. *perianteritis mucosa necrotica recurrens*, Sutton).

In September, a few months after the onset of iritis he developed a right femoral thrombophlebitis. Except for a positive Mantoux test, full investigation in hospital proved as negative at this time as it did subsequently. Focal sepsis was suspected in the tonsils, and tonsillectomy was performed in October. The disease however progressed, and in December thrombosis of the inferior vena cava occurred. Meanwhile the condition of the right eye had been steadily deteriorating. By March, 1941, vision was practically nil and there was extensive damage involving the whole uvea. The left eye also was slightly threatened. A search for a common focus of infection for the thromboses and the iritis failed as did that for a tuberculous focus in the chest or elsewhere. Naturally it was regarded as suspicious that his sister had died of pulmonary tuberculosis.

By July the thrombosis of the inferior vena cava was subsiding though the patient still had slight swelling of the legs after exercise, which was controlled with elastic stockings. He had been treated with prolonged rest, which when interrupted brought on exacerbations of the iritis in the right eye. The left eye had been flaring up periodically.

In August he was again admitted to hospital this time with nausea, constant insomnia and severe temporal headache. The eye lenses were equivocal and a cerebral neoplasm possibly with meningeal involvement was suspected. Lumbar puncture showed a raised pressure (250 mm) with a clear fluid. The cell content was normal, the chemical and bacteriological examination negative. The colloidal gold test was negative as was the Wassermann, which had been done on the blood on a number of occasions previously. Radiography showed no evidence of an intracranial space filling lesion. An encephalogram gave no positive result. In view of his past occupation as a paint sprayer a lead encephalopathy was suspected but there was no evidence of skeletal lead deposition and the lead content of the urine was 0.08 part per million (normal, 0.04-0.12). No suppurative erythrocytes were seen in the blood. Apart from a haemoglobin of 76%, the blood count was within normal limits. Blood culture was sterile. General physical examination apart from revealed no definite abnormal signs in the central nervous system, heart or abdomen. Large veins were now present below

Poupart's ligaments and across the abdomen, carrying blood upwards, presumably a relic of the bilateral femoral thrombosis. The posterior tibial arteries were present and palpable.

Meanwhile, vision in the left eye had become suddenly worse and the headaches had increased in severity. An extensive white exudate from the choroid was seen, suggestive of choroiditis rather than papilloedema. After another month's rest, however, the headache had lessened and vision in the left eye had improved somewhat. The superior quadrants had cleared a little, but details were still not visible. He was again discharged to the out-patient department without any aetiological diagnosis having been made.

Shortly afterwards a new set of symptoms made their appearance—namely, various skin lesions, and ulcers on the scrotum and penis. The skin lesions were of three types: (a) Small, solid, slightly tender papules on different parts of the body, particularly the forehead, cheeks and legs. They were of normal skin colour or sometimes a little dusky, and came and went within ten days or so without ever breaking down. (b) Small patches of erythema—e.g., on the chest and arms. These were thought to be due to thrombosis of a surface vein. (c) Larger, more tender nodules of erythema nodosum type particularly on the thighs, giving an appearance of inflammation. One of these lesions on the leg was excised for section and was reported as showing an acute inflammation of a vein with thrombosis, many polymorphs were seen in the thrombus and around the vessel, the inflammatory process spreading a little distance into the surrounding tissue. No organisms were seen. Aerobic and anaerobic cultures were negative. The ulcers on the scrotum and penis recurred every two weeks or so, sometimes more than one appearing at a time. They began as small, solid, tender nodules which broke down to form a sharply punched-out ulcer with a yellowish necrotic base. They invariably left scars.

In December the patient was readmitted to hospital with intense pain in the right eye and side of the head. Excision of the eye was then performed. The headaches, however, continued, now mainly left temporal and vision failed completely in the remaining eye. He was again admitted to hospital in May, 1942 and fully investigated. His case was now, *faute de mieux* labelled "thrombophlebitis migrans". The bleeding time, clotting time, and platelets were normal. The blood count was Hb 70%, white cells, 14,100 (polymorphs 73%, lymphocytes 23%, monocytes 1%, eosinophils 2%, basophils 1%). The electrocardiogram was normal. The Mantoux reaction (1/10 000) was weakly positive. As vision had failed completely and the headache and distressing pain persisted in the left orbital region, enucleation of the left eye was carried out in June.

After-history—The patient attended the out-patient department periodically for the next two years and was treated symptomatically. His case was reported on as follows:

"January 1943. Since discharge from hospital gets aching pain in left hip radiating to calf. Still has red nodules, especially on thighs. No further ulcers in scrotum or mouth. Spleen and liver not palpable. BP 118/75. Dilated veins on abdomen, especially on left. Both posterior tibials and popliteals palpable. Left calf tender. Left ankle jerk brisker than right. Hyperaesthesia to touch round left ankle? early neuritis. May, 1944. Now has pain across forehead, especially on coughing. Giddy turns and fainting attacks no fits. Legs getting weak. No sphincter disturbance. No abnormal physical signs in central nervous system. Some occipital fibrositis. Caput medusae well marked."

Eventually the patient found the journey to London too difficult because of his blindness and air raids, and ceased attendance. It has not been possible to ascertain his subsequent history.

Ophthalmic Summary

I have to thank Mr Frank Juler for the following note:

"The ocular condition manifested itself first in June, 1940, in the form of subacute recurring iritis of the right eye with hypopyon. After some four attacks at monthly intervals the visual acuity was reduced to 6/24 but soon after, in December 1940 there was a fairly sudden loss of vision, with a central scotoma due to a lesion probably in the choroid. Further congestive attacks occurred in the right eye, and perception of light in this eye was lost by October 1941. In this month glaucoma ensued, and the right eye was removed on account of pain.

In the meantime the left eye was also attacked by subacute iritis in October 1940 but in February, 1941, fine vitreous haze and patches of choroidal change in the periphery were noted with vision still 6/6. In June, 1941 this eye suddenly became defective, and vision fell to finger-counting at 15 metres. Much vitreous opacity was present and severe headache became a marked feature. In two months the eye had cleared to 6/18, and a scotoma was present owing to a large white area in the fundus near the optic disk. In September 1941, the left eye became suddenly worse with severe congestion and headache, and by October vision was reduced to perception of light. A recurrence of iritis with hyphaemia did not improve matters, and in May, 1942, with severe pain in the head

and congestion of the eyeball, perception of light was lost. Recurring glaucoma with pain led to excision in June, 1942.

Histological examination of the excised eyes threw little light upon the aetiology. There was complete detachment of the retina, with gross intraocular haemorrhage, chiefly subretinal. Marked patchy thickenings of the ciliary body and choroid were evident, showing reactionary changes, but there was no certain evidence that vascular thrombosis was the initial factor.

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Medical Memoranda

Intravenous Anaesthesia and Circulation Time

In all the better-known techniques for the induction of anaesthesia by the intravenous route a safety pause of 20 to 60 seconds is recommended. It is generally stated that this interval must be allowed in order to observe the effect of the drug on the patient. It seems to me more likely that its function is to permit the blood stream to transfer the drug from the site of injection to the brain. The following investigation was carried out in order to obtain more accurate information on the matter.

Investigation

Thirty-two patients were given, by intravenous injection at the elbow, 3 ml each of a 10% solution of hexobarbitone or of a 5% solution of pentothal (thiopentone B.P.). In all cases this was enough to make the patient go to sleep. The duration of the period of injection (A) and the interval from beginning the administration until the patient ceased speaking (B) were measured. It was assumed that half-way through the injection period a sleeping dose for an average patient had been given. The mean interval between the administration of this amount of drug and its action was thus obtained (Table I). It was

TABLE I—Mean Interval between Administration and Action of Drugs

Drug	No of Cases Studied	Mean Injection Time (A)	Mean Interval until Onset of Sleep (B)	B—A
Hexobarbitone	12	7.5 secs	19.2 secs	15.5 secs
Pentothal	20	8.0	20.0 "	16.0

identical for hexobarbitone and pentothal. Further, it approximated to the arm-tongue, arm-carotid sinus, and arm-arm circulation times determined by the ordinary methods (Table II).

TABLE II—Circulation Time determined by Ordinary Methods

Author	Circuit Studied	Circulation Time	Agent Used
Gargill (1933)	Arm-tongue	15.9 secs	Sodium dehydrocholate
Fishberg <i>et al</i> (1933)	Jugular vein-tongue	13.2	Saccharin
Blumgart and Weiss (1927c)	Arm-tongue	12.0	Radioactive material
Blumgart and Weiss (1927b)	Arm-arm	18.0	Sodium cyanide
Robb and Weiss (1933)	Arm-carotid sinus	15.6	

The corresponding interval was determined in four cases for drugs injected into the internal saphenous vein at the ankle. It was found to be 35, 45, 45, and 55 seconds. Presumably the greater delay was due to the longer course which the drug traversed on its way to the heart.

The interval which occurs between the injection of an effective dose of an intravenous anaesthetic and the appearance of

its action is therefore entirely traceable to the time required for its transfer from the site of injection to the brain. In normal individuals a matter of 15 seconds will suffice for drugs injected at the elbow or into the external jugular vein. As much as 60 seconds may be necessary when the veins of the foot and ankle are used. The normal circulation time is seriously prolonged in patients suffering from myocardial failure (Table III). Therefore, in the presence of any form

TABLE III—Circulation Time in Heart Disease

Author	Circuit Studied	Circulation Time	Pathological Condition
Blumgart and Weiss (1927c)	Arm-arm	22-51 secs	Arteriosclerosis and myocardial degeneration
Blumgart and Weiss (1927b)	"	30-55 "	Auricular fibrillation
Gargill (1933)	Arm-tongue	15-71 "	Rheumatic heart disease
		17-48 "	Syphilitic aortitis
		20-52	Congestive heart failure

of serious cardiac disease great caution must be observed in the giving of intravenous anaesthetics. Methods which employ fixed rates of injection offer no protection against accident in such cases. The only safe procedure is to inject an initial small sleeping dose and observe what time elapses before its effects are apparent. A similar interval must be allowed for the appearance of the action of subsequent doses.

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Landry's Paralysis

The following case of Landry's paralysis is thought to be worth recording because of the rarity of the condition.

CASE HISTORY

A man aged 26 was admitted to hospital complaining of weakness of the arms and legs. He had been demobilized from the Navy six months previously and had been quite well until ten days before admission, when he had had a short bout of vomiting and diarrhoea. Three days before admission he developed "pins and needles" in his fingers, and his hands felt weak. Next day he could not move his fingers at all and his feet alternately burned and felt cold and numb. By the third day he was unable to stand because of weakness of the legs.

On admission on the fourth day, he had a complete flaccid paralysis of the muscles of the hands and forearms and of the triceps and deltoids. All the other muscles of the limbs and trunk showed extreme weakness bordering on paralysis. All reflexes except the cremasterics were absent. There was also aphonia and retention of urine. The bowels had not been opened for two days. The muscles of the head and neck were normal. There was slight blunting of sensation on the hands and feet, otherwise sensation was unaffected. The temperature was 99.2° F (37.3° C) on admission, but never exceeded 98.4° F (36.9° C) during the remainder of his stay in hospital. There were no other symptoms or abnormal findings. Examination of the cerebrospinal fluid showed pressure and appearance normal, total protein 0.140%, other constituents normal. W R and Langes test negative. The blood contained 14,000 white cells per cmm (85% polymorphs), and the W R was negative. X-ray examination of skull and cervical spine revealed nothing abnormal.

On the fifth day the patient regained control of his bladder, and the bowels functioned normally after the administration of an enema. The paralysis continued to extend, however, and reached its height on the seventh day. At this stage there was aphonia, slight dysphagia, and flaccid paralysis of the whole body except the diaphragm and the muscles of head and neck. The cremasteric was the only reflex which could be demonstrated.

On the same day the first signs of recovery were noticed—his ability to make slight movements of the fingers. By the ninth day the fingers moved well and the arms could be flexed. By the twelfth day the voice was noticeably stronger, one leg and both arms moved well and there was at least a little power in all the affected muscles. The knee jerks and plantar responses returned on the eighteenth day and all the other reflexes during the following week. The patient was discharged, completely recovered, five weeks from the onset of paralysis.

I am indebted to Dr W H James, medical superintendent of the Beverley Emergency Hospital for permission to publish this case.

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Reviews

DISEASES OF THE ADRENALS

Diseases of the Adrenals By Louis J. Soffer, M.D. (Pp. 304 illustrated with 42 engravings and two coloured plates 28s.) London: Henry Kimpton 1946

Although diseases of the adrenal glands are uncommon they are of profound interest because of their far reaching effects on the mental and physical well being of the patient. Dr Soffer is well qualified to describe them, for he has had considerable experience of clinical practice and experimental research in this field. His book begins with an account of the anatomy and embryology of the adrenals and a useful summary of the chemical and other special investigations used in the diagnosis of adrenal disease, an account is then given of the physiology of the adrenals. The number of steroid hormones isolated from adrenal cortical extract at present totals 25, and it is expected that more fractions will be isolated in the future, there is presumably some form of mutual balance or synergy between them. This is illustrated by the fact that the whole extract will not produce hypertension, and desoxycorticosterone will not produce hypertension if the adrenals are intact but will do so in patients with adrenal insufficiency.

Cortical extracts have been used in various forms of shock during the war but on the whole the results have been disappointing. Addison's disease is described in detail, and Dr Soffer shows that with modern measures a third of his patients are alive four to seven years after the institution of treatment. There follows a fascinating study of the adrenogenital syndrome. The active male sexual life of many female pseudo-hermaphrodites and the psychical changes in Cushing's syndrome are remarkable biological phenomena not only are they of importance for psychosexual theories, but they are of great practical concern, for the incidence of pseudo hermaphroditism is approximately 1 in 1000 people. Finally there is an account of the tumours of the adrenal medulla. Dr Soffer handles his subject and its copious literature with complete control, his style is clear and readable, and he has done full justice to the subject in fewer than 300 pages. His monograph is well printed and illustrated, it is greatly to be commended.

GROUNDWORK OF PHYSICAL TRAINING

Principles of Anatomy and Physiology for Physical Training Instructors in the Royal Air Force (Pp. 180 158 figures 7s. 6d.) London: H.M. Stationery Office 1946

This small and attractive book, authorized by the Air Council and introduced by a foreword written by the late Director-General Sir Harold Whittingham, has many things to commend it not only to physical training instructors, for whom it is written but to many general practitioners. 'P.T.I.s' cannot fail to have their enthusiasm and interest captured by the simplicity and clarity of presentation by the attractive illustrations and diagrams and the comfortable style of simple English in which it is written. 'G.P.s' who are not too proud but are ready to admit rustiness in their anatomy and physiology will find this book a most attractive means of refreshing their knowledge with a minimum of trouble. But one word of warning: the example of a day's diet on page 105 must have been the work either of someone living in the past or with foreknowledge of the early lifting of food rationing. Here it is stated that 'The calorie requirements of a man doing light manual work are shown below expressed as a specimen diet for twenty-four hours. Do those who come under R.A.F. physical training instruction really have porridge, bacon (2 oz.), egg, sugar, marmalade, butter, and white bread for breakfast? Is this a subtle way of leading us into State secrets and are we entitled to drink their health in the pint of milk that appears later in the diet?' But apart from this at the moment obviously impractical example the physiological section is extremely well presented.

The chapter on medical rehabilitation in the R.A.F. makes fascinating reading. Every consultant, practitioner, physiotherapist as well as P.T. instructor who studies this book will be a gainer and will certainly improve his understanding of the science of rehabilitation.

INDUSTRIAL TOXICOLOGY

Industrial Toxicology By Alice Hamilton, M.D., and Rutherford T. Johnstone, M.D. Edited by Henry A. Christian, M.D., Sc.D. (Pp. 125 15s.) New York and London: Oxford University Press 1946

This book is a reprint of a section of the Oxford Loose Leaf Medicine and has the same page numbers as in that work. Industrial medicine is an artificial grouping of different sections of medicine which have an application in industry. These include physiology, psychology, heating, ventilation, statistics, skin diseases, accident surgery, ophthalmic medicine and surgery, industrial pulmonary disease and industrial toxicology. These subjects are so diverse that a man may cover them in a form of general practice but no individual can possibly be an expert in every branch. The subject of industrial toxicology, the knowledge of injurious actions of substances used in industry, has always been important, it is perhaps the most important branch of industrial medicine so much so that the two have often been regarded as synonymous. Its importance has rapidly increased during recent years with the flood of new and complex chemicals which find their way into industry for diverse purposes. One cannot therefore but welcome a new book on toxicology from the United States, even though the principal criticism of the book is that, though published in 1945, it has not appeared in this country until August 1946 and it conspicuously does not refer to much of the newest work on the subject such as manganese pneumonia, the latest reported cases of beryllium poisoning, and tri-ortho-cresyl phosphate. Nevertheless it is a full book, well written and well documented.

Many doctors are now faced with the problems of the diagnosis and treatment of injuries and diseases developing in workers by reason of conditions associated with their work. This applies not only to the industrial medical officer and general practitioner but to every physician who may be consulted by a worker. This book should therefore appeal to a very wide field and we can with confidence commend it to all of them.

CATALAN CULTURE

The Spirit of Catalonia By J. Trueta (Pp. 198 8s. 6d.) London: Oxford University Press 1946

The rise and fall of the Catalan culture on the eastern seaboard of the Iberian Peninsula and in the south of France is less well known in England than its peculiar interest merits. From the tolerant, humane, inquiring spirit of thirteenth-century Catalonians was created the first democratic government in the world: all society was represented—ecclesiastics, noblemen, villagers—and no law could be passed without the approval of their representatives: a state of affairs epitomized by Lullius writing at about that time: "Men are serfs of other men but their ownership my Lord is not essential but accidental."

This concise and scholarly book by the eminent Catalan surgeon is as crowded as an illuminated missal with portraits of Catalonia's famous men—Lullius, Arnau de Vilanova, Sibiude, Vives, Servetus (the first to suggest the blood's circulation)—and though the style is marred at times by a flatness inappropriate to the exposition of a people's spirit the matter is well worth the general reader's attention. There are still lessons to be learnt from Arnau de Vilanova, author of many medical treatises accusing the teachers 'of losing themselves in universals and ignoring particulars, as well as of their unfounded therapeutical empiricism which lost itself in particulars and ignored general principles', and from Sibiude's neatly incised bridge between scholasticism and humanism.

Man is the limited reproduction of the Creator and thus a scientific knowledge of man may bring us by successive steps to the knowledge of God.

The history of a people such as this, blessed at its birth with the poetry of Provence tempered by conflict with the Moors, rising to great maritime power and summits of philosophical thought, only to sink back into oblivion, poses, as we have suggested a problem of particular interest to us: what is the nature of that cultural force which suddenly liberated, waxed so imperiously and as inexorably declines? The accretions of the course are well described by Dr Trueta—the policy of Ferdinand (Machiavelli's *The Prince*), the Inquisition, the alien military coups. The essence remains as inscrutable as the curve of an individual life.

PHARMACEUTICAL ASPECTS OF PENICILLIN

Penicillin Its Properties Uses and Preparations (Pp 199, illustrated 10s 6d) London The Pharmaceutical Press 1946

Penicillin Its Properties Uses and Preparations is published by direction of the Council of the Pharmaceutical Society of Great Britain, and its authorship is undisclosed. Said to have been inspired originally by a stream of inquiries coming to the editor of the *Pharmaceutical Journal*, it has been expanded into a scholarly treatise which will be found a useful work of reference. It concludes with a bibliography of 331 items. This book has evidently been written chiefly for the benefit of the pharmacist, and deals exhaustively with the aspects that concern him most. There is a whole chapter devoted to the question of stability, and the account of penicillin preparations is one of the most complete yet to appear, many alternative formulae being given. The account of clinical uses, though occupying only a single chapter of 34 pages, is adequate as an outline of the scope of penicillin treatment and of the general lines which it should follow. In this chapter it is repeatedly suggested that a dose of 200 000 units or more given twice daily is adequate for many purposes. This is a wasteful if convenient system, and evidence that its effect equals that of much smaller doses given frequently is not yet forthcoming.

There is a somewhat resentful reference in the preface to the suggestion made in the earliest days of treatment with penicillin that its dispensing should be undertaken "by bacteriologists rather than by those trained in such work." No one would wish to maintain this attitude to day, but let it not be forgotten that a good aseptic technique is still necessary. It is admitted on page 115 that some pharmacies are structurally unsuitable for aseptic dispensing. There is a tendency in other directions to reverse the policy of 1943, it is emphasized that some preparations need not be sterile, that economy is no longer necessary, and that bacteriological diagnosis is superfluous. These encouragements to lavish use may be justified by the present supply position and such use there will certainly be whether encouraged in print or not. We nevertheless find it rather shocking that it should be thought necessary to say:

It would be wise, in order that this most useful substance should not become discredited, to resist the lay suggestion, which sometimes amounts to a demand that no person should be allowed to die without having been given penicillin."

The Distressed Mind by J A C BROWN is published as No 115 of The Thinker's Library by Watts and Co at 2s 6d. This is a digest of psychiatry and a very readable comprehensive and clearly expressed one. To the reader already versed in psychology, psycho-pathology and psychiatry it all seems delightfully simple. Even the doctrines of Freud, Jung, and Adler are set out in simple terms. The danger of such digests lies in their own virtues of simplicity and clarity, for the uninstructed reader is apt to think that the whole subject is simple and easy. In justice to the author, however, it should be pointed out that he does not say so, and that the difficulties and complexities are stressed. The chapter on psychopathic states is excellent, pointing out as it does how many criminals belong to this class and how difficult it is to treat since there is almost certainly a constitutional factor in their genesis. It is as well that the public should realize that while psychiatry has an important part to play in the understanding and prevention of crime its role in the direct treatment of the criminal may be limited. In his chapter on treatment the author is wise in that he gives some detail with regard to physical forms of therapy which the general public cannot apply, but little detail of psychotherapy which the general public would like to apply. This little book, in view of its brevity, clarity, and low price, will doubtless appeal to a large public, and it can certainly be recommended if such simplifications of a complex subject are to be recommended at all.

H E Cox's *Chemical Analysis of Foods* (J and A Churchill, 24s) now appears in a third edition. It is not much enlarged but contains a considerable amount of new matter replacing some which though not obsolete is sufficiently available in former editions. This is a result of the exigencies of the present period. The new material, however, includes all the subjects that have come into prominence during the past few years, and this brings the volume up to date in the matter of vitamins and the newer official regulations governing the sale of foods. It is a most useful book to those engaged in the analytical examination of foods.

BOOKS RECEIVED

[Review is not precluded by notice here of books recently received]

1946 Year Book of Radiology Edited by C A Waters, M D, and I I Kaplan, M D (Pp 464 \$5 50) Chicago The Year Book Publishers, Inc 1946

The book is in two parts diagnosis and therapeutics. Includes articles on tracer chemistry, pneumography of the knee, tomography of the gall bladder, stereoscopic fluoroscopy, varieties of lobar and segmental collapse of lung, and many others.

New Aspects of John and William Hunter By Jane M Oppenheimer (Pp 188 25s) London W Heinemann 1946
An American biography of the famous surgeon and his brother.

Your Guide to the National Health Service By A D Le Vay M S, F R C S (Pp 78 3s 6d) London Hamish Hamilton 1946

An exposition and interpretation of the Act, a survey of past and present health services, and an account of the effects of the Act on doctors and ancillary medical services.

The Household Doctor Anonymous Revised (Pp 224 3s 6d) London English Universities Press 1946

A popular book whose first object is to teach the principles of healthy living. The treatment of many minor and some major diseases is also dealt with from the practical point of view.

The Use of Research by Professional Associations in Determining Program and Policy By Esther L Brown (Pp 39 25c) New York Russell Sage Foundation 1946

The utilization of research and scientific techniques by professional associations in America, with particular reference to the American Library Association.

Neue Wege in der Diagnostik und Therapie der Lues By A Rottmann (Pp 128 No price) Vienna Bruder Hollinek 1946

Summarizes the author's experience in the diagnosis of syphilis.

Surgical Clinics of North America, October, 1946 By various contributors (Pp 268 Year's subscription for 6 numbers cloth covers, 75s, paper, 55s) Philadelphia and London W B Saunders 1946

Contains three symposia: (1) Aseptic surgical technique and its application to thoracic surgery, from Duke University; (2) Gastrointestinal surgery, from Cincinnati University; (3) Genito-urinary surgery, from Tulane University and the Ochsner Clinic.

The Nature of Disease up to Date By J E R McDonagh F R C S (Pp 168 15s) W Heinemann 1946

The author develops a theory on the composition and "pulsation" of proteins and their relationship to life and disease in the soil, plants, animals, and man, with particular reference to the blood proteins.

Shall We Live or Die? By Robert Morton (Pp 114 7s 6d) St Botolph Publishing Co 1946

A survey of the apparent decline in Western culture and its causes. Suggested cures include harder living in the open air, fresh food, non-industrialized agriculture, and the reinstatement of faith in living.

Clinical Methods of Neuro-ophthalmologic Examination By A Kestenbaum, M D (Pp 384 \$6 75) New York Grune and Stratton 1946

A review of the clinical methods of ophthalmologic examination used in the differential diagnosis of nervous diseases, by the Assistant Clinical Professor of Ophthalmology, New York University. Diseases that affect the eye and the CNS in a parallel way are not considered.

Intracranial Complications of Ear, Nose, and Throat Infections By H Brunner, M D (Pp 444 No price) Chicago The Year Book Publishers 1946

An account of a quarter of a century's work in this field by the Associate Professor of Otolaryngology at Illinois University. Not intended as a textbook, the reader is presumed to be acquainted with the principles of otorhinology.

Essai d'Exploration Humaine By J F Porté (Pp 408 No price) Paris Presses Universitaires de France 1947

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RETIREMENT OF THE EDITOR

The issue of the *Journal* of Dec 28 was the last to go to press under the editorship of Dr Norman Gerald Horner, who retired on Dec 31 on reaching the age limit for his office. He was appointed Editor by the Council of the British Medical Association in January, 1928, when he succeeded his distinguished predecessor, Sir Dawson Williams, to whom he had acted as Assistant since 1917, after serving as a Captain in the R A M C in the war of 1914-18. Before that Dr Horner had been on the staff of the *Lancet*, which he joined in 1911 at the time of the National Health Insurance Act, his retirement from the *BMJ* coincides with the passing of Mr Bevan's National Health Service Act.

During his 19 years of editorship of the *Journal* he has seen the B M A reach out for new conceptions of a medical service, formulated before the recent war in the revised Report on a General Medical Service for the Nation, published in 1938, and the Draft Interim Report of the Medical Planning Commission, published in 1942. During his hard-working years as a medical journalist Dr Horner has witnessed not only two revolutions in medical service—troubled times indeed—but also revolutionary changes in medical science. It is hard to believe that in 1911 Hopkins had not yet published his epoch-making article on accessory food factors, and that the word "vitamine" had in that year been introduced by Casimir Funk. Insulin was discovered in 1921, and since then the science of endocrinology may be said to have grown into full adult stature. The past 10 years have seen the conquest of disease advanced an important stage further by the discoveries of the new chemotherapy. The pace of research has been breathless, and we can do no more than mention one or two milestones in medical progress, not forgetting the fearlessness and skill of the surgeon in exploring the cavities of the body, and the development of thoracic surgery and neurosurgery as compact specialties.

The rapid evolution of medicine in all its phases during the period covered by two world wars has placed a heavy responsibility upon the Editor of the *Journal*, which has not only had to serve as a scientific weekly newspaper but has also had to expound and interpret the policy of the British Medical Association. To preside over the destinies of the *Journal* during this time has been a difficult task, and one not made easier by the war of 1939-45, when the editing continued to be done in London and two changes of printer ensued on the destruction of the *Journal's* printers by enemy action in May 1941. That Dr Horner has maintained the tradition and enhanced the reputation of the *British Medical Journal* in this and in other countries has been shown among other things by its steadily

growing circulation. His services to medicine have been recognized by honorary election to Fellowships of the Royal College of Physicians and the Royal College of Surgeons. He leaves behind him a record of painstaking and conscientious work, a name for scrupulous fairness in controversy, and a reputation for a felicitous pen. His successor inherits a tradition of faithful service.

PROTEIN-REQUIREMENTS OF ADULTS

The protein requirement of adults has been the subject of research from time to time, and speculation has sometimes been based on insufficient evidence. The difficulty is that though long-term balance studies are necessary the very conditions of such an experiment, involving as it does a constancy of diet over long periods of time, may lead to an abnormal situation. Hegsted, Tsongas, Abbott, and Stare¹ recently studied the nitrogen balance in twenty-six apparently healthy adult subjects aged 19 to 50 years who were fed on diets low in protein and devoid of animal protein, and they investigated the effect of replacing part of the protein in the diet by meat, soy flour, wheat germ, and white bread. They regard it as essential that in evaluating the nutritional value of the proteins in a diet by nitrogen-balance studies the level of protein given should be sufficiently low to produce a negative nitrogen balance, and that the diet should be fed for long enough to assure a reasonably constant nitrogen output. Owing to the lag in the change of nitrogen excretion with decreases in dietary nitrogen, short periods will show negative balances that are too large. Thus if either of these two conditions is not met the determined requirement for nitrogen will be too high.

Leitch and Duckworth,² from a study of published data on nitrogen balances with varying levels of protein intake, estimated the average human requirement to be approximately 50 g per day. By what appears to have been a more rigorous selection of metabolic data Sberman and his colleagues³ estimated the requirement to be about 44 g per day for a 70-kg man. Nevertheless many of the data used by the latter investigators were collected from subjects on diets consisting almost wholly of a single protein-containing food, so the estimate may be unduly high, since in a more mixed diet the supplemental effect of the proteins would more readily make up the amino-acid requirements of the organism.

Another method of approach to this problem is based on the general finding that there is a parallelism between basal energy metabolism and endogenous nitrogen excretion (Brody,⁴ Terroine,⁵ Sorg-Matter,⁶ Smuts⁷) in all species from mice to dairy cows. This is approximately 2 mg nitrogen (125 mg protein) per calorie of basal heat expended. Terroine⁵ pointed out that if we assume that this minimum protein requirement is replaceable gramme for gramme by a completely digestible protein with a bio-

¹ *J. Lab. clin. Med.*, 1946, 31, 261.² *Nut. Abstr. Rev.*, 1937, 7, 257.³ *J. Biol. Chem.*, 1920, 41, 97.⁴ *Bioenergetics and Growth*, New York, 1945.⁵ *Arch. internat. Physiol.*, 1928, 30, 115.⁶ *Ibid.*, 1928, 30, 126.⁷ *J. Nutrition*, 1935, 9, 403.⁸ *Quar. Bull. Hlth. Org. L.N.*, 1936, 5, 427.

value of 100, then the adult human requirement is the order of 19 g, or if a protein or proteins with a biological value as low as 50 are used, then the requirement is approximately 38 g. Incomplete digestion would of course raise the requirement. On this theoretical basis the requirement of man is of the order of 20-40 g protein per day.

In the study by Hegsted and his fellow-workers the basic diet was selected to approximate in some respects to certain low-cost diets and was devoid of animal protein. White bread supplied 50% of the nitrogen, a total of 62% was supplied by cereals. Potatoes supplied 13%, and the total from vegetables was approximately 30%. The remaining 8% came from fruits. The protein intake was kept constant. The remainder of the diet consisted of butter, cooking oils, corn-starch biscuits, jelly, syrup, sugar, and sweets. The subjects were allowed these fat and carbohydrate foods freely, but everything was recorded. When meat was being tested the intake of the foods containing vegetable protein was decreased by one-third, and sufficient meat was added to supply approximately the nitrogen thus removed. The loss in calories was made good by additional amounts of the calorie supplements. The same procedure was adopted when testing soy flour and wheat germ, the vitamin and mineral contents of the diets were maintained by supplements. Certain other variations in the diets were also investigated. The authors of this investigation appreciated that owing to the shortness of the preparatory period some of their subjects were not stabilized accurately. They believe that this has the effect of placing the protein requirement at a somewhat high level.

The data from these experiments were analysed on the basis of the estimated intake at the point of nitrogen equilibrium. The daily requirement for maintaining nitrogen balance on a vegetable protein diet was approximately 2.9 g nitrogen (18 g protein) per square metre body surface—equivalent to 30-40 g protein—depending on height. When meat replaced one-third of the vegetable protein the protein requirement was found to be 17% less. The biological value of the low-protein (all-vegetable) diet used in these studies was increased from 72.5 to 80.4 by replacing one-third of the protein by meat. Those who have had considerable experience of nitrogen-metabolism studies are well aware of the very considerable day-to-day variations in urinary nitrogen excretion which can take place in some apparently normal individuals, variations not due to inaccuracies but to some instability in protein metabolism. Further considerably longer periods of collection are necessary if error resulting from the ill-defined spread of the usual time-markers for faecal collections is to be offset. Cuthbertson and Munro⁷ have also demonstrated the effect on nitrogen equilibrium of non-protein food consumed in excess of calorie requirement. Some caution is therefore to be exercised in interpreting the data of this recent work by Hegsted and his colleagues.

These requirements for protein are not to be confused with protein allowances. The latter are generally assessed as 50% greater than actual requirement so as to allow for safety. In accordance with Sherman's assessment

the League of Nations placed their allowance for men at 1 g protein per kg body weight. Determinations of the protein intake in the diets of most peoples in temperate climates indicate that the level of these nutrients tends to be fixed at roughly 10-14% of the total calories, which for normal expenditure levels is approximately the equivalent of the League of Nations allowance. It is probable that the difference between normal dietary practice and requirement is also dictated by the fact that most members of the family tend to take out of the "common pot" that measure of food which is appropriate to their energy requirements. Although school milk schemes and the distribution of milk and vitamin concentrates to priority classes are tending to alter this, the design of human diets still appears to be adapted to meet the divergent needs of the various members of the family.

CANCER CELLS IN SPUTUM

Although the technique of thoracic surgery has been highly perfected, Tudor Edwards¹ found that he was able to perform a pneumonectomy in only 66 out of 1,016 cases of bronchial carcinoma which he had seen. The importance of methods for the early diagnosis of the condition is more than apparent. Present methods of diagnosis consist of a consideration of physical signs, symptoms, skiagrams, bronchographic and bronchoscopic investigation with histological examination of the sections obtained, direct aspiration of the tumour through the chest wall, and thoracotomy. Little attention has been paid to the simple procedure of microscopical examination of the sputum.

As early as 1860 Beale² described masses of malignant cells in the sputum from a case of advanced pharyngeal carcinoma, Betschart³ in 1895 described four cases of malignant disease of the lung in which pieces of tumour were expectorated, and in 1913 Weller,⁴ in an analysis of ninety cases of primary bronchial carcinoma, stated that malignant cells had been found in the sputum from four cases. Nevertheless this form of investigation was not properly developed until Dudgeon and Wrigley⁵ in 1935 published a detailed account of a wet-film method for the examination of the sputum for evidence of malignant growth. Since then considerable success has been reported in many countries—70% in Russia,⁶ 86% in Denmark,⁷—and enthusiastic reports have been published in Latin America.⁸

In England first Dudgeon,⁹ then Barrett,¹⁰ and then Bamforth¹¹ reported the results from St Thomas's Hospital. In the first paper an account was given of 102 cases examined, of which fifty-six were eventually proved to be cases of malignant disease, out of the fifty-six a total of forty-three, or 76%, were diagnosed by examination of sputum. The second paper added 119 positive cases, and the third a further 113. Sambrook Gower¹² used the method in ninety-three cases of proved or probable carcinoma at the London Hospital and obtained a positive result in 64.3%. He drew attention to the fact that a high proportion of the positive cases were of the squamous cell

¹ *Thorax* 1946 1 1

² *Arch. Med. Lond.* 1860 2 44

³ *Virchows Arch.* 1895 142 86

⁴ *Arch. Intern. Med.* 1913 11, 314

⁵ *J. Laryng.* 1935 60 752

⁶ *Altman A. Y. J. Clin. Med.* 1939 17 90

⁷ *Wandall H. H. Acta path. microbiol. scand.* 1943 20 485

⁸ *Nostro D. Polak M. Sem. med. B. Aires* 1937 44 1549. *Bence A. E. Ibid.* 1940, 47 836. *Izzo R. A. Ingoyen L. Publ. Centro Invest. Biol.* 1943 7, 323

⁹ *St. Thom. Hosp. Rep.* 1936 1, 51

¹⁰ *J. Thorac. Surg.* 1938 8 169

¹¹ *Thorax* 1946 1 118

¹² *Brit. J. Surg.* 1942 30 193

type, though these probably only form a third of the cases of carcinoma of bronchus. Gloyne,¹³ in a paper on the cytology of sputum, also commented on the greater frequency with which squamous-cell growths were detected in the sputum and suggested that it was due to early breaking down of these growths, whereas oat-cell carcinomata do not ulcerate till a late stage and do not readily break down.

This year also a report has come from Herbut and Clerf¹⁴ in Philadelphia on the examination of bronchial secretion for malignant cells. They chose bronchial secretions rather than sputum because they consider that they are more concentrated, and that expectoration of sputum does not occur until late in the disease. Bronchoscopy is now performed as a routine in every case of suspected pulmonary cancer, and material which comes from the area of the suspected tumour is more likely to contain cancer cells than are the more dilute secretions found in the trachea and the even more dilute sputum. They claim that in thirty consecutive cases of primary pulmonary carcinoma cancer cells were demonstrated in the bronchial secretions of twenty-two, or 73%. Bronchoscopy was negative in seven of these cases. Sputum was examined from five cases in which cancer cells were present in the bronchial secretions and in only one were neoplastic cells found.

Bamforth, in his article¹¹ in *Thorax*, reported also that a number of specimens of pleural fluid were examined between December, 1937, and March, 1946 and that in thirty-one cases a positive diagnosis was made by examination of the pleural fluid. In thirteen cases considered to be primary carcinomata of the lung no evidence of neoplasm was found outside the chest. Obviously a case with a pleural effusion is inoperable, but it is frequently difficult to establish the diagnosis with certainty, a simple method which can achieve this would be of the greatest practical value.

PLEURAL GAS ANALYSIS

Analysis of the pleural gases in cases of pneumothorax often yields useful information, and the pioneer work of Coryllos has done much to show the possibilities of this method, particularly in the clinical diagnosis of bronchial fistulae. A recent paper by Ornstein, Herman, and Friedman¹⁵ serves to emphasize some of the many problems connected with the behaviour of the pleural gases which still remain unsolved. These authors consider that in the past too little attention has been paid to the role of the pleura in affecting gaseous exchanges, and they challenge the diffusion theory which most physiologists have advanced to account for the absorption of gases from the pleural cavity. According to this theory the oxygen and carbon dioxide in the pleural cavity reach equilibrium with the corresponding gases in the venous blood, thereby raising the partial pressure of the pleural nitrogen above that in the capillaries. The nitrogen therefore diffuses out of the pleural cavity and thus raises the partial pressures of the pleural oxygen and carbon dioxide above those in the venous blood. The cycle then repeats itself until all the gases are absorbed.

In a large series of observations Ornstein, Herman, and Friedman found wide variations in the oxygen and carbon dioxide content of the pleural gases in different cases, although the values were usually constant for the same individual. Moreover, the partial pressures of these gases were often different from the theoretical pressures of the corresponding gases in the venous blood. The authors conclude that the pleural oxygen is not in equilibrium with that

in the venous blood. They also found that the volume per cent of carbon dioxide in the pleural cavity was remarkably constant in individual cases, whereas the diffusion theory suggests that the level should vary at different times after a refill. They infer that the pleural gases are in equilibrium with the pleural tissues rather than with the venous blood, and that oxidative processes in the pleura are responsible for the high carbon dioxide and low oxygen values so often encountered, and for the outpouring of carbon dioxide after pleural lavage with oxygen. The absorption of nitrogen still remains to be explained, and they suggest that the expanding lung may exert sufficient pressure on the pleural gases to raise the partial pressure of the nitrogen to a level which will ensure its absorption.

There are many weak links in this chain of reasoning. The fallacies of theoretical estimation of the gases in the venous blood are well known, and we have no means of determining the values for the pleural circulation. Again, the pleura itself may act as a variable resistance and under certain conditions, such as pleurisy, may impede the passage of gases to and from its capillaries. Finally, there is no evidence that the expanding lung exerts any pressure on the pleural gases. However, this paper serves a useful purpose in drawing attention to these problems of the pleura and to the possibilities for further research based on gas analyses.

Another observation reported by these investigators will interest many tuberculosis workers. In five cases they measured the volume of the pleural cavity twenty-four hours after the induction of a pneumothorax, and in every case the volume was greater than that of the air injected. They conclude that the excess air must have escaped from a puncture in the lung. Tchertkoff¹⁶ propounded the theory that the lung was always punctured during the induction of a pneumothorax and that the initial pleural space was produced in this way. Most workers believe that a blunt cannula can be introduced between the pleural layers without puncturing the lung, but this requires investigation. It should be relatively simple to find out by pleural volume estimations how often the lung is punctured when using different induction techniques. Such information would have an important bearing upon the design of pneumothorax needles.

MYOCARDITIS IN MUMPS

Cardiac injury is not usually regarded as a common complication of mumps. As with any other acute infection convalescence is sometimes retarded by the presence of slight cardiac dilatation, with perhaps a soft systolic murmur at the apex which would usually be regarded as non-specific in origin. Apart from Pujol's¹⁷ records of three cases of myocarditis where mumps seemed the only exciting cause, there is little reference to the complication and none to a series of cases studied systematically for its occurrence. Rosenberg¹⁸ recently observed two patients in whom there seemed no doubt that mumps was the exciting cause of heart block, and he was therefore prompted to make a careful study of the heart in a group of adults suffering from the disease. These two cases developed typical heart block confirmed by electrocardiogram (E.C.G.), one on the seventh and the other on the fifteenth day of illness. Both patients complained of retrosternal or precordial pain and experienced palpitations or dizziness. After a day or two the first patient developed a harsh systolic murmur at the apex which gradually diminished in intensity, and eight days after the onset of

¹³ *Tubercle Lond* 1936 18 292

¹⁴ *J Amer med Ass* 1946 130 1006

¹⁵ *Quart Bull Sea View Hosp* 1946 8 5

¹⁶ *Quart Bull Sea View Hosp* 1936 1 398

¹⁷ *Arch de Med et Pharm mil* 1918 69 527

¹⁸ *Arch Intern Med* 1945, 76 257

symptoms the ECG was normal. The other patient, however, continued to show abnormal tracings until the seventy-seventh day of illness.

An electrocardiographic study of one hundred and four adults with mumps was then undertaken. Repeated examinations of forty-six of them were made at 2-4-day intervals. Abnormal records were obtained from 15%. There was no specific ECG pattern, the most common abnormality being a change in the form of the P wave, or a prolongation of the P-R interval. Fourteen of the patients showed more than one abnormality. Apart from one case all the changes occurred between the fifth and tenth days of illness, that is, at the same time as one expects to find other evidence of systemic dissemination of the virus. Subjective complaint was made by only four patients, in the others recognition depended entirely on the electrocardiographic examination.

The pathological nature of such changes must remain a matter of conjecture, but the findings raise the interesting question as to how far they are specifically caused by the virus. There is no doubt that myocardial damage may follow a severe virus infection such as influenza, and Finland and his colleagues¹⁹ have reported two examples of non-bacterial myocarditis in which influenza (virus A) was the aetiological agent. It seems more likely, however, that the abnormalities reflect a non-specific myocardial lesion which might be a part of any acute infection. Indeed, Rosenberg avers that he has encountered similar changes not only in rheumatic fever but even in such mild infections as rubella. Watson, Rothbard, and Swift²⁰ recently recorded a study of one hundred and ten patients with scarlet fever who were investigated in a manner very similar to that of Rosenberg's study. In twenty-two instances they found abnormal ECG patterns—most commonly inversions of the T waves and indications of transient partial heart block. In the majority of their patients the abnormalities were detected much later (tenth to fifty-sixth day of illness) than in the mumps cases, but like them many made no subjective complaint. Since they were dealing with a streptococcal infection it was natural to interpret their findings in the light of rheumatic fever and to consider that the fundamental tissue injury was the same in both. Rosenberg rightly argues, however, that delayed conduction time should not be regarded as a specific indication of rheumatic fever and that a recent acute febrile illness may induce ECG changes which do not have the same serious significance.

The old clinical conception of myocarditis as a not uncommon complication of acute infections seems to gain some recognition from these findings. Is it possible that they may also explain the recrudescence of rheumatic fever sometimes seen in the course of an infection such as pneumonia in which haemolytic streptococci do not appear to have played a part?

SYMPTOMLESS GLANDULAR FEVER

It was formerly said that glandular fever was seen more often in medical students and nurses than in any other classes of the community. This unusual incidence was attributed to the fact that the proximity of such patients to the laboratory attracted the attentions of the haematologist. Now the spread of institutional medicine and of clinical pathology has made it clear that glandular fever is not only a common disorder but one on which current views need to be recast.

Tidy²¹ recognized glandular, febrile, and anginose types of the disease. Jaundice, meningo-encephalitis, parotitis,

and a thrombocytopenic haemorrhagic state are noted by Bernstein²² as acknowledged complications. But the epidemics described by Halcrow, Owen, and Rodger²³ in 1943 and by Van der Meer, Lutterloh, and Pilot²⁴ in 1945, have stressed a new aspect. The first started in an E.M.S. hospital, which was thereupon closed to further admissions. The blood of all patients in hospital and of some of the medical and nursing staff was examined, of these 296 persons 125 presented the clinical and haematological picture of glandular fever, and a further 165 had the characteristic blood and serological changes without symptoms or physical signs of the disease. The second group of authors made similar observations on an American Army unit of 600 men from which several cases of glandular fever had been admitted to hospital. Blood films from 522 healthy men were examined, in 217 "abnormal cells resembling typical mononucleosis cells" were seen. The agglutinins for sheep's erythrocytes were titrated in the sera of 74 of these men and figures above 1/56 found in 13.

Study of the epidemic in the E.M.S. hospital has provided conclusive proof that the haematological and serological changes regarded as characteristic of glandular fever can exist without any clinical signs of ill-health. The second paper is less well documented and in many cases the proportion of abnormal cells was below 5%. The familiar problem arises of whether the "glandular-fever cell" is specific in its diagnostic import. Such cells were found by these authors in percentages of 1-20 in blood films from 110 patients admitted to hospital with other complaints, and Downey and Stasney,²⁵ Warren,²⁶ and others have described their presence in a variety of unrelated conditions. Thus it seems unjustified to regard the finding of a few "glandular-fever cells" in the blood film as necessarily indicating glandular fever. The absence of heterophil agglutinins is of little significance unless the test is repeated frequently, for Himsworth²⁷ has reported an example in which the titre did not rise to a diagnostic level until eleven weeks after the onset. Even with these reservations Van der Meer, Lutterloh, and Pilot have confirmed the existence of this asymptomatic form of the disorder described by Reyeisbach and Lenert²⁸ and the British observers.

Emil Pfeiffer's²⁹ concept of *Drusenfiebers* must now be expanded to include not only the variants which most clinicians have come to recognize but also this symptomless haematological disturbance. Moreover the experience of Halcrow, Owen, and Rodger suggests that the accepted view of its low infectivity must be revised, for of the sample of the population at risk which they examined 97.9% showed evidence of the infection.

ABSTRACT JOURNALS

Owing to printing difficulties it has, unfortunately, not been possible to publish *Abstracts of World Medicine* and *Abstracts of World Surgery, Obstetrics and Gynaecology* on Jan 1 as advertised. Both journals should be published next week.

We regret to announce the death of Sir Richard Cruise, G.C.V.O., Surgeon-Oculist to King George V and Queen Mary and consulting surgeon to the Royal Westminster Ophthalmic Hospital.

¹⁹ *Medicine* 1940 19 35

²⁰ *British Medical Journal* 1943 2 443

²¹ *Amer J med Sci* 1945 210 765

²² *Folia haematol* 1936 54 417

²³ *Amer J med Sci* 1941 201 483

²⁴ *Lancet* 1940 1 1082

²⁵ *Amer J Dis Child* 1941 61 237

²⁶ *Jhrb Kinderheilk* 1889 29 257

¹⁹ *Amer J med Sci* 1945 209 455

²⁰ *J Amer med Ass* 1945 128 1145

²¹ *Lancet* 1934 2 180 236

THE FIRST ADMINISTRATION OF ETHER

Centenary Commemoration at University College Hospital

On Dec 21 1846 at University College Hospital London, the first public operation under an anaesthetic to be performed in Europe was carried out by Robert Liston. The patient was a Harley Street butler aged 36, who came for amputation of the right leg above the knee. At 2.25 on that day he was brought into the operating theatre, he breathed ether vapour for between two and three minutes, and the effect was such as to cause complete insensibility to pain, although consciousness was retained and questions were answered. Liston performed the complete operation in less than half a minute during which not the slightest groan was heard from the patient nor was his countenance at all expressive of pain.

To commemorate this event a gathering took place at University College Hospital on Dec 21, 1946 at which Dr MASSEY DAWKINS gave a short address. The original operating table with the holes through which the straps were drawn to restrain patients in pre-anaesthetic days, a model of the original inhaler and various contemporary sketches and portraits were exhibited and a copy of the case notes of this successful amputation was handed to every visitor.

Dr Dawkins said that an attempt had recently been made by Scotch friends to claim for a hospital in the North the honour of the first ether administration in the Old World but the evidence was scanty (*Journal* Oct 26, p 621) and the occasion was not in any sense a public one. Some idea might be obtained from Sir Rickman Godlee's biography of Lister of the state of pre-anaesthetic surgery at University College Hospital. The three senior surgeons operated only on Wednesday afternoons and with such celerity that that time was sufficient for all the operations of the week apart from emergencies. Patients requiring amputations were asked at the doors of the theatre whether they would have their leg off or not and if they said 'Yes' no heed was taken of any subsequent change of mind. Patients at first frequently refused to face the ordeal, then became resigned only many of them, to engage in a useless resistance at the last moment.

In October 1846 the discovery of ether anaesthesia was announced in America. Liston witnessed its demonstration at the Royal Medical and Chirurgical Society where Matthew Duncan was a volunteer. Liston was a surgeon of great skill and of forceful character with remarkable dexterity in the use of cutting instruments. The operating theatre in which he worked was a semicircular apartment about 40 ft (12 m) across with sharply rising tiers of seats for the students. It contained a small basin about the size of a soup plate in which the surgeons washed their hands—sometimes even before the operation—and there were pegs from which hung the blood-stained frock coats of the staff. Actually the first English operation performed under ether anaesthesia was a dental extraction carried out by Mr Robinson, a dentist of Gower Street.

Liston's theatre had a noteworthy company including Sir Russell Reynolds, Sir John Erichsen and the future Lord Lister. Liston gave a short address describing the American discovery and the advantages to be hoped for added a word about the weak condition of the patient and appealed for quietness and consideration. The patient was brought in with a handkerchief covering his face. Ether induction took place quietly, and in twenty-six seconds the limb was off. The patient rising as from ordinary sleep then said 'Take me away. I cannot have it off. I must die as I am' and could hardly believe when it was proved to him that the limb was already amputated. He went on without interruption to a good recovery and was discharged from the hospital on the following Feb 11. Sir John Forbes, one of the spectators said that he never felt so near to falling on the floor in his life as he did when he witnessed the operation. Everybody was pale and silent except Liston himself who was flushed and excited and could scarcely command himself to speak. When after it was over he broke the silence and said 'Gentlemen' he almost choked. According to Sir Russell Reynolds's account he said before starting 'Gentlemen we are going to try a Yankee dodge for making men insensible. This man's leg has to come off above the knee and my friend Mr Squire

is going to give the ether so that the man will not feel it.' The ether in those days was not as pure nor the apparatus as handy as now so perhaps Liston was a little impatient to get on with his work. When Squire said he was ready, Liston's knife flashed in the air. 'I took out my watch' said Reynolds and the leg was on the floor in twenty-six seconds. Liston turned to the company 'This Yankee dodge beats mesmerism hollow.'

There was a curious incident of a student (or by some accounts a hospital porter) named Sheldrake, a man of powerful build, who volunteered to be anaesthetized in the theatre but after half a minute's administration sprang from the table, felled the anaesthetist with a blow, swept aside the assistants and tore up the gangway, scattering the students like sheep. The second patient on whom an operation was done under anaesthesia was an out-patient whose toenail was removed. On the same night, in a letter to a friend, Liston began with the words of St Paul, 'Rejoice, and again I say, rejoice.' At dinner that evening he insisted on anaesthetizing his assistant. The assistant said afterwards that when he was about half under he heard one of the ladies say 'Mr Liston for God's sake stop, you will be the death of this young man.' He did stop but the assistant felt the pressure of Liston's hands on the lobes of his ears for a day or two.

The lay press took no account of this historic happening until Christmas Day, when it was mentioned in the *Daily News* sandwiched between paragraphs about the lateness of the Birmingham mail and a fracas of bedmakers and students at Cambridge. The *Times* did not notice it until Jan 4 1847. The change in surgery consequent upon the introduction of anaesthesia was a very gradual one. No striking new operations were introduced, no new fields opened up, operations were still performed at breathless speed and students still saw the surgery of pre-anaesthetic days robbed only of its most shocking feature, that of the pain inflicted. But the records of University College Hospital showed no cases of excision of the knee between 1830 and 1850 while in the next four years there were twenty-one cases. Ether was still the safest anaesthetic for general use and despite the advances in other forms of anaesthesia the average yearly consumption of ether was now more than half a ton at each of the large London hospitals.

Dr E. A. BARTON whose father then twenty-two years of age was at University College Hospital and present on the occasion added a few words. He recalled the smallness of the old theatre how the students in their tiered seats looked down upon the patients. His father had told him that in the pre-anaesthetic days the one part of their training which the students could not stand was the surgery course, which was made dreadful by the shrieks and screams coming from the operating theatre and echoing through the hospital. The wooden table on which the operations were done had been rescued from a lumber room and was now a treasured museum piece at the hospital.

HEALTH ADMINISTRATION IN THE CITY OF LONDON

The development of health services in the City of London was the subject of interesting speeches at a luncheon of the Corporation health committee on Dec 19 when a presentation was made to Sir George Elliston on the completion of his third term of office as chairman of the committee.

Sir ALLEN DALEY, President of the Society of Medical Officers of Health, pointed out that the Corporation had been issuing sanitary regulations as far back as 1281 and had continued to develop their health services from that time onwards. But the outstanding event in the health history of the city had been the appointment by the Corporation in 1848 of Sir John Simon as their first medical officer of health. For once London had to yield pride of place to Liverpool, who had appointed the first of all medical officers of health the previous year.

From Simon onwards the City could be relied upon to pick winners for its chief health officers. After seven years' service with the Corporation Simon had become successively medical officer for the Central Board of Health and for the Privy Council and the first medical officer of the Local Government Board. He had therefore been the first in line of the seven medical officers who had filled the City post now held with

such distinction by Dr Charles White. He had also been the first in line of the chief medical officers of the Ministry of Health.

Hygienist and Surgeon

Simon had been not only a great hygienist but also a distinguished surgeon on the staff of St Thomas's Hospital and sometime President of the Royal College of Surgeons. His reputation among scientists had secured his election as a Fellow of the Royal Society.

During his seven years in the City he had coped with an outbreak of cholera (1854). He had laid the foundation of the work of a public health department as we knew it to day, but naturally with emphasis on bad environment. He had started house-to-house inspection and the registration of tenement houses, his had been the first annual report of a medical officer of health. His reports had been models of clarity and good sense. He had asked for power to control nuisances, unhealthy industries, the adulteration of food, and the sale of poisons. He had recommended that there should be one Minister of the Crown for all health purposes, but not till 1919 had we had a Minister of Health. On leaving the City he had expressed 'grateful recollection of the years during which I have been a local officer of health'. The citizens, he had said, had always treated him with favour and confidence notwithstanding all he had had to preach to them. In 1885 all the vestries in London had been required to follow the example of the City and appoint an M.O.H. and Simon had been very gratified that so many distinguished doctors had sought these posts.

The Corporation during the past 100 years had been responsible for much pioneer work in the City. Their chairman, Sir George Elliston, had claimed that they cared for the citizens from the cradle to the crematorium, and it was true that the City had set a high standard in the matter of infant welfare work just as they had been among the earliest municipal bodies to provide a crematorium. They had set an early example in securing open places for the recreation of the people, they had developed highly efficient port health services, through their markets and inspections they had done much to safeguard the food supplies of Greater London, finally, they had maintained through the centuries close connexion with the five royal hospitals.

Bart's and the City

SIR GEORGE AYLWEN replying to the toast, said it was a matter for pride that St Bartholomew's, founded in 1123, had for 8½ centuries on the same site continued its benevolent work of tending and healing the sick. The history of the hospital was inextricably interwoven with the history of the City. It had been the citizens of London who, with their own hands, under the guidance of Rahere, had built the first St Bartholomew's, and who had successfully petitioned Henry VIII to restore to them the ancient Foundation which he had suppressed. The legal title of the hospital was still 'The Mayor and Commonalty and Citizens of London, Governors of the House of the Poor, commonly known as St Bartholomew's Hospital'. In early days the City Corporation and the hospital had not always been on good terms. In 1559 the governor had complained that the Lord Mayor was wrongfully withholding their water supply. In 1697 we found the hospital governors protesting vehemently to the City aldermen about a matter of £7,500—no mean sum in those days—which the aldermen had seemed disinclined to pay until the court of chancery had insisted that they should. In 1775 the Common Council had attempted to induce the tenants of the hospital to pay their rents to them instead of to the hospital governors. Since then times had changed, and he was proud to think that to day and for many years past, the hospital's relations with the City Corporation had been an object lesson to local authorities and voluntary hospitals alike.

Partners in Welfare

The hospital regarded it as a privilege to co-operate with the Corporation in providing those services which were essentially the responsibility of the medical officer of health. The Corporation in their turn regarded themselves as fortunate to enjoy the services which only a great hospital like St Bartholomew's could adequately provide. There were no arguments, no

troubles, no friction, no questions of prestige, just a sincere and mutual desire to secure for the patients the best possible treatment that medical and nursing skill could provide. He needed only to mention some of the services the hospital so willingly rendered the City. Since 1915 there had been established at Bart's the City's tuberculosis dispensary, and during these thirty years just over half a million attendances had been recorded. For nearly thirty years, first in Golden Lane and subsequently in the hospital, the governors had undertaken the provision of a special treatment centre for City patients suffering from venereal disease. From 1932 onwards the hospital's infant welfare clinic had been made the subject of an agreement with the Corporation whereby City mothers and babies could attend there at all times for attention and advice.

These and many other activities it had been the privilege of the hospital to undertake. That they had been successful there could be no doubt. But that success had been due not only to the part played by St Bartholomew's, it had been due just as much to the help and co-operation received from the Corporation and its medical officers. Speaking as treasurer of Bart's it might be hoped that under the National Health Service there would be left to them the opportunity and the privilege of continuing, with the Corporation as their partners, a service which had proved itself so outstandingly successful in the past.

REHABILITATION AND OCCUPATIONAL THERAPY CENTRE AT BROMLEY

A Rehabilitation and Occupational Therapy Centre at Bromley and District Hospital in Kent was opened on Dec 14 by Sir Wilson Jameson, Chief Medical Officer of the Ministry of Health. Dr Talbot Rogers stated in some introductory remarks that the hospital had received help from the Ministry in the form of equipment and of postgraduate facilities for those who would work at the centre. When fully started in the new year the department would employ eight physiotherapists. It was equipped to give all forms of electrical treatment except deep x-ray therapy. In the remedial gymnastic department emphasis would be laid on group methods in treatment. Patients would come to the department from the hospital or from other hospitals or be sent directly by local doctors. Dr D. B. Whitlock and himself would supervise and co-ordinate the department to which doctors would have full access and would be informed of the progress of their patients. Two ways in which the department expected to extend its activities were the provision of evening clinics and the use for mobile physiotherapy of a general purposes car which had been given to the hospital.

Sir Wilson Jameson, after an appreciation of Dr Talbot Rogers's work on the Medical Advisory Committee of the Ministry and a word of praise for the Bromley Hospital as one of the best general practitioner hospitals in the country, went on to say that the sphere of usefulness of hospitals had tended to be limited to the more critical phases of ill health, and too little regard had been paid to means of preventing physical breakdown or to the methods of rehabilitation. Great changes were likely to take place, however, and it was good to see Bromley well in the van.

"It should increasingly become the practice for patients requiring specially expert medical and nursing skill to seek such help in the well equipped hospital of the future rather than in their own homes. The shortage of domestic labour and a growing appreciation of the importance of the ancillary medical services are already resulting in more numerous applications for treatment in hospital, and as soon as more adequate staff and accommodation are available hospital services will be more and more in demand."

The hospital of the future, Sir Wilson Jameson continued, would no longer be preoccupied with what might be termed the medical stage of ill health but would concern itself to an increasing degree with the primary and with the final stages—that is to say, with methods of prevention and of rehabilitation. In the past those patients who were debilitated by serious illness or unable to return to their former employment on account of severe disabilities left hospital in too many cases with little more than a recommendation that they were fit only for light work. Yet numbers of them if only they had been taken in hand in time and provided with the necessary medical rehabilitation and vocational guidance could have been saved from



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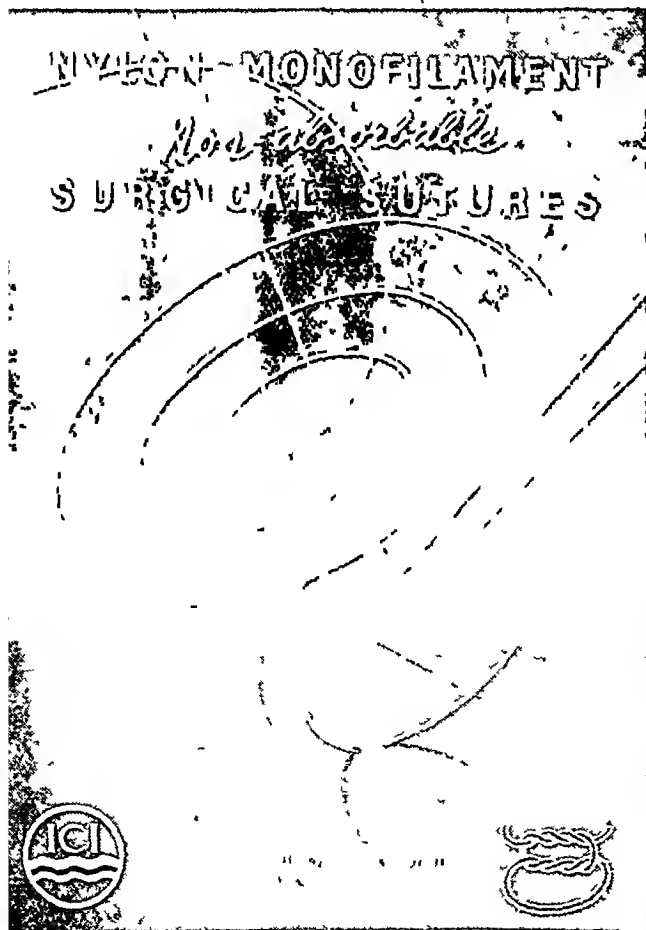
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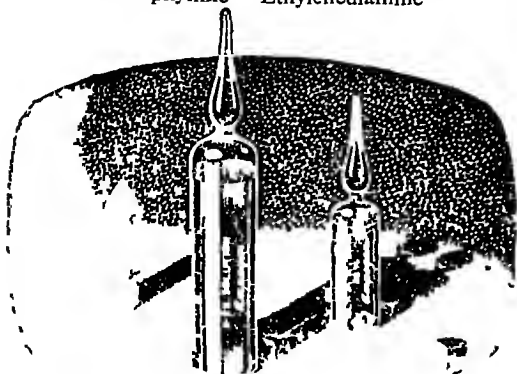
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chronic invalidism. It was in this respect that hospitals possessing modern rehabilitation departments could render such valuable additional service to the community. Physiotherapy and rehabilitation would form an essential part of the hospital and specialist services of the future. He added that a modern rehabilitation department should, wherever possible, be open in the evening as well as during the day. It should also be provided with its own almoner or social worker. It was important also that such a specialist service should never be divorced from the general practice of the neighbourhood. Hospitals which were already experimenting in this form of community service were meeting an astonishing response to their endeavours. One hospital which served a somewhat similar area to that of Bromley reported no fewer than 500 patients attending daily in its physiotherapy and rehabilitation department. In 1943 there were some 48 hospitals in England and Wales possessing all facilities for active rehabilitation, the latest figure he could give was 204, with a further 129 having partial facilities.

'The principle of general practitioner hospitals and departments is now widely accepted—always with the proviso that such a hospital or department should form part of a bigger scheme with suitable links with a larger parent hospital, preferably of teaching hospital standard.'

Bromley provided an excellent demonstration of the importance of having hospital facilities readily available to the general practitioners of the area.

MEDICAL PHOTOGRAPHY

Increasing interest is being taken in the use of photography and cinematography for record and teaching purposes, and it has been found particularly valuable in the medical sciences. In accord with this the Institute of British Photographers has decided to allot one part (Section 4) of its final examination to medical photography. Candidates must have passed the Institute's intermediate examination, and therefore be acquainted with general photographic theory and practice, before sitting for the final, for which is required not only a higher standard of photographic knowledge but also a knowledge of such subjects as human anatomy and physiology, medical terms and their significance, the recognition of the regions and tissues of the body from photographs and skiagrams, and also the more general topics of medical etiquette, relations between photographer and doctor, nurse, and patient, the problems of working in operating theatres, and the risks of infection. Since much of the medical photographer's work consists of record photography, he must learn standardization of technique and record filing.

The qualified medical photographer must have a wide range of technique at his command. With the improved materials now available infra-red, ultra-violet, and fluorescence photography may be required, and he may also carry out miniature radiography, photomicrography, and stereoscopic photography.

The Scientific Film Association, 34, Soho Square, London, W1, was founded in 1943 to provide information on and promote the use of scientific films. Membership is open to private persons, academic institutions, and commercial firms. It has issued several lists of films of medical interest, the latest being a *Catalogue of Films on Anaesthesia*, which includes notes on about twenty-five films.

A detailed account of each film is provided—running time, gauge, where made and by whom, etc—but the most interesting feature is an 'appraisal' that comments on the qualities of each film from every point of view—photographic, scientific, and educational. The Association has a viewing panel, which appoints appraisal groups of a 'considerable size,' to examine films selected by the appraisal committee. The constitution of these groups is kept as wide as possible so that every aspect of the film shall be judged, and they include medical specialists, house-men, nurses, students, photographers, and laymen. The result is admirable appraisals seem to be entirely objective, and, indeed, sometimes severe. If a film is practically valueless in the opinion of the appraisal group the fact is recorded.

The whole range of anaesthesia is dealt with in this series—local, spinal, intravenous, and inhalation, and there are films on operative shock, the handling of the patient, and respiratory and cardiac arrest.

Reports of Societies

CARCINOMA OF THE STOMACH

A symposium on carcinoma of the stomach was held at two joint meetings of the Radiological Section of the Royal Society of Medicine and the British Institute of Radiology on Dec 13 and 14. The chairmen at the sessions were Dr S WHATELY DAVIDSON, president of the Section of Radiology, and Dr H W SMITHERS, president of the Institute.

Radiology and Gastroscopy

Dr J A GROUT discussed the various sites and radiological signs of carcinoma. The radiologist should be able to distinguish between the ulcer and a cancerous lesion. The mucosa and the peristaltic waves, which only at the later stages stopped at the obstruction, needed careful examination.

Mr H W RODGERS said that radiology and gastroscopy were complementary methods of examination. The principle that gastroscopy should follow x-ray examination was important. Gastroscopy was contraindicated in gross deformity of the oesophagus, spinal curvature, atrophy of lining mucosa, and if x rays demonstrated an advanced carcinoma. Gastroscopy was of value in clinically suspect cases which were obscure or negative radiologically, but the technique had definite shortcomings in not showing the whole area of the stomach. Of carcinomata, 10% were diagnosed by gastroscopy, but the whole position concerning gastric carcinoma was disquieting and every effort must be made to find precancerous lesions. Gastroscopy had made the diagnosis of early cases possible.

Pathology and Surgery

Prof M J STEWART said he was impressed by the malignancy of the scirrhous cancer of the stomach, which recurred. The fact of invasion of the lymphatic glands, not its extent, was the important point in ultimate prognosis. Concerning the spread of carcinoma of the stomach, it was remarkable how seldom it transgressed in the duodenum, when it did so it was always by submucous extension, and such cancers made their way back to the surface, giving the appearance of two independent cancers. He gave his own figures covering a twenty-year period, including over 700 cases. One interesting point brought out was the positions of chronic ulcer, ulcer cancer, and primary cancer in 358 surgical specimens.

	Chronic ulcer %	Ulcer-cancer %	Primary cancer %
Pyloric end	57	29	84.5
Lesser curvature	94.3	71	10.7
Rest of stomach	0	0	4.8

For Mr HERMON TAYLOR the outstanding clinical fact about cancer of the stomach was that, in itself, it was a symptomless disease, a large tumour might develop without being suspected by the patient. Bleeding of a sufficient degree to cause alarm was uncommon and pain was a later symptom. Unless the growth was in a position to cause obstruction there was no compelling reason which drove the patient to the doctor. The potential significance of the minor symptoms and correction of the misconception that cancer need only be postulated if symptoms failed to respond to treatment were important. Pyloric growths, as they might give rise to obstructive vomiting, were generally recognized earlier than the less common tumours of the body of the stomach. Ulcers which underwent malignant change were mostly situated near the pylorus, and the danger in these cases was that a new symptom might be regarded as part of the already established general picture. Persistent minor dyspeptic symptoms arising *de novo* in a patient over forty, or persistent vomiting in a patient with known ulcer, must be investigated for malignant disease before treatment was applied. Of thirty-eight consecutive patients many of whom were diagnosed early by gastroscopy, no fewer than eleven showed histological evidence of their lesion having arisen in a chronic ulcer.

By modern radiological technique, supplemented where necessary by gastroscopy, the diagnosis of carcinoma of the

stomach could be established as a fact and not an opinion. An unequivocal filling defect shown by x rays needed no gastroscopic confirmation. But radiology and gastroscopy failed to estimate the operability of the lesion, demonstrating only its mucosal aspect, and giving no indication of lymphatic involvement. The question of operability could be decided finally only by the surgeon's hand within the abdomen. Adequate extirpation of the growth could be achieved in a large proportion of cases only by a wide dissection, as was illustrated by 17 cases of radical removal for gastric carcinoma in which one or two of the contiguous viscera were removed with the stomach. Of these 7 died as a result of the operation, but of the 10 survivors 8 were still alive after two or three years.

Radiotherapy

Dr G C FAIRCHILD and Mr ALAN SHORTER presented a joint paper on radiotherapy. They described the technique for direct irradiation of deep seated tumours exposed temporarily at operation. Intensities of 3,000 r in three minutes were used and radiation of the normal viscera so far as possible avoided. Of 15 cases of inoperable gastric cancer treated by direct radiation, the growth in 7 was so extensive that the radiation could be palliative only, among these the longest period of survival was six months. In 8 cases in which the growth was limited to an area which could be irradiated, the period of survival after treatment in one case was twenty-four months, in another fifteen months, and in the others shorter periods.

Dr D JENNINGS said that carcinoma of the stomach was the most important form of malignancy in Western civilization. The total yearly incidence of carcinoma of the stomach in persons under the age of 70 was 8,500. Of these cases 7,000 were referred to hospital, of these again between 3,000 and 5,000 were referred to surgeons, on these between 1,000 and 3,000 laparotomies were carried out, from 300 to 1,000 underwent a gastric operation, from 200 to 500 survived gastrectomy, and from 40 to 100 were 10 year survivors.

THROMBOSIS

A meeting of the Section of Pathology of the Royal Society of Medicine was held on Dec 17, with Dr A B ROSHER president, in the chair. The members of the Surgical Section had been invited.

Pathological Post-operative Thrombosis

Mr H J B ATKINS opening from the surgical side, said that thrombosis as a post operative complication was increasing and there were many problems connected with it which the pathologist would be able to help the surgeon to solve. Thrombosis, of course, was a natural and physiological accompaniment of any operation. By post-operative thrombosis was not meant that natural occlusion in the veins at the site of operation which would normally occur, but a thrombosis which tended to spread or which appeared remotely. A question at issue was whether pathological post-operative thrombosis was due to a spread by continuity of natural thrombosis. He had analysed the records of a series of cases of post operative thrombosis occurring at Guy's Hospital between 1921 and 1925, and during that time there were two cases of axillary vein thrombosis—one after a gastrectomy and the other after a prostatectomy—and two cases of left femoral vein thrombosis following radical mastectomy. An argument which was put forward to show that thrombosis in the leg veins was a spread from the site of operation was that thrombosis was extremely rare when the abdomen had not been opened. After laparotomy there was diminution of the respiratory excursion, and this would lead to a slowing of venous return, which was an important factor in the causation of thrombosis. Pelvic operations were peculiarly liable to be followed by post-operative thromboses, this suggesting that thrombosis extended from the operation site. But here age incidence should be taken into account. Pelvic operations were performed more commonly on patients getting on in life who were more liable in any event to thrombotic complications. Mr Atkins felt that the continuity theory as an explanation of post operative leg thrombosis should be discarded.

Why did the remote thrombus form? An operation occasioned various changes in the blood—an increase in the platelets and fibrinogen content—two factors closely connected with blood coagulation—and also a slowing of the blood stream consequent upon recumbency. Again there was the possibility of infection which might cause an endophlebitis predisposing to thrombotic complications. Why did thrombosis so commonly occur in the left leg? Venous circulation was sluggish after an operation, and more sluggish on the left side on account of pressure, perhaps by the sigmoid colon and iliac vessels. Anti coagulation therapy protected the patient in a very large measure against the development of pulmonary complications. All that such therapy could do was to prevent the development of fresh thrombi, it could not influence the thrombus already present, and it looked as if it were only the freshly formed thrombi which were likely to cause pulmonary embolus. What clinicians would like to know from their pathological colleagues was how fresh the thrombus must be to cause pulmonary manifestations. Heparin and dicoumarol were agents which prevented thrombus formation but the former had certain disadvantages and the latter some dangers. On the other hand, it was known that as soon as the patient got up the danger of the occurrence of thrombus was very slight. Could the duration of anti coagulant therapy be shortened with safety?

Pathology of Primary Thrombosis

Dr R H D SHORT described an imaginary post mortem examination of a case in which death had occurred from pulmonary embolism ten days after an operation. On opening the pulmonary artery a long coiled thrombus might be found, blocking both main branches. If the thrombus was taken out carefully and disentangled it would be found that over the greater part of its length it was unbranched, but there were branches at the upper and lower ends, one end being paler than the other. If sections were made of the pale part the typical laminated structure characteristic of ante-mortem clot would be found. The upper end of the thrombus would appear rounded, and the other, the pale end obviously broken. From the length of the clot it might be assumed that it came from either of the two femoral veins. If those veins were now opened one of them might be found to contain a long eel-like thrombus and the other to be empty. Somewhere near the level of the knee would be found a broken end which corresponded with the broken end of the thrombus in the pulmonary artery. If further examination were made of the veins of the lower limb it would be found that the primary thrombus in a large proportion of cases arose in the muscular branches of the posterior tibial vein. When once organization had occurred the tendency to embolism would be enormously reduced, and there was evidence that organization occurred very rapidly, though it might not involve all portions of the thrombus at the same time. Thus a certain interval might elapse before the whole of the thrombus was organized on to the vein wall. Lesions in the media of affected veins were the result rather than the cause of thrombosis. He discussed the factors favouring embolism and said that the essential problem of thrombosis was why the platelets deposited where they did.

Dr HELEN PAYLING WRIGHT spoke of the modern experimental approach to the study of platelets. The precipitating cause of thrombosis was far from clear, but after operation there was an increase both in platelets and fibrinogen, reaching their maxima about the tenth day coincident with a slowing of the blood flow. Young platelets were more adhesive than older ones—a characteristic common to all young blood elements. She discussed the adhesiveness of platelets and gave an account of some experiments which suggested that adhesiveness was due to a surface film of fibrin.

Mode of Action of Anti-coagulants

Prof H P GILDING said this stickiness of the cells must somehow enable them to release the kinase and so initiate thrombosis. Dicoumarol as an anti coagulant would inhibit the formation of prothrombin in the liver, but such inhibition took time. A more rapid inhibition might be brought about by the injection of an adequate amount of heparin. With this substance it would take place within a period of seconds, depending on the circulation time from the vein into

which it was injected Heparin affected the stickiness of the platelets and tended to prevent them from agglutinating and perhaps from disintegrating Should one use vitamin K or a transfusion after excess anti coagulation therapy? For a quick reaction a transfusion of normal blood in adequate amount should be given, at the same time giving the patient vitamin K so that he could rapidly manufacture his own

Mr D H PATEY said that if a fatal thrombosis occurred it was commonly supposed that it was likely to happen on the tenth day after operation But it might occur on the first or second day, a surgical colleague of his had a fatal embolus in a patient on the way back from the theatre It was a question whether the static factor at operation might not have an effect, and it had been suggested that any increased incidence of thrombosis might be referable to the longer time taken over operations One impediment in the way of research and further knowledge was the fact that these occurrences were relatively so infrequent Hospitals were appointing resuscitation officers, and they might usefully be employed also as thrombosis or pulmonary embolus officers

Mr SOLLY COHEN said he had had a patient die on the table from pulmonary embolus It seemed particularly important that, before operation on a patient who had had a long rest in bed such as for gastric ulcer, the subject should be ambulant for at least a week Dr SHORT, replying to a question, said that a thrombus under 15 cm in length was not likely to cause sudden death, the thrombi which did produce sudden death were of 45-50 cm length So far as the effect of pressure was concerned it was a peculiar fact that it was not the more superficial of the calf muscles which were involved but the deeper soleus muscles

CARE OF CHRONIC SICK CONTRIBUTION OF PHYSICAL MEDICINE

At the meeting of the Section of Physical Medicine of the Royal Society of Medicine held on Dec 11 Dr F COOKSEY presided, and referred with great regret to the death of Dr A R Neligan, who was to have been one of the openers of the discussion, and whose paper would be read by Dr F I DAWSON

Dr E L STURDEE said that the problem of the chronic sick was becoming greater because of the larger number of old persons in the population In Great Britain in 1901 there were only 1,750,000 persons over the age of 65, in 1941 this number had increased to 4,300,000, and by 1951 it was estimated that it would have reached 5,000,000 An investigation in Surrey, however, had disclosed that 29.6% of the chronic sick in that county were under the age of 65 Owing to housing and economic conditions many of these people who would have been nursed at home were seeking admission to hospitals and occupying badly needed beds Public opinion—and medical opinion in particular—must be educated to the fact that the chronic sick constituted a problem with which it was not beyond medical knowledge to deal If every hospital took long-term patients medical students would realize the problem which would continually face them in private practice, and some at least would be interested enough to specialize All chronic patients could not be cured but they could be accommodated in annexes perhaps in the hospital grounds or at all events near the hospital and under its supervision Here they would be able to get about, though still needing medical oversight and could live in conditions more nearly resembling those of a private home Such annexes would not require nursing and domestic staff in the same proportion as the hospital proper The general public and especially the medical and nursing professions, must be made to realize that patients suffering from chronic illness had as much right to treatment as those with acute ailments

The paper by the late Dr A R NELIGAN detailed certain general and special methods of treatment

Dr MARJORY WARREN discussed clinical aspects of the chronic sick She emphasized the need for treating the patient as a whole—physically, psychologically and socially An atmosphere of optimism in rehabilitation was necessary Patients might become bedridden in various ways and some were confined to bed because of inadequate help for some minor lesion for example, an old man whose only trouble was stiffness in the hands and who was unable to dress himself Some old people were put to bed by indulgent relatives Other chronic

cases had been mismanaged and were suffering from loss of morale There were those who preferred to remain bedridden as the only way of avoiding a return to unsatisfactory social conditions

Treatment must be energetic and optimistic, and the patient must be inspired with confidence in his doctor It was important to keep patients moving in bed and as soon as possible to get them up even if only for a short time They should be encouraged to sit up to all meals and dress when able It should be explained that this was not for the convenience of the staff but because it gave better limb movements than any other form of exercise A hemiplegic should be given a full range of shoulder movements two or three times a day by the nursing staff, and if possible should be encouraged to do them on his own Occupational or diversional activities should be arranged as soon as possible Patients in the active stage of treatment should be separated from those in the earlier stages or the completely bedridden From the psychological point of view it was most important that the doctor should discuss the patient's condition with him It was necessary to keep in touch with relatives and friends When treatment was prescribed the doctor should see that it was carried out fully and he must obtain the co-operation of the nursing staff Adequate nursing staff was a first necessity, and when it was not possible to get enough trained nurses, nursing attendants were useful

CHILDBEARING SOCIAL AND ECONOMIC PROBLEMS

An inquiry into the maternity services of this country, and especially into the social and economic problems of the young mother, is being made under the auspices of a joint committee of the Royal College of Obstetricians and Gynaecologists and the Population Investigation Committee Two years ago a grant of £5,000 per annum for five years was made to the Population Investigation Committee for the purpose of research, and it was decided that an inquiry into maternity services would be most appropriate Dr J W B DOUGLAS was appointed research officer and at a meeting of the Eugenics Society on Dec 17 he gave an interim report

The inquiry has been aimed at discovering what use the mother made of the maternity services, the cost, including medical costs of her confinement, the regional differences between the services provided for mothers, the incidence of breast-feeding, and a number of other facts It was considered that the information could be obtained only by a direct approach to mothers all over the country, the interview was preferred to the questionnaire, and it was necessary that the interviewers should have a knowledge of maternity and child welfare Health visitors were the obvious people to undertake this task The co-operation of the Society of Medical Officers of Health and of individual local authorities was secured for a scheme whereby health visitors were requested to interview all mothers delivered during a single week in March last Out of 458 local authorities in Great Britain, 424 agreed to participate in the survey, the remainder were unable to do so owing to shortage of staff The field workers thus engaged were given a list of questions which had a very wide range, from such matters as antenatal care and the use of analgesia at the confinement down to the number of nappies in use for the baby and the cost of the perambulator The mothers were interviewed two weeks after delivery About 150,000 forms were completed, 2% of the mothers refused to co-operate and 8% could not be traced

The full report would not be ready until June, 1947 but some preliminary results were available Grouping the women according to the employment of their husbands a professional group accounted for 8%, black-coated workers 10%, and manual workers 65% In the professional group one birth in every twenty was that of a fourth or higher number child, in the black-coated group one in every ten, and in the manual group one in every four In the professional group those who were living in a population density of two or more for every bedroom and living-room—a high degree of overcrowding—numbered one in twenty, in the black-coated group one in ten and in the manual group one in four Considering the high proportion of wives of manual workers who had their babies at home this last was a shocking figure

Antenatal visits were almost universal, only 65 mothers had no care at all, and these were mostly mothers of illegitimate children who had concealed their pregnancies. On the average the professional group started to have antenatal care in the third month and the wage earners and manual workers in the fourth. The whole position with regard to antenatal care seemed to be most satisfactory. Most of the professional class went to their private doctors and most of the manual workers were taken care of by the local authority.

Care during the Confinement

It was in the care of delivery that the greatest differences showed themselves between the groups. The wives of men in the professional class received all round a higher standard of attention than did the wives of manual workers, and the wives of black-coated wage-earners came somewhere between. One out of every ten mothers in the professional group was delivered by a specialist, the corresponding figure for the wives of manual workers was one in fifty. Home delivery was much more common in the manual worker group. One in five of the women in the professional group was delivered at home, the figures for the other two groups were one in three and one in two, respectively. One in three of the professional group was delivered in a nursing home, but only one in seventeen of the wives of manual workers.

It might have been thought that in the same type of institution the members of the three social classes would receive the same quality of treatment, but this was not so. At home the mothers in the professional group were mostly attended by their own doctors, the wives of manual workers by midwives. Three out of five in the professional group who were delivered at home received analgesia, but only one out of five in the manual worker group. The same sort of difference obtained in institutions and hospitals. The proportion in the professional group who, being delivered in hospital, received analgesia was much greater than in the manual group. The black-coated wage earner group again occupying an intermediate position.

The same social distinction obtained in respect to the length of time spent in hospital. In the professional group the mothers stayed in the nursing home or hospital for an average of thirteen and a half days, the wives of black-coated workers for thirteen days, and those of manual workers for twelve and a half days. Behind these averages were hidden, for example the fact that those in the professional group rarely left hospital before the tenth day, whereas the wives of manual workers might have to leave hospital five days after the birth. These differences were not reflected in the averages.

The incidence of postnatal examinations the question being put eight weeks after delivery, was rather low in all the classes. Only four out of ten in the professional class and three out of ten in the manual worker class had had an examination by a doctor since the birth.

The figures were very consistent in showing how far the country was from achieving any equality of care of mothers as between different social groups. Such equality could not be obtained without a very considerable extension of existing services and the education of expectant and nursing mothers.

CHEMICAL MECHANISMS OF DEFENCE

Some of the chemical methods employed by the human body to rid itself of poisonous substances were described by Dr C R HARRINGTON, FRS of the National Institute for Medical Research when he delivered a Friday evening discourse at the Royal Institution on Dec 13, taking as his subject "The Body's Chemical Mechanisms of Defence".

Dealing first with substances of relatively simple composition he pointed out that, apart from excretion, oxidation was the simplest process used. Certain amines which, although toxic, might be produced in the intestine were easily oxidized (mostly in the liver) to the corresponding and relatively non-toxic acids. These might, either be excreted as such, or converted by conjugation with another compound into the excretory product.

One of the commonest and earliest recognized of conjugation reactions was the formation of the so called ethereal sulphates—sulphuric acid esters, production of which in small

amounts from food containing aromatic hydrocarbon groups was a normal physiological process. Benzene and other aromatic hydrocarbons if absorbed from outside, were dealt with in the same two stages—oxidation followed by conjugation to form an ester.

Aromatic hydroxy compounds he proceeded, as well as many hydroxy compounds in the aliphatic series, might also undergo conjugation to form glucuronides, which like the ethereal sulphates were readily excreted in the urine. The same process was also applicable to aromatic acids and acetylsalicylic acid while in some animal species the conversion of certain terpene alcohols such as borneol, into the corresponding glucuronide was so extensive as to form a reasonably convenient basis for the preparation of glucuronic acid.

As an example of the combination of aromatic and other carboxylic acids with nitrogenous compounds, Dr Harrington instanced the conjugation of benzoic acid with glycine to give hippuric acid. This reaction was common to many species and applied to many derivatives of benzoic acid in addition to providing the second stage in the detoxication of substances such as toluene which contained oxidizable side chains.

Species Differences

The detoxication of carboxylic acids showed species differences. Benzoic acid was conjugated with glycine in mammals but with ornithine in birds to form ornithuric acid, and phenyl acetic acid with glutamine in man and the chimpanzee, with ornithine in birds, and with glycine in the dog, cat, rabbit, and monkey.

With organic bases detoxication was by alterations in the basic group the commonest change being acetylation. This was the general reaction with aromatic amines, such as aniline and its derivatives including the sulphonamide drugs. Excretion was not however, necessarily facilitated, and the products of certain sulphonamides might be an embarrassment.

Chemically, one of the most interesting conjugations was that with acetylcysteine to form the so called mercapturic acids. This took place most characteristically with the monohalogenated benzenes and involved the direct linkage of the nuclear carbon atom of the benzene ring with the sulphur of the acetylcysteine. Because of this conjugation prolonged administration of bromo benzene might lead to cystine deficiency with delay of growth in young animals.

Antibodies and Allergy

The second and major part of the discourse was devoted to the antibody mechanism on which Dr Harrington has himself made important contributions. In contrast with the variety of defence processes invoked by relatively simple compounds there was here a single mechanism of extreme specificity. This was true of the response, not only to natural proteins, but also to proteins which had been artificially altered. Specificity in the latter case being determined by the new groups which had been introduced. Thus iodinated horse serum raised antibodies in the rabbit which were inactive against untreated horse serum protein but would react by precipitation with other proteins, including egg albumen, which had been iodinated. Similarly if sugar-protein complexes were prepared by the azo coupling method, familiar in dyestuff syntheses, the antibodies raised were determined by the nature of the sugar even small stereochemical differences being detectable. Finally Dr Harrington had himself been able to show that an antiserum prepared against a protein which had been combined with thyroxine could neutralize thyroid protein in which thyroxine was naturally combined. This was a physiological demonstration of the defence method against such a toxin.

Anaphylaxis and allergy appeared as an embarrassing variant of the same mechanism. A wartime example of sensitization was contact dermatitis from tetryl (2, 4, 6 trinitromethyl nitraminobenzene) an explosive which had to be made in large quantities. The experimental sensitization of guinea pigs, with tetryl and then with related substances had made it clear that the action depended on the formation after absorption through the skin of trinitrophenyl proteins which acted as antigens. The resulting antibodies which caused the skin lesions reacted to trinitroaniline compounds and to compounds which could form this group by combination with protein.

Correspondence

The Decision

SIR—What proportion of the profession can the individual doctor count on refusing to enter the new Health Service? The result of the plebiscite gives some sort of guide, but a much firmer guide is essential before the average doctor would risk refusing, whatever his opinions of the Health Service Act and however strong these may be.

Surely the only solution is for the doctors in every district to get together in small groups at the earliest possible date to discover what each individual is likely to do. He should not be asked, "Do you intend to enter the Service or not?" but the qualified question "If you were assured that a large majority of the profession is going to refuse to enter the Service would you?" The results of these meetings should be sent to B.M.A. Headquarters through the Divisions, and B.M.A. Headquarters should keep the groups informed at frequent intervals through the Divisions what returns are coming in from other districts.

It is only if we who individually object to the new Act know what the rest of the profession is going to do that we could contemplate refusing to enter the new Service on the appointed day. Discussions on the Act and alternative proposals for an amended Act are out of place at this stage—I am, etc.,

Sevenoaks

D E YARROW

The Need is Unity

SIR,—The *Journal* of Dec 21 makes inspiring reading. The profession whose attitude has been so strikingly demonstrated by the result of the plebiscite, may feel pride in its leadership. Its determination to resist bureaucracy and dictatorship has been clearly expressed. The battle is joined and we shall need to muster all our determination to carry it through.

The immediate economic prospect facing practitioners who follow the Council's lead and refuse service under the Act is a stern one. On the appointed day they will, of course, lose their insured patients while the unfortunately not inconsiderable disloyal minority will be in a position to secure large practices very quickly. Specialist appointments will also be affected by this position. This economic struggle will call for the greatest fortitude but it is better for the majority of the profession to see it clearly in good time. Under the leadership of Dr. Dain and the Council they will surely feel that the struggle is worth while if it leads to the overthrow of the Act. In the words of your leading article, the paramount need of the profession at this moment is indeed unity—I am, etc.,

London W9

A L JACOBS

The Plebiscite

SIR—Two of your correspondents reject my contention that the Labour Government has a clear mandate from the electorate to pass the Health Act on the grounds that the details of the Act were not published at the time of the election. Dr. A. K. Young (Dec 21, p. 960) goes further and writes that the great majority of the electorate are totally incapable of giving any intelligent mandate to anybody on their own account. That as may be. Political parties lay down the general lines of their policies and rightly claim a latitude in their execution. They could hardly do otherwise without infringing the right of Parliament to shape its own Acts. In the case of the Health Act the Labour Party had indicated its intentions in great detail in a pamphlet called *National Service for Health* which was published in 1943. The Act in no way conflicts with this announced statement of policy. No number of red herrings can alter this fact. In addition it should be noted that parties voting for the Act represent 15 million voters while those who voted against represent only 10 million. This is conclusive.

Dr. H. M. Stanley Turner (p. 961) claims that the Act is a purely political matter. Of course it is. The Labour Party is giving practical expression to its own political philosophy of which he happens to disapprove. I cannot agree with him that the 1944 plebiscite was a confusing document. Many

categorical questions were asked and answers given—e.g., a majority approved negative direction." A study of the results will prove my contention that the B.M.A. Council and the Negotiating Committee are out of line with the profession as a whole.

I accuse many opponents of the Act of being concerned primarily with their own interests and liberties and very little with those of the community. I accuse them of remaining silent during the years before the war when unemployment and starvation conditions were creating ill-health, and of rushing to print when their own standard of life is allegedly affected. I accuse the B.M.A. Council of adopting a narrow sectional viewpoint at a time of immense social change when it should be leading the profession towards the creation of a great health service—I am, etc.,

Bristol

H B O CARDEW

The Plebiscite and the S.R.M.

SIR—The Council is to move the following motion at a specially summoned Representative Meeting on Jan 28:

"That the Negotiating Committee be advised that in view of the results of the plebiscite the Minister be informed that, because of the divergence between the principles of the profession and the provisions of the National Health Service Act, the Committee is unable to enter into discussions with the Minister on the Regulations to be made under the Act."

It has frequently been suggested that the decisions reached at Representative Meetings do not represent the views of the profession, and that persuasive oratory on the platform has played too important a part in its deliberations. At this crucial moment we should convince ourselves and the outside world that neither of these suggestions is correct by ensuring that our Divisional meetings are fully attended, and that our representatives are adequately briefed.

There is one further point which I should like to put forward for consideration. At the Divisional meetings which are to be specially summoned to discuss the Council's motion, each doctor should be handed a piece of paper upon which he will be asked at the end of the discussion to answer a plain "Yes" or "No" in favour of or against Council's motion. These slips should be handed to each doctor so that there will be no necessity for signatures and the secrecy of the individual doctor's vote will be obtained. The final voting figures should be announced by the Divisional chairman at the end of the meeting. If every Division in the country sent its representative to the Special Representative Meeting armed with these figures (and the total votes for and against should be publicly announced from the platform), I feel sure that they would reveal the fact that the profession is at last fully aware of the implications of the "Willesden affair" and what it may expect in the future.

I have written this letter with the approval of the chairman of my Division—I am, etc.,

R. PROSPER LISTON,
Representative Tunbridge Wells Division

Goodwill of Practices

SIR—I would draw attention to the eloquent letter of protest, as published in the Press sent to the Government by the representative bodies of the Insurance Companies and Investment Trusts in which they condemn the proposed unilateral method of affixing the purchase price of compulsorily acquired property. This is just what the Government is going to do to myself and the thousands of G.P.s who own their own practices. My practice represents my life's savings, and yet under the new Health Act I shall be compelled to sell out to the Government at their price which may or may not be a fair valuation—I am, etc.,

Witchaven

T S L JONES

National Health Service Act

SIR—Now the fight is on I think to begin with the B.M.A. should make an effort to give the public the true facts about this Health Act. The facts which I think are correct, are as follows. The late Government planned the Bill in the form of a White Paper which was handed to the profession for their

consideration and advice. Little alteration in this White Paper was considered necessary, and that little was agreed to by the Government but unfortunately before it could be made into a Bill the Government was out. As soon as Mr Aneurin Bevan was made Minister of Health our representatives approached him regarding the Bill, but were told he was too busy with housing to talk about health, despite the fact that the present Act was being prepared at that time. When we got to know this our representatives again approached the Minister with a view to negotiation and discussion but the Minister then said he was negotiating or discussing the Bill with no one.

Surely we, the persons who are mainly responsible for running the Service, should be the ones to know how it should be organized to the best advantage of the public. Mr Bevan has stated that the Bill has been passed and is the wish of the people of this country but I maintain that it is an Act made by Mr Bevan to nationalize medicine with no consideration for either the sick patient or the doctor.

I think it is time Mr Aneurin Bevan realized that when he was appointed Minister of Health he became a servant of the Crown and thereby of the people of this country, and cannot use dictator methods such as were used in Germany and Italy and which were the cause of the last war—I am, etc.,

Sutton in Ashfield

JOHN ANDERSON

SIR—The matter appears to me to be supremely simple. I am not interested in the details of furnishing, decoration or equipment of a house which I believe to be structurally faulty and dangerous, and which will apparently be the only house in which I shall be allowed to live. I have no desire to emulate the immortal Florrie Forde and be admired as a very useful bird in a finely gilded cage. Unless the builder is prepared to remedy its structural defects I am not interested in or tempted by details of its beauty or comfort—I am, etc.,

Rotherham

G H SEDGWICK

SIR—In the next week or two BMA Divisions will be called upon to discuss and instruct representatives whether or not to support the Council's resolution that the Negotiating Committee should not enter into discussion with the Minister concerning the regulations to be made under the Health Act. It is important for each one of us to realize what exactly this implies and to consider whether or not it circumvents the already declared view of the majority of the profession as expressed in the BMA referendum of 1944.

The issue, as recently restated by the Chairman of Council at Exeter is: Does the Act sufficiently conform with the principles of the profession to permit further negotiation with the Minister? What are these principles? Close examination shows them to be no more than a thinly disguised stratagem to have excluded from the Act the prohibition of the buying and selling of practices, payment partly by basic salary partly by capitation fee and what is misrepresented as direction of the doctors. There is not the slightest doubt that the enabling Bill demanded by Dr Dain in the same speech would have for its purpose the exclusion of these particular clauses. With regard to these three issues the 1944 plebiscite showed the Council of the Association to be quite out of touch with the opinion of the profession as a whole and this was particularly evident in the case of the younger doctors represented by the Forces. It is greatly significant that the present plebiscite reveals this tendency still to exist as doctors with 14 years experience and under show a majority in favour of negotiation.

It would be difficult to deny that the Council has consistently ignored the results of the 1944 questionnaire and, far from democratically accepting the majority point of view on these important issues has by a persistent and often emotional propaganda campaign endeavoured to impose its own view on the profession. To that end in the present plebiscite, with the voting forms were issued a statement condemning the Act and a letter from the Secretary which was not likely to impress the doctor in its favour. There was at the same time published in the *Journal* the speech by Chairman of Council at Exeter, in which he practically advised the doctors to say 'No'.

In spite of all these manoeuvres a majority of less than 8% of the profession actually voted 'No'. This can hardly be

regarded as the 'substantial majority' laid down by the last Representative Meeting. In the forthcoming Divisional meetings the issue which has really to be decided is whether or not the present Council or the profession as a whole is finally to determine policy. It is not without significance in this respect that the proposer in Council of the resolution presently before the doctors is that same member of Council who, in 1944, before the Act was even conceived, resisted the election of the present Negotiating Committee for the purpose of consulting with the Minister concerning the future health services of the country—I am, etc.,

Edinburgh

S LIPETZ

The BMA and Public Relations

SIR—As the issue has now been joined with the Ministry of Health over the new Health Service I wish to suggest that every attention be given to the publicity side of the campaign. It is always said that however popular individual doctors may be the medical profession as a whole has had a bad Press. It is absolutely vital that the public should appreciate the various points in the new Act which we consider are so unsatisfactory to them and to us. Public meetings should be called in the big towns to ventilate the questions and inform public opinion. It would be a great help if medical men were furnished with a concise tabulated statement giving them the salient points in the matter and the vital principles involved, to convince the waverers and to provide the whole profession with the necessary ammunition. The many channels of advertising should all be employed. There can be no better use of the fighting fund than to devote a portion of it to securing more public support without which there is little prospect of real success—I am, etc.

St Leonards-on Sea

W GOVER

The Unstable Adolescent Girl

SIR—The appendix to the Report of the Committee on Psychiatry and the Law published in the *Journal* of Dec 14 (p 909) and the leading article in the same issue (p 904) draw attention to an urgent social problem. While agreeing with the writer of the leader that "doctors and magistrates alike have approached their problem in a realistic and scientific spirit" it seems unfortunate that the appendix as published should contain a number of misleading statements. Take for example, the sentence "In many ways girls of higher intelligence are more dangerous to the community than girls of a lower intellectual capacity" (paragraph 34), or, "if it [the IQ] is above 70 they are apt not to be regarded as mental deficiency cases because of a misinterpretation of the Mental Deficiency Acts" (paragraph 10). No statement is forthcoming however, to explain which cases may be dealt with under these Acts.

In the first paragraph the committee describe a particular type of girl with whom they are concerned, yet in the ensuing paragraphs deal with mentally defective, morally defective socially defective psychopathic, and—in that some are expected to respond to psychiatric treatment—psychoneurotic cases, as though they presented a single problem.

Clinical observation and detailed study of the unstable adolescent girl have shown the importance of basing diagnosis upon both mental capacity and social maturity and of giving due consideration to the home circumstances before arriving at a recommendation. If a girl's intelligence quotient is below 70 the degree of incomplete development of mind is such as to warrant her being regarded as simple minded. Whether she will require to be dealt with under the Mental Deficiency Acts will depend upon the extent to which she is also socially defective and the ability or otherwise of her parents or guardians to exercise the necessary care or control for her protection. If a girl's intelligence quotient is between 70 and 90 she should be regarded as being intellectually dull. In an exceptionally good home environment she may respond to supervision while on probation. If she shows strongly vicious or criminal propensities she can be dealt with under the Mental Deficiency Acts as being a "moral defective" but cannot strictly be dealt with as being "a feeble-minded person" if the intelligence quotient is more than two or three degrees above 70. The majority of girls in the dull group will require a period of from two to three years in a residential school or training

centre. Some will respond satisfactorily to this lengthy period of discipline and character building, for others the provision will prove to have been purely preventive. In relatively few of the cases in which the intelligence quotient is below 90 will there be any permanent response to psychiatric treatment. In those cases in which the intelligence quotient is 90 or more (and I Qs as high as 140 will be encountered among those who are persistently delinquent) the primary need is to determine the level of social maturity. In the absence as yet of a social maturity scale of general applicability the most reliable guide is a study of the girl's personal history from infancy onwards. Precocious physical and emotional development is a common feature in the history of the more intelligent girl, and absence of understanding, help, and advice on the part of parents or teachers a contributory factor. It is this group of cases that provides the most favourable material for psychiatric investigation and treatment.

When the committee have obviously gone to much trouble to collect and sift facts relating to the problem of the unstable adolescent girl it seems unfortunate that the above general principles upon which recommendations must be based have not been more clearly enunciated—I am, etc.

Liverpool

MURIEL BARTON HALL

Migraine and the Sympathetic Nervous Pathways

SIR—Mr G F Rowbotham's article (Sept 7 p 319) on 'Migraine and the Sympathetic Nervous Pathways' has just come to my notice. Several points seem worthy of comment. It is noted that Case IV did not respond satisfactorily to surgery. This it is felt could have been avoided by not subjecting him to the operation. The procedure we have adopted should obviate surgery on cases unlikely to respond.

I have personal experience of three cases of migraine which we have cured by cervical sympathectomy. In the first case stellate ganglionectomy was performed on account of status anginosus, and it was noticed that a left-sided migraine which had been present for years was abolished. The second case was that of a woman of rather neurotic tendencies who complained of a unilateral migrainous type of headache. In view of the possibility of a psychogenic origin it was decided to determine before embarking on any surgical procedure whether it was likely to improve her condition. Mr Trumble first of all injected the region of her cervical sympathetic with normal saline, with no effect on her headache. He then substituted 'novocain,' and with the appearance of a Horner's syndrome the headache was abolished. The cervical sympathetic chain was then divided under local anaesthesia, and on stimulating the cut end of the latter the patient complained of having her 'headache.' Following operation she has remained well and has had no sign of any recurrence of symptoms over a period of nearly two years.

In the third case the patient complained of typical unilateral migraine of many years' duration. During an attack I injected her cervical sympathetic with 'novocain,' and with the appearance of a Horner's syndrome the migraine was abolished. Mr Grayton-Brown performed a cervical sympathectomy, but could not reproduce her migraine by stimulating the cut end of the sympathetic chain. She has so far remained well and free from any untoward symptoms.

Three other cases in which operation might easily have been undertaken were found not only to be unrelieved by local anaesthesia of the cervical sympathetic but were made worse by it. Thus three failures were avoided. I would like to suggest to Mr Rowbotham that he adopt the simple procedure of infiltrating the cervical sympathetic with 'novocain' prior to operation so that cases suitable for this form of treatment can be selected. The ligation of the external carotid does not seem to be necessary and was not carried out in any of our cases—I am, etc.,

Melbourne

S A SEWELL

Mental Deficiency

SIR—I wish to draw your attention to what appears to be an inaccuracy in Any Questions under the heading 'Mental Deficiency' (Dec 14 p 929) where there appears the statement, 'The sole criterion is what is best in the interests of the child.' Although that may have been the standard until recently, the

Education Act of 1944 gives to local education authorities the power to order special educational treatment for mentally deficient children not only in their own interests but also in the interests of the other children in the school which they would normally attend. The relevant section is 57 (4), which states

For the purposes of this section, a child shall be deemed to be suffering from a disability of mind of such a nature and extent as to make him incapable of receiving education at school not only if the nature and extent of his disability are such as to make him incapable of receiving education, but also if they are such as to make it inexpedient that he should be educated in association with other children either in his own interests or in theirs.

I think you will agree that although the ten-year old mongolian idiot may be quite happy in the village school, the local education authority would be justified in removing the child in the interests of the other pupils—I am, etc.,

Leeds

MARY N M PAULIN

Use of Penicillin Pastilles

SIR—Dr G C Pether's letter (Dec 14, p 920) on the possible dangers of oral penicillin may indicate a rather wide interest in this matter and one or two further points may be made. The correspondence, to which a number of the readers of this *Journal* have contributed, arose from a Question and Answer in the issue of Sept 21 (p 447). Your technical expert there stated that stomatitis after oral penicillin was rare, only four cases having been reported. In subsequent issues there have been a number of letters reporting further cases, and the impression is growing that commercial penicillin pastilles supplied for the local treatment of sensitive oral infections may be quite a frequent cause of sore tongue and sore mouth. The matter seemed to be clinched by the communication of Drs Ellinger and Shattock, 'Nicotinamide Deficiency after Oral Administration of Penicillin,' in the issue of Oct 26 (p 611). The authors demonstrated that a clinical picture of nicotinamide deficiency, associated with a diminution of nicotinamide methochloride output, might follow the oral ingestion of a few thousand units of penicillin daily for several days in a subject who was apparently rather sensitive to dietary nicotinamide deficiency. These workers concluded that the penicillin swallowed by their subject had inhibited the metabolism of intestinal flora and diminished the quantity of the vitamin usually available from this source.

That, this may not be the whole story of 'penicillin stomatitis' is suggested by the following two considerations. (1) Whether in the ordinary way penicillin derived from sucking pastilles would be likely to reach the colon in sufficient quantity. (There is evidence that little penicillin enters the intestine from the blood-stream—e.g., McDermott *et al* (1946)—and so we may take it that the drug must reach the colon via the small intestine.) Supposing a 500 unit pastille is dissolved in the mouth in fifteen minutes, 2,000 units an hour are slowly swallowed or absorbed from the buccal membranes. Of that portion which reaches the small intestine a further fraction will be absorbed (Abraham *et al*, 1941, Florey and Florey, 1943). This appears to occur mainly from the duodenum (McDermott *et al loc cit*). This small dose would probably be insufficient to give demonstrable blood levels, from the evidence of Burk, Ross, and Strauss (1945), McDermott *et al* (1945), Krantz, Evans, and McAlpine (1945), the evidence assembled in a recent editorial in the *Lancet* and other work.

The recent work of McDermott and his colleagues (*loc cit* 1946), quoted by Ellinger and Shattock, emphasizes the irregularity with which ingested penicillin is absorbed from or retained in the small intestine. Of two subjects who had received oral penicillin in a single dose of 5 million units, apparently in aqueous solution, the stools of one were found to contain 0.94 units of penicillin per gramme of stool, and of the other 1.200 units per gramme. In another subject, who took 100,000 units orally in water at two hourly intervals for a twenty-four-hour period, the stool (held till the end of the experiment) contained no demonstrable penicillin. It is clear that the doses with which these authors worked far exceed the quantity one would swallow from sucking pastilles through a day, where ten or twenty probably represent as many as most patients would take.

(2) Whether the triad of sore tongue, sore mouth, and sores at the angles of the lips, which may be due to vitamin deficiency, could receive another explanation in these particular circumstances. Unfortunately most of the clinical work on oral penicillin has been limited to gonorrhoea, where the total dose is usually given inside of one day, but in this connexion it is perhaps worth noticing that in the very careful paper by Bushby and Harkness (1946), a subsection, "Toxic Manifestations," does not mention this particular complication. Florey and Florey (1943) treated a case of right orbital cellulitis with 60,000 units daily for seven days by capsules and duodenal tube, and a case of sensitive actinomycosis with 80,000 units daily for six days by duodenal tube, and do not mention that either case developed stomatitis or glossitis, although the second case (whose primary disease was unrelieved) developed coryza and gastro-intestinal disturbance.

It seems to me that Dr T V Cooper is on the right lines when he suggests that the commercial lozenge base may be at fault. Until we have work of the quality of that of Ellinger and Shattock supplemented by readings of penicillin blood levels, gut levels from a Miller-Abbott intestinal tube (with its tip positioned by contrast fluoroscopy to be in the region of the ileo-caecal valve), and perhaps by urinary and stool penicillin levels, and by stool culture, I feel we may continue to use oral penicillin for oral infections, but that we should order lozenges made with agar or gelatin (as has Dr Cooper) until it has been shown that the base alone and the heat-inactivated pastilles are not the cause of the stomatitis—I am, etc.

London S W 19

G I C INGRAM

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 Pether G C (1946) *British Medical Journal* 2 920.

Epidemic Gastro-enteritis

SIR—Having heard on the wireless and read in the newspapers about the outbreak of an epidemic of gastro enteritis among maternity patients and newborn babies, I would like to mention how similar cases have been treated successfully by myself both abroad and here in Dorking County Hospital. It is the treatment which was used in the Berlin City Orphanage by Prof Finkelstein and L F Mayer.

The aim of the treatment is to prevent dehydration and make the patient afebrile. It starts with a short period of starvation, during which only weak cold tea sweetened with saccharin is given. (1) 1 dr (3.5 ml) is given every 5 minutes until vomiting has ceased for about 1–2 hours. (2) Tea is gradually increased (cold or warm) for no longer than another 8–12 hours. (3) Expressed breast milk is then given—12 g 2-hourly for 24 hours, and increased daily by 10 g until the 5th or 6th day. (4) 3-hourly feeds are then given, the amount required according to age and body weight.

As the mothers are ill also, I would advise sterilizing the expressed breast milk. If breast milk is not available buttermilk may be used. Unfortunately reliable brands of buttermilk are not always available, but it can be obtained by using the milk left over from making butter from sweet cream. This milk should be boiled with 1% flour and 3% sugar—I am, etc.

Dorking

K BRANDL

Cerebral Malaria in Great Britain

SIR—Drs J B Ryder and R T Towson (Nov 30, p 815) state that in the literature they have only found two cases of cerebral malaria in Great Britain recorded. In the *British Medical Journal* 1930, 1, 336, I reported the case of a gentleman aged 35 who had just returned from West Africa. He had a rigor for which he took 10 gr (0.65 g) of quinine. Instead of being better the next day he had a very severe head-

ache, and his temperature was still up. He called in a doctor who prescribed more quinine without effect. The headache became worse and worse, and vomiting set in. That night he was very delirious, with intense headache and frequent vomiting. Morphine gave him no relief. In the morning I was asked to see him as a case of meningitis. He was then semi-conscious, with a temperature of 103.6 F (39.8 C), pulse 112. His head was retracted and could not be moved forward. There was double Kernig's sign, and the toe reflexes were extensor. The abdomen was retracted, the spleen could just be felt below the ribs, and the liver was slightly enlarged. Some of the vomit during the night had been of coffee grounds character.

I came to the conclusion that the case was probably one of cerebral malaria, and had 10 gr of quinine hydrobromate injected into the buttock, and another 10 gr into the other buttock in two hours, and another injection in four hours. Soon after this the patient became perfectly conscious and free from headache and vomiting. He was given an intramuscular injection of 10 gr twice a day for the next three days, and had then quite recovered. This case illustrated the fact that quinine by the mouth is no good in cerebral malaria.

Since then I have seen post mortem a child of 2 who had returned from India, where she had had malaria. She was taken ill one morning about 8.30 with headache, had a rigor with a temperature of 104° F (40° C) and became comatose at midday, she died at 4 in the afternoon. Malarial parasites were found in the blood after death—I am, etc.

Henfield

WALTER BROADBENT

Dental Anaesthesia after Coronary Thrombosis

SIR—Like Dr F Barnett Mallinson (Dec 14, p 921), and I am sure many others, I could not agree with your correspondent that a person recovering from a coronary thrombosis was a normal anaesthetic risk. Dr Mallinson has suggested treatment which should ensure the patient against any mishap or untoward occurrence, and I doubt if safer treatment could be suggested. However, I venture to point out that it is most unlikely that a hospital patient would be afforded the opportunity to have teeth extracted a few at a time in this way, and so a different regime must be laid down as a routine treatment of a not uncommon condition.

The requirements during this anaesthetic are that the patient should be well oxygenated at all times, that the anaesthetic should be smooth, and of course that the required plane of anaesthesia should be reached but not passed. In your issue of June 17, 1945, I mentioned a technique that I had used considerably on very bad risk cases with complete success. This is quite applicable to out-patient dentistry and, I consider very suitable for the case in point. No sedative premedication is given, though atropine sulphate 1/100 gr (0.65 mg) is probably indicated. With the patient in the dental chair a syringe of 5% 'pentothal' (thiopentone) is strapped to the arm after the needle has been introduced into a vein. Before any 'pentothal' is given the nose-piece of a gas and oxygen apparatus is applied to the face while 100% oxygen is run through the machine. Only when the patient is breathing this smoothly is the 'pentothal' run in. This is given slowly speed depending on the severity of the risk, but the respiration must not be allowed to get shallow, and so the patient will remain a good colour. When unconsciousness has supervened the gaseous mixture is altered so that the oxygen percentage is reduced and replaced by nitrous oxide. With a bad risk this must not go below 50% at first, and some lose their full pink colour at this stage. Others, such as the convalescent coronary case, will rapidly tolerate 25% or 20% oxygen. Further injections of 'pentothal' or alteration of the gaseous mixture are made as and when required but it must be realized that it is better to give more 'pentothal' than to cause any degree of cyanosis. With out-patients the minimum of 'pentothal' will be given, and so the maximum use will be made of the nitrous oxide, consistent with the patient remaining a good colour. With in-patients this is less important but it must be remembered that as a group they are a different type of case. In this way a few dental extractions can be made after only 3–5 ml of pentothal.

Speed during the preliminary stages of the anaesthetic should not be aimed at. The safety of the patient is the only thing

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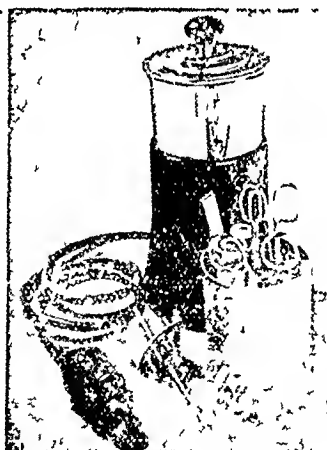
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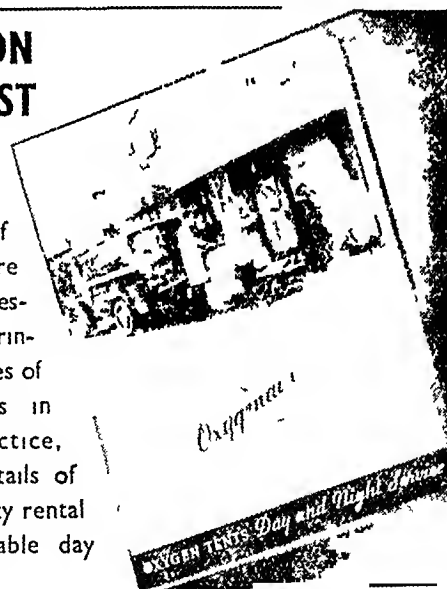
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that matters, and speed may well lessen this. Once they have reached the stage of surgical anaesthesia by this gradual process, very gravely ill patients will stand a prolonged anaesthetic very well provided there is no need to take them into the deeper planes. Frequently I have seen their blood pressure rise appreciably during 60 to 90 minutes of such anaesthesia.

This regime requires no special skill and no special apparatus—it can even be done with foot cylinders providing oxygen is used. There is no need for an operating theatre or to admit the patient and so I feel that it should be mentioned in the treatment of this and similar cases. I have used this technique now on so many bad risk cases, especially during the war that I feel that anyone who is not on the point of death can be taken to the first plane of the third stage with safety and when I heard a few days ago at the anaesthetic section of the RSM of a grave risk case that did not survive a 1 ml dose of "pentothal" I came away feeling that had oxygen been given first the result might well have been different—I am, etc.

Emsworth

H B C SANDIFORD

Postgraduate Education

SIR—I was pleased to read the letter of Dr J Maclean Smith (Dec 14, p 921) in which he pays tribute both to the warm welcome which was extended to the medical officers of the British Pacific Fleet by our colleagues in Australia and to the postgraduate educational opportunities provided out there. I have no doubt that there are many others who like Dr Smith, are grateful for having had experience of such postgraduate instruction. While in Australia as surgical consultant to the BPF I was invited to become a member of the Postgraduate Committee on Medical Education of the University of Sydney and was able to attend a number of meetings at which the excellent work being done for postgraduate education by this committee became very apparent to me.

The correspondence tuition to which Dr Smith refers was conducted by senior members of the teaching staff who devoted much care and attention to it and was supplied to medical officers away on service stations such as New Guinea and the Pacific Islands. It was much appreciated and is an idea which might well be given consideration here. Many medical officers from this country on far-away stations have adequate enthusiasm and much time on their hands and would no doubt welcome something like the Sydney correspondence courses. In Melbourne and Sydney, and indeed throughout Australia and New Zealand, postgraduate medical education has reached a high standard of efficiency. I should like to take this opportunity of again expressing thanks to our colleagues in Australia and New Zealand for all their kindness to those of us, who were out there with the Fleet, and in joining with Dr Smith in hoping that friendly postgraduate teaching within the British Commonwealth will long continue and progress—I am, etc.,

Cardiff

LAMBERT ROGERS

Venereal Disease Control

SIR—I read with rising alarm the article (Nov 30, p 825) by Lieut-Col R R Willcox on 'Some American Ideas on Venereal Disease Control'. I could not help feeling that this eminent venereologist viewed these American methods favourably, and was without saying so explicitly seeking to further them in this country. As a medical officer of health I am naturally anxious to secure that transmissible diseases are kept under control by all reasonable methods but I think that there is a general tendency at the present time to lose sight of wider ethical considerations in trying to achieve immediate administrative results. Interference with the liberty of the subject can scarcely be too much curtailed and the idea of compulsory investigation for venereal disease before marriage cannot, I think, be too strongly deprecated.

Even the risk that a relatively small number of people may infect others with a dangerous complaint should not be allowed to stampede us into further restrictions upon civil liberty, particularly at a time when the profession as a whole is trying to maintain its freedom against those who desire to enslave us, for the sake of perfectly laudable immediate results—I am, etc.

Weston-super-Mare

CYRIL G EASTWOOD

Errors in Diagnosis

SIR—During the last six months I have had no fewer than four cases in which diagnosis of anxiety neurosis and nervous dyspepsia had been made, and which turned out to be (1) gastric ulcer, (2) carcinoma of stomach, (3) carcinoma of stomach, (4) advanced pulmonary tuberculosis. All these cases had been attending hospitals over a period of some years.

My contention in writing this letter is that too much attention seems to be paid to patients' neurotic symptoms rather than to seeking some organic cause. The diagnosis of nervous dyspepsia or anxiety neurosis is too easily made. Further investigation—x-ray examination—should, I feel, be made in all cases complaining of dyspepsia to exclude new growth. I have for some years now made it a rule that any patient complaining of dyspepsia for more than four weeks should go to hospital for x-ray investigation—I am, etc.,

Willesden

L SHELDON

Treatment of Ingrowing Toenail

SIR—I was rather surprised to see in the *Journal* of Oct 19 (p 589) Lieut-Col J C Leedham Green's letter recommending as a simple and most satisfactory procedure that old-fashioned method of paring the nail with a piece of glass. Anyone who will try it will agree that it is a most tedious and unsatisfactory procedure. Years ago (in 1914) an American surgeon described a new method which is so simple that any doctor can easily do it under local anaesthesia, and the result is excellent and permanent. He pointed out that "ingrowing" is a misnomer, as the nail does not start growing sideways. What happens is that the toe irritated by the pressure of the shoe against the edge of the nail gets bigger, as anyone can see, so that often the nail gets partly embedded in the toe.

The logical thing to do is at the same time the simplest and best. A good wedge should be cut out of the side of the toe cutting right down to the bone. The inflamed edge near the nail is left severely alone but not so much should be cut out that the edges of the wound cannot be brought together without tension. A little 1% 'novocain' is all that is required for anaesthesia. Two or three stitches and a gentle pressure bandage complete the simple operation. Sufficient tissue should be cut away that the nail may again rest comfortably on top of the nail bed instead of seeming to grow into it. A few days in bed is advisable for rapid healing.

The relief is wonderful and the result as a rule permanent if the operation has been performed *lege artis* but if not enough flesh has been removed it is quite easy to remove some more at a second sitting and sometimes the inside may be treated as well in the same way till a nice small toe is obtained protected by the nail as intended by nature. It is really surprising that this operation is not yet being universally taught, as it is so logical, simple and effective—I am, etc.,

Rustenburg Transvaal

S J D ESSER

Advertising Patent Medicines

SIR—In the *Journal* of Dec 7 (*Supplement* p 150) the report of a debate by the Hunterian Society quoted one doctor as stating that £90 million a year was spent on the advertising of "patent medicines". In the recently published report, *Statistics of Advertising* which was based upon inquiries carried out by the National Institute of Economic and Social Research on the initiative of this Association, the figure of expenditure by manufacturers on the advertising of patent and proprietary medicines, tonic wines and rupture appliances in 1935 was £4822 000, almost exactly the figure which Mr Mortimer quoted for 1938 in respect of the Press only. The Institute's computation however comprises Press, outdoor, and radio advertising and represents 74% of total advertising expenditure directed to the final consumer in that year. It should be noted moreover that the medicines, etc., the advertising of which represented £48 millions excluded all products where the ratio of advertising cost to sales was under 3%. In computing these figures the Institute has indicated the possibility of considerable margins of error, of the order of 10% to 20%.

The Advertising Association is now planning to collect systematic statistics *inter alia* in relation to proprietary advertising. One object will be to eliminate the considerable margin

of error which may exist in the figures for particular categories, such as patent medicines and toilet preparations. The statistical investigation recently concluded provides a most useful starting point to a continuous statistical system. Meanwhile, deductions from the present figures should be drawn with caution. It would be fair to add that the fact of a proportion of advertising expenditure of 25% or more in relation to sales is by itself no measure of the relative merits or demerits of the preparations advertised. The great bulk of this type of advertising is subject to a considerable measure of supervision in one way or another, but the Association and its affiliated bodies recognize that the existing standards of restraint require to be made more explicit, more concise, and more uniform. We believe we are making progress to that end with the general support of professional bodies, such as the British Medical Association, who have been consulted—I am, etc.,

J L HENDERSON

London EC4

Director and General Secretary
Advertising Association

Amenorrhoea during Internment

SIR—I have just read Dr Anne Sydenham's article (Aug 3 p 159) on 'Amenorrhoea at Stanley Camp, Hongkong, during Internment'. It is interesting to recall a somewhat similar condition when the Japanese first occupied Ipoh, seven weeks before the fall of Singapore. In spite of the chaos I was able to see about 30 cases of amenorrhoea, especially among young unmarried girls. There were then numerous cases of rape and conditions were most uncertain. Food however, was not so very difficult to get owing to stocks left over by the British. Nearly all the cases started menstruating again without any treatment after 4-5 months, when conditions were slightly more settled. I would put the cause of all these cases to emotional shock—I am, etc.,

Ipoh

GOH TEIK WAH

Pay of Pathologists and Bacteriologists

SIR—I very much regret that my letter provoked the thought that I consider a specialist to be of higher prestige than the GP—at least this would appear to be the case on reading Dr G Behr's letter (Dec 14, p 919). Having been a GP myself I can assure Dr Behr that in my opinion there is no higher prestige than that of the family practitioner's which, however, does not alter my contention that the present salaries paid to pathologists and bacteriologists are little short of outrageous.

If a GP earns, say, £1,500 per year (and a doctor is capable of doing so within a year or two of qualification) then the pathological specialist should be paid accordingly—i.e., a similar sum. I do not think this unreasonably 'rebellious'. I hold no brief for a salaried medical service, but sometimes I wonder if such a service is the only means by which the "junior" pathologist will be freed from a most unjust system of remuneration—I am, etc.,

LABORATORY DOCTOR

Diet and Canine Hysteria

SIR—Allow me to congratulate you on the publication of Sir Edward Mellanby's article (Dec 14 p 885) and your excellent leading article thereon (p 903). For some years now the veterinary profession have realized the importance of a toxic substance or toxic combination in diet as being a direct and positive cause of specific hysteria, so called 'Fright's disease' or 'running fits' and Sir Edward's contribution has gone a long way to narrowing down the possible causes. As you indicate the next step is to study the result of feeding agenzized wheat gluten to dogs and if this fails to produce the disease, then to study the effect of the agene process on all or part of the vitamin B complex.

M B Richards, in the *British Medical Journal* (1945 1, 433) describes a pyridoxine deficiency in suckling rats whose dams had received a high aneurine content. In *Nature* (1946 158 306) she records that in the experiment described above she observed but did not report that fits were not manifested in litters where dams received national wheatmeal flour 85% extrac-

tion instead of white flour. I understand that in this part of the country during the war it has not been normal practice to apply the agene or any bleaching or improving process to flours of high extraction rate, and it is possible that Mellanby's work would throw fresh light on Richards's experiment.

By the same token the next interesting step would be to feed pyridoxine with diets known to be capable of producing hysteria, and if this prevents the disease the problem will be further elucidated. The veterinary profession has known for a long time that certain batches of dog food are capable of producing hysteria, and I have access at the moment to a bag of dog food which will produce hysteria in less than a week from the time feeding is commenced. I have had some pyridoxine on order for some months which I hope to receive shortly, and propose using it as a therapeutic on dogs fed on a known hysteria producing diet. Mellanby's article indicated that rats were not affected but it may well be that the hysteria syndrome is only manifested in adult rats when the toxic factor is present in large quantities, and small quantities can only be demonstrated in suckling rats whose dams have been fed on a hysteria producing diet.

With regard to the human aspect of the problem I do not think the new facts necessarily present a grave problem, as there is no doubt that pre-war experience demonstrated that the toxic factor was much greater in dog biscuits than in bread—even white bread—as evidenced by observation of kennels of dogs fed on both these diets. On the contrary I have frequently seen hysteria developing in kennels where ship's biscuits (emergency lifeboat rations) were fed and I have very infrequently seen hysteria follow feeding with 'brown bread'. Any complete set of experiments would require to take into account the high temperatures associated with baking.

Sir Edward's description of the fits is excellent, and it is a matter of some importance that in specific hysteria the dog's nervous condition is not normal between fits. I would like to issue a word of warning here. In the past, as indicated in the article a multiplicity of causes were implicated as being responsible for hysteria and this was not without some reason. Conceding that specific hysteria occurs as described and is caused by a toxic factor in food it must be recognized that hysterical attacks clinically indistinguishable from those described do occur due to the virus of distemper in dogs that have had no hysteria producing foods. In the past two years outbreaks of distemper of a very virulent type have frequently been ushered in by typical hysteria to be followed later by the more common distemper symptoms. It may be that the virus creates a set of circumstances whereby larger quantities of an accessory food factor are required than is normal analogous to the increased demand for biotin in rats given avidin.

Another interesting feature whereby a virus appears to have an antivitamin effect occurs in distemper in puppies between the ages of 2 and 4 months. Such animals develop the condition described by May Mellanby as dental hypoplasia even while large quantities of vitamin D are given during the disease. Mellanby produced this condition in the disease free puppies by diets deficient in D and it might be that in distemper there is a failure to assimilate D because of associated bowel catarrh. Or again it may be that the requirements are greatly increased by the action of the pathogenic agent. I have tried the effect of radiation by ultra-violet light in such cases but in practice there are difficulties in carrying this out and results have been inconclusive. The question could be readily solved by the experimental method. An investigation of such altered vitamin requirements would probably indicate the way to their more rational therapeutic use—I am, etc.,

Glasgow

WM L WEIPERS

Dr George Gunn, MBE FRCS, of Crowborough, Sussex who died on April 3, 1946 left £10,189. Dr W S A Griffith, CBE FRCP, FRCS, of Haslemere, Surrey, who died on Feb 26, 1946 left £79,989. After various legacies he bequeathed one third of the remainder to St Bartholomew's Hospital for the development of the obstetrical and gynaecological department to perpetuate the name of Dr Matthews Duncan and one third to the medical college. Dr Howard Henry MC MD, of Debenham Suffolk who died on June 24, 1946 left £14,564. Dr A B Murray of Birnfi who died on Oct 13, 1946, left personal estate in England and Scotland valued at £45,850.

Obituary

Dr DORIS MARY RINGROSE died at West Park, Leeds, on Nov 7 at the age of 46. She was educated at George Watson's Ladies College, Edinburgh and graduated M.B. Ch.B. at Edinburgh University in 1923 taking the D.P.H. the following year. She worked in general practice until 1926, when she settled in Leeds and married Mr H. T. Ringrose, the pioneer of automatic firedamp alarms in mines. The principle of this device has recently been applied to the continuous indication of anaesthetic vapour concentrations. In 1930 Dr Ringrose resumed her medical work and until her illness was employed by the West Riding County Council and the Batley Corporation on antenatal and child welfare work. During the war she served on a medical board for recruitment to the women's Services. She also took a great interest in industrial medicine. She was a woman of truly high ideals, of great kindness of heart, and she was a very loyal friend. Her death came as a great shock to all those who knew her and she will be greatly missed. *She leaves a daughter who is still at school and a son now studying medicine at Cambridge.*—H. F. H.

Dr GEORGE LOCKE, of Hastings, died in retirement at Sedlescombe, on Nov 19, at the age of 93. A native of Aylesbury, Dr Locke qualified L.R.C.P. Ed. in 1881, took the L.S.A. in the same year, and the M.R.C.S. in 1886. He spent his early years in general practice in Princes Risborough and later in London. In 1893 he settled at Hastings, where he practised until his retirement in 1930. A man of wide interests, Dr Locke took a keen and energetic part in local affairs. He was appointed a Justice of the Peace in 1906 and sat regularly on the Hastings Bench until shortly before the war. He was also vice chairman of the old school board and chairman of the local branch of the Royal Surgical Aid Society, a post he held for many years. His greatest pleasure and interest was in the St John Ambulance Brigade, which owes him a deep debt of gratitude for his devotion to its development. For his part in this work he was made a Commander of the Order of the Hospital of St John of Jerusalem, an honour of which he was justly proud. Dr Locke was a member of the British Medical Association for forty years and took a prominent part in the activities of the Hastings Division, which he represented at the Annual Representative Meetings in 1912, 1913 and 1921. He was president of the Sussex Branch in 1918. He was also an ex-president of the East Sussex Medico-Chirurgical Society. Dr Locke is survived by a son and three daughters. Mrs Locke died nineteen years ago and his second son was killed in the first world war.

With the death of Dr IZSET MEAD HAYTHORNTHWAITE at the age of 87 at King's Langley, Herts, on Nov 24, one more link is severed with the days of women's emancipation. She in 1886 being the second woman to receive the triple qualification of Edinburgh and Glasgow. Engaged by the Zenana Bible and Medical Mission, she took postgraduate training in Vienna in midwifery and diseases of the eyes and ears attending, among others, the clinic of Prof. Politzer. In 1887 she was house-surgeon at the New Hospital for Women (which stood on the present site of Marblebone Station) under Dr Elizabeth Garrett Anderson and after that went to India. For five years she worked in the Lady Kinnaird Hospital for Women and Children with Miss Haskey (now Mrs Birket) to whose efforts the building of that hospital was largely due. In 1892 she married the Rev. J. P. Haythornthwaite and this, with a trip to New Zealand, put a term to regular medical work, but while in Agra 1893-1911 as wife of the Principal of St John's College she found ample opportunity to minister to the families of missionaries as well as having five children of her own. In 1915 her eldest son was killed in action in France and she, though by now getting old, somewhat infirm and suffering from the disability of a malunited fracture of the wrist and running a home with little help, did her best to fill a place in the depleted ranks of doctors serving the civilian population. During 1915-18 she filled the posts of clinical assistant at the Garrett Anderson Hospital for three months, six months as resident medical officer at the Nayland Sanatorium, filled a short gap at the Rosa Morrison Home of Recovery at Barnet, was for three years visiting physician at the Four Boroughs maternity clinic and first doctor to the King's Langley antenatal clinic. Predeceased by her husband by many years she leaves three children, two of them doctors in India, who mourn the loss of a personality of more than ordinary character, ability and sweetness.

Dr WILLIAM MURRAY, who died at Hesse on Nov 29, was a native of Montrose, he studied in the University of Edinburgh, graduated in 1891 and took the M.D. in 1895. After being house surgeon at Tottenham Hospital, he went to sea for three years in the service of the P. & O., and then came to Hesse in partnership with the late Dr Fraser, whom he later succeeded. He was a member of the Hull Medical Society and of the B.M.A. from 1895 till the day of his death, being chairman of the East Yorkshire Division in 1924-25. For many years he was honorary medical officer to the Hull Seamen's and General Orphanage and devoted much time and thought to the interests of that charity and to the well-being of the children. In 1903 he joined the Territorial Army and reached the rank of lieutenant colonel in the 2nd Northumbrian Brigade, R.F.A. He was officer in charge of the Central Hospital in Hull until it was closed down. Dr Murray retired from practice in 1937, but on the outbreak of war again interested himself in lecturing to the St John's Ambulance and in other professional activities. He will be greatly missed by a host of ex-patients and personal friends in Hesse and the surrounding district. Everyone admired his wide learning, his phenomenal memory, and his powers as a raconteur, but perhaps his most endearing characteristics were his unfailing cheerfulness and his keenness while at work or play. He was a good horseman, a pioneer motorist, and a fisherman to whom the mysteries of flies and fish were an open book.

Dr ROBERT LEE MOORE, J.P., died at his home in Bangor on Nov 30. For over half a century Dr Moore carried on an extensive practice in Bangor. He was a skilful family doctor with a real interest in the welfare of his patients. A native of Belfast, he was educated at the Royal Belfast Academical Institution and at Liverpool, qualifying in 1890. He was closely associated with the Bangor Hospital from its beginning as a small cottage hospital, and was a life governor of the present hospital. He had an inexhaustible fund of stories about old Bangor personalities and events, and he was an authority on County Down folklore and dialect. In his youth Dr Moore was a noted Association football player and athlete, and throughout his long life his love of sport continued. He was a member of the Royal Ulster Yacht Club and a life member of Bangor Golf Club. A prominent and highly esteemed figure in the Masonic Order, he occupied most of its important offices. He is survived by his wife, three daughters and two sons, one of whom is Dr B. P. L. Moore, clinical pathologist to the Mater Hospital, Belfast. A third son died in Java while a prisoner of war in Japanese hands.

Dr GEORGE STEWART CLARK, of Edinburgh, who died on Dec 17, had been school medical officer for Midlothian and Peebles from 1924 until his retirement early this year. He had previously held a similar post at Roxburgh for four years. Dr Clark graduated at Edinburgh University, and was for two years assistant medical officer at the Edinburgh City Hospital. For six months he was junior assistant to the Professor of Public Health, Edinburgh University, and for one year senior assistant medical officer at Monsall Hospital, Manchester. He worked under the Edinburgh education authority for nearly eleven years as assistant medical officer, and had served for four years with the R.A.M.C. Dr Clark, who was 72 years of age, is survived by his widow and a son and daughter.

Dr JOHN FLASBY LAWRENCE WHITTINGDALE, the doyen of the medical profession in Dorset, died on Dec 11. It is given to few men to have so many years of life and so many years of active professional work. Born at Thornton in Lonsdale on Oct 6 1858, he was educated at Richmond School and at Gonville and Caius Cambridge. He qualified at Edinburgh in 1883 and became house-surgeon to Prof. John Chiene and afterwards to Sir Halliday Croome at the Lying-in Hospital. He did two trips as surgeon to the P. & O. Company, being shipwrecked off Trincomalee. After a year as assistant in Maidstone Dr Whittingdale came to Sherborne in 1889, where for fifty years he was actively engaged in one of the largest medical practices in the county. He held the appointments of public vaccinator and parish medical officer to two large districts, was medical officer to Sherborne School, to Sherborne School for Girls, the post office, and the almshouse. During the whole of his active life he was surgeon to the Yeatman Hospital and on his retirement was elected consulting surgeon and vice-president of the hospital. For fifty years he was a mainstay of the Dorset Division of the B.M.A., regularly attending all meetings. He held all the offices in succession both in the Division and in the Branch. From 1914-18 he was Chairman of the Local Medical War Committee and occupied this position in the early days of the recent war until ill health

compelled him to retire. He was at one time much occupied in local affairs and served as chairman of the Sherborne UDC. Interested in apiculture he was for many years chairman of the local beekeepers association. A lifelong devotion to field sports occupied his scanty leisure. He was lamed permanently by a hunting accident in 1896, but shot and fished until his eightieth year and had a profound knowledge of game birds and fishes. It is remarkable that a man so fully occupied with medical practice in a wide district could still manage to be interested in and find the time for so many other activities. He will be greatly missed in Sherborne and by the profession in Dorset.

The late Dr HARRY ATKIN DUNKERLEY was born on Dec 26, 1883 son of John Whiteley Dunkerley, LDS, a founder of the Manchester Dental Hospital. Educated at the Central High School and Victoria University, Manchester, he graduated MB, ChB in 1912. As a student, being unable to take part in outdoor sports, he took keen interest in the RAMCV, and was in the 2nd Western General Hospital, reaching the rank of staff sergeant, RAMCT. After four years as a colliery surgeon he returned to Manchester in 1917 and was in practice there for 22 years. Glaucoma in 1925 resulted in blindness of the left eye, he also had myopia to a high degree. Progressive myopia and large scotomatous areas in the visual field of the right eye eventually made it impossible to discharge professional duties efficiently, and through help from the National Insurance Defence Trust he was enabled to retire in 1939 after an overwhelming struggle against affliction in later years of active professional life.

Dr VIKTOR POLLAK, who died suddenly on May 7 this year, was born at Rokicany, Austria-Hungary, on March 18, 1884. After his schooling in Prague he entered the University there, graduating MD in 1908. The following six years he spent in hospital appointments in Prague, Vienna, and in the Austrian Army. He was assistant to such famous men as Yaksch, Schauter, and Knopfmacher. Immediately before the first European war he was working with Wertheim. He was surgeon in the Austro-Hungarian Army throughout the 1914-18 war, serving with distinction on the Russian and Italian fronts. After the war he set up in private practice in Vienna, largely among women and children. After twenty years' busy and valued work he had to flee his beloved Vienna in 1938, to find refuge first in Prague, then in England. For the last four years he held a responsible post on the staff of the North Middlesex Hospital. A colleague writes. It is remarkable what a warm place Viktor Pollak won in all our hearts. How bravely he faced the difficulties of new work in a strange land—difficulties which would have daunted many a younger man. To say he adapted himself to his new work would not be accurate—he did up to a point, and then all around him joyfully adapted their ways to his. His English was emphatic and picturesque and well became his distinguished, rather military bearing. He was, by the way, very proud of his soldiering in those far-off days before the first war in the old Austro-Hungarian Army. He often looked back wistfully to the old empire. It was good to hear him talk of the medical giants of Vienna—he had worked with men who knew them all—Billroth, Czerny, Mikulicz. Pollak took a great pride in his work—many a time he was chaffed in the mess about some diagnosis only to be vindicated in the operating theatre or post-mortem room. His accurate clinical accounts were often embellished by the most excellent sketches of the condition found. These rapid vivid drawings were the envy and joy of his colleagues. He died as he would wish, in harness with no warning, having won the love and admiration of all who worked with him.

We report with regret the sudden death on Aug 19, at Montego Bay, Jamaica, of Dr EUGENE DE MONTEVIN GIDEON, formerly MOH of St James, a position he recently relinquished to become medical superintendent of West Indies Sugar Estates, Ltd, a division of Tate and Lyle, Ltd. Born in 1885 he was educated at Bedford Grammar School and at Toronto University, graduating MB with honours in 1907. Returning to England he took postgraduate courses at the London and at the Queen Charlotte Hospital, obtaining the MRCS, LRCP in 1908. After a few years in private practice he entered the Jamaica Medical Service and was medical officer of the Buff Bay district for many years. During this period he was selected by the Government to represent Jamaica at the British West Indies Medical Conference at Georgetown, British Guiana, in 1921. He practised in partnership with his brother, Dr Cyril Gideon, in Kingston for a short time, and acted as MOH for the Kingston and St Andrew Corporation before taking up his duties at Montego Bay. Eugene Gideon

joined the BMA in 1909 soon after qualifying and was an active member up to the time of his death. He held office as a member of council from 1932-9, was chairman of the obstetric section, and was elected president of the branch in 1934. By his wise counsel, his tact, and his felicity of speech he rendered invaluable service to the Association, and did much to bring about happy solutions of the many problems which the local branch had to face in its dealings with the Government. His presidential address on 'Fraternity in Medicine' was an appeal to the members to improve social and professional relations, and with his charming manner and engaging personality he was himself a brilliant example of the precepts he advocated in this respect. He was seen perhaps at his best when he presided at a dinner given in honour of the late Lord Moynihan in 1935, and in the same year at a reception for the visiting members of the Pan-American Medical Association. He did splendid work, too, when the then General Secretary the late Dr G C Anderson, visited Jamaica in 1939. Dr Gideon was a man of outstanding professional ability, loyal to the profession which he loved, and sympathetic always to his colleagues and friends. The medical profession and indeed, the whole island have suffered a great loss by his death.—G I L

Wing Cmdr H M Stanley Turner writes. It was with deep regret that I heard of T S RIPPON'S death (Dec 14, p 922). We were associated for many years, and he was one of my officers in the Middle East. He has a unique claim to fame in that he must undoubtedly be regarded as the father of the Royal Air Force Medical Branch. At the time the Royal Air Force was constituted as a separate Service in 1918 the question arose as to whether it should or should not have its own separate medical service. It was Rippon who made out an overwhelming case for a separate medical service, and the subsequent history of the R A F Medical Branch has fully justified this claim, both in the intervening period between the two wars and especially in the war recently ended. Rippon had a very shrewd, scientific mind which foresaw clearly the highly specialized work which a R A F Medical Service would be called upon to undertake and the lines of research which as the Service developed, must necessarily be followed. He was a delightful colleague with whom to work, with a quaint sense of humour which never failed even under the most adverse circumstances, and he is entitled to a niche as one of the pioneers in aeronautical medicine, a branch which even to-day is only in its infancy. Those of us who knew him well will always regard him with respect and affection.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

The following candidates have been approved at the examination indicated

FINAL MB.—Part I (Surgery Midwifery and Gynaecology). H D Alexander P S Andrews W E C Astle C P Atkin A P C Bacon W H Barker H B Barlow J G Bennette H C H Bird J P Bull D B Cathcart D Cooper H W Cornford J D Cox C H K Daly M C Edmond J B C Eveleigh A W Ferguson J Fiddess N B Finter D K Ford J A S Forman W D Foster J M Frew J H Garson R G Gibbs A W Halliday B Hardie M Harington R E D Harvey Samuel C W Hollingsworth D A P Hunt, J S Jenkins, W P Kelly N Kennedy C C Kenred Smith H B Kidd F R Lambert T C Langdon D D La Touche D N Lawson M G H Lewis J E MacIver E V Mackay K M McNicol G C Manning I A Macnott, R Marshall R K Mason W T S Moore D C Morley P C S Panton T G Osmond D S Paine J P Paul J K P Perera A Pines R C S Panton A I D Prentice I R D Proctor R H B Protheroe P K Pybus E T Roberts R H C Robins A W Robinson M G Rolfe A J Russell J D Scott J G H Shaw, E Sherrah Davies E P H Shortt W Spector M P Spence G W Sykes N Tate K C G Taylor M B Thompson P G Trehearne G G Walker A P Waterson J D Whitby M E E White J S W Whitehead Women J M Cockrell J Crossley P E Davis Mrs B M Eley L A Farquharson A D Fuller J K Goodacre H A Jaques I Kane Mrs P D Kilner R M Licence Mrs M R Simpson S G Willis Part II (Principles and Practice of Physic Pathology and Pharmacology). A V Adams R J Alcock M S Aldridge T W Backhouse A P Baker C P Bennett E M M Besterman D A L Bowen G T F Braddock D C Bradford D W Burnford A O Chase J M Childs P W S Coghill J Crossley A J Denby E B Davies G H P Drake E H Eason R D Eastham J A Elliott P A Emerson J Fiddess G R Freedman J H H Glynn T C Hallinan R Hodgkin son K G Irving I S M Jones B T Kieft J G Kilner C S Kirkham D N Lawson M H Lessof A D R MacAuslan J A McDonald A G MacLay J McMillan E D Marsh H E S Marshall R Marshall J G Mathewson D G Miller R H B Mills J J Morland K S Murray A G Norman D O'Brien T C L Parry F G Patrick A Pines E Pringle I R D Proctor G Raperport R H C Robins W J B Rogers J F F Rooney P W Rowse R A Ryan D Seymour E S O Smith M F Smith J H Steeds J P Stephens W M B Strangeways J E H Stretton, A D Thomson J C Ward D J Watt W B Webb M E E White R H L Wolfson Women Mrs E W Higgins G F Jacob S M McNeile, N J Pease

UNIVERSITY OF LONDON

The title of Professor Emeritus of Surgery in the University has been conferred on G Grey Turner LL.D. M.S., F.R.C.S. on his retirement from the Chair of Surgery, which he has held at the British Postgraduate Medical School since 1934.

The title of Professor Emeritus of Physics in the University has been conferred on Sydney Russ, D.Sc. on his retirement from the Chair of Physics which he has held at the Middlesex Hospital Medical School since 1920. He is succeeded in the Chair of Physics by J. E. Roberts D.Sc. Ph.D.

Mrs Meave Kenny M.D., F.R.C.O.G., has been appointed to the University Readership in Obstetrics and Gynaecology tenable at the British Postgraduate Medical School from Oct 1 1946.

The following candidates have been approved at the examination indicated:

ACADEMIC POSTGRADUATE DIPLOMA IN MEDICAL RADIOLOGY—P. E. S. Palmer, W. Pimblett, M. P. Shapiro. Part I: V. Berman, E. B. Brennan, T. Chopping, J. M. Corall, P. M. Davies, J. Dawson, H. F. T. Deane, A. Greig, T. Holroyd, C. H. Kitchen, M. J. Meyer, R. O. Murray, D. H. Nelson, W. D. Nichol, J. H. O'Connell, R. H. Owen, B. Prasad, C. Stuart, P. Teitmar, A. Volpowitz, M. C. Wood, W. B. Young.

UNIVERSITY OF MANCHESTER

The following candidates have been approved at the examination indicated:

FR. AL. M. B. CH. B.—Joan Hampson (second-class honours), C. J. T. Archer, Kathleen Burn, H. S. Coulsting, Dorothy Davies, Vera A. Dearden, O. G. Lodge, C. J. Glancy, A. B. Haward, J. B. Howard, S. T. Lunt, J. Needoff, E. L. Peel, N. W. Preston, Kathleen Rampling, A. E. Snellswell, Lorinda Wallace, Joan M. Waterfall. Part I: Sheila A. Costello, F. J. Davies, A. Kinsey, J. E. Barry, S. L. Royce, P. Wolf, K. S. Holt.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

The following Hunterian Lectures will be delivered at the College Lincoln's Inn Fields, W.C. on Thursdays at 5 p.m.: Jan 9, Prof. J. B. Macalpine 'Growths of the Renal Pelvis and Ureter', Jan 16, Prof. R. H. Franklin, 'Congenital Atresia of the Oesophagus', Jan 23, Prof. H. A. Haxton 'Regeneration after Sympathectomy and its effects in Raynaud's Disease', Jan 30, Prof. John Hawkins 'Movement of the Diaphragm after Operation'. The lectures are open to those attending courses in the College and to all other medical practitioners and advanced students.

A course of lectures in ophthalmology will be held at the College and will be given as follows: Jan 20, at 3.45 and 5 p.m.; Jan 21, at 3.45 and 5 p.m.; Jan 22, at 3.45 and 5 p.m.; Jan 23, at 3.45 and 6.15 p.m.; Jan 24, at 3.45 and 5 p.m.; Jan 27, at 3.45 and 5 p.m. The fee for the whole course is £5 5s. Fellows and Members of the College and Licentiates in Dental Surgery will be admitted on payment of a fee of £3 3s. Applications, accompanied by a cheque for £5 5s. or £3 3s. should be sent to the assistant secretary, Royal College of Surgeons of England, Lincoln's Inn Fields, W.C.2.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH

The annual meeting of the College was held on Dec 5 when Dr D. M. Lyon was re-elected President. Drs W. D. D. Small, S. P. Davidson, J. D. S. Cameron, H. L. Wallace, I. G. W. Hill and D. K. Henderson were elected to form the Council of the College for the ensuing year. Dr W. D. D. Small was nominated Vice President.

SOCIETY OF APOTHECARIES OF LONDON

At a recent meeting of the Court of Assistants with Dr C. T. Parsons Master in the chair the announcement of the death of Sir Walter Langdon Brown, Honorary Freeman of the Society, was received with great regret. Dr J. P. Hedley was reappointed as the Society's representative on the General Medical Council.

Common Hall was recently called to discuss the proposal to admit medical women to the Yeomanry and Liver of the Society. The result of the vote was reported to the court, which has decided that medical women shall be admitted.

The Diploma of Mastery of Midwifery was awarded by examination to J. G. Hunt.

The Diploma in Industrial Health was granted by examination to F. H. Tyrer and J. B. Lyne.

The Diploma of L.M.S.S.A. was granted upon examination to the following successful candidates: I. J. R. Musson, H. F. Goldmar, H. M. Price, J. O. Kelsey, G. A. May, A. H. J. Whitehouse, H. Freeman, J. A. Sodipo, R. M. Holmes, T. C. McC. G. H. G. H. S. L. O. Jackson.

FACULTY OF RADIOLOGISTS

The following candidates have satisfied the Board at the recent examination for the Fellowship: R. J. Keating and G. S. M. (Radiodiagnosis).

The Services

Lieut.-Gen. Sir W. P. MacArthur K.C.B., D.S.O., O.B.E., retired pay, to be Colonel Commandant, R.A.M.C., in succession to Lieut.-Gen. Sir James Hartigan K.C.B., C.M.G., D.S.O. retired pay, who attained the age limit for the appointment on that date.

Surg. Cmdr. R. H. Enoch R.N.V.R., has been awarded the R.N.V.R. Officers' Decoration.

The following officers have been mentioned in dispatches in recognition of gallant and distinguished services in Malaya in 1942: Col. J. M. Mitchell, O.B.E., Lieut.-Col. L. T. Pearson, Lieut.-Col. (Temp.) W. J. L. Neal, O.B.E., M.C., Lieut.-Col. (Acting) E. G. Hardwood and W. G. Kennedy, Majors K. F. Alford and L. Feinholz, Major (Acting) S. G. Nardell, Capt. Arora, O. F. Campbell, A. K. Marwat and A. Roy, and Assistant Surgeons R. R. Braganza and G. McG. J. Hartley, I.A.M.C.

Medical News

Dr Innes Pearse will speak on the Peckham Health Centre at a meeting of the London Association of the Medical Women's Federation in the Hastings Hall of B.M.A. House on Tuesday, Jan 7 at 8.30 p.m. The next meeting will be held on Wednesday, Feb 5 when Miss D. J. Collier will speak on the influence of war experience on everyday ear and throat treatment.

A meeting of the Faculty of Homoeopathy will be held at the London Homoeopathic Hospital, Great Ormond Street, W.C. on Thursday, Jan 9 at 5 p.m., when Dr Tatiana Hardy will give an address on Allergy.

The London Council of Social Service (7, Bayley Street, Bedford Square, W.C.1) has arranged a conference on 'Special Forms of Catering for the Aged Invalids and Infirm' to be held at Bonnington Hotel, Southampton Row, W.C., on Saturday, Jan 18, at 10.20 a.m., with Lord Amulree M.D., F.R.C.P., in the chair.

The Central Office of Information (Montagu Mansions, Crawford Street, W.1) has designed an exhibition for the Ministry of Labour and National Service, the Ministry of Health, and the Ministry of Pensions entitled 'And So To Work' which will be open on the exhibition site in Oxford Street, London W., on weekdays from 11 a.m. to 7 p.m. from Jan 8 to Feb 1 inclusive. The exhibition will show the rehabilitation and resettlement of the disabled from hospital to training centre and so to work, and demonstrations will be given by physiotherapists, occupational therapists, and remedial gymnasts. Questions will be answered by experts at the information centre in the exhibition.

An Ethiopian Exhibition of arts and crafts, the first of its kind in England, will be held for a fortnight from Jan 20 under the auspices of the Princess Tsehai Memorial Hospital Council at Fovle's Bookshop, Charing Cross Road, W.C.2. Lectures on the Ethiopian language, literature, Church, etc., will be given; the exhibit will include specimens of the fine and applied arts, photographs and children's drawings. The committee would be grateful for the loan of further exhibits.

A meeting of the Association of Industrial Medical Officers will be held at the London School of Hygiene and Tropical Medicine, Keppel Street, W.C. on Friday, Jan 24 at 4 p.m. At 5 p.m. on the same day there will be a joint meeting with the School Medical Service Group of the Society of Medical Officers of Health when the subject for discussion will be 'The Change from School to Industry', to be opened by Drs A. A. E. Newth and T. A. Lloyd Davies. On Saturday, Jan 25 at 10.20 a.m. Mr R. H. Young will give an address on 'The Diagnosis, Pathology and Treatment of Intervertebral Discs' illustrated by a colour film.

Messrs. Boos have endowed for seven years a research fellowship of £1,000 per annum at St. Mary's Hospital. The board of management of the hospital and the council of the inoculation department have elected R. E. B. Hudson M.B., B.S. to be the first Boos Research Fellow.

Messrs. Butterfords Wellcome and Co. announce the adoption of a five-day week for their London offices and warehouse. Until further notice an emergency staff will be in attendance on Saturday mornings at 12, Red Lion Square, W.C.1 (Tel. Chancery 6621) from 9 a.m. to 12.20 p.m., to deal with urgent orders.

Mr Joseph Cunningham F.R.C.S., F.R.A.C.S., and his wife Mrs Annie Broomhall Cunningham M.B., have given the house and ground of Broome Park, Beaconsfield, Bucks, to the Electrical Industries Benevolent Association as a home for old people to serve as a memorial to their son James Ernest Cunningham, who was killed in a road accident in 1941.

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Dec 14

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year for (a) England and Wales (London included) (b) London (administrative county) (c) Scotland (d) Eire (e) Northern Ireland

Figures of Births and Deaths and of Deaths recorded under each infectious disease are for (a) The 126 great towns in England and Wales (including London) (b) London (administrative county) (c) The 16 principal towns in Scotland (d) The 13 principal towns in Eire (e) The 10 principal towns in Northern Ireland

A dash — denotes no cases a blank space denotes disease not notifiable or no return available

Disease	1946					1945 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever Deaths	31	3	25	—	1	44	2	19	—	1
Diphtheria Deaths	328	16	87	33	14	575	46	153	79	19
Dysentery Deaths	68	13	16	4	—	313	44	49	4	—
Encephalitis lethargica, acute Deaths	—	—	—	—	—	1	—	—	—	—
Erysipelas Deaths	—	—	51	9	3	—	42	17	3	—
Infective enteritis or diarrhoea under 2 years Deaths	63	7	14	36	1	42	5	8	39	19
Measles* Deaths	6 957	243	318	50	219	619	42	106	167	4
Ophthalmia neonatorum Deaths	43	3	10	—	—	68	6	15	—	—
Paratyphoid fever Deaths	5	1	(B)	2(B)	—	1	—	—	1(B)	—
Pneumonia (influenza)† Deaths	693	62	12	6	6	969	69	4	4	1
Pneumonia primary Deaths	22	2	2	—	—	69	6	1	1	1
Polio-encephalitis, acute Deaths	—	—	—	—	—	2	—	—	—	—
Polomyelitis acute Deaths	14	—	2	5	1	10	2	1	1	—
Puerperal fever Deaths	—	3	7	—	—	—	4	10	—	—
Puerperal pyrexia† Deaths	148	8	16	1	—	113	5	10	—	—
Relapsing fever Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever Deaths	1,392	101	332	35	41	1 753	168	307	22	49
Smallpox Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid fever Deaths	7	1	—	5	1	6	—	6	4	—
Typhus fever Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough* Deaths	1 664	96	273	57	40	1 195	86	65	42	5
Deaths (0-1 year) Infant mortality rate (per 1 000 live births)	495	61	69	—	11	423	61	49	49	9
Deaths (excluding still births) Annual death rate (per 1 000 persons living)	5 297	887	649	—	127	5 775	907	684	218	109
Live births Annual rate per 1 000 persons living	9 440	1464	1102	—	279	6 672	875	824	364	257
Stillbirths Rate per 1 000 total births (including stillborn)	296	42	39	—	—	213	21	33	—	—

* Measles and whooping-cough are not notifiable in Scotland and the returns are therefore an approximation only

† Includes primary form for England and Wales London (administrative county) and Northern Ireland

‡ Includes puerperal fever for England and Wales and Eire

It is still not possible to publish the return of births and deaths for Eire for the weeks ended Oct 26 Nov 2, 9 16 23 30, Dec 7 and 14

EPIDEMIOLOGICAL NOTES

Neonatal Diarrhoea

The only other outbreak since our report of last week (Dec 28 p 1009) is at Stoke-on Trent

At the beginning of December the 30-bed maternity unit there had to deal with some 35 cases. During the first week of December two of these mothers complained of diarrhoea and by the end of the second week nearly a dozen infants were affected. In the infants the onset was explosive and there have now been four deaths. The four infants were perhaps a week old when the diarrhoea began, in each case the condition terminated fatally after ten or fourteen days. Altogether 10 mothers, 36 infants and 2 members of the staff appear to have been affected. Bacteriological investigation has not as yet revealed any causative organism. Clearly this outbreak is very like the one at Oxford. It has been of moderate severity with a case fatality rate not nearly so high as that in the Leicestershire outbreak.

There have been no further developments in Leicestershire and at Oxford and Preston the maternity units have now reopened.

Discussion of Table

In England and Wales an increase was recorded in the notifications of measles 491 and scarlet fever 115, and there was a decrease in the incidence of whooping cough 119.

An increase in the incidence of measles was recorded throughout the country, the largest rises were Kent 119, Yorkshire North Riding 109 and Essex 88. In contrast to the general trend large decreases were recorded for Buckinghamshire 103 and Northumberland 92.

The rise in the notifications of scarlet fever was mainly contributed by the West Midland counties the largest increase was Warwickshire 30. Small increases in the number of cases of whooping cough were noted in most counties, the largest variations in the local trends were an increase in Lancashire 41 and a decrease in Yorkshire West Riding 30.

There was an outbreak of diphtheria in Lancashire Orrell UD where the notifications rose from 1 to 29. A fall in the incidence of diphtheria was recorded in London 15 and Durham 10. London had 13 (Chelsea 6) cases of dysentery.

In Scotland increases were reported in the notifications of measles 93 and whooping-cough 26 while a decrease was recorded for scarlet fever 28. An increase of 10 in the incidence of diphtheria occurred in the city of Glasgow.

In Eire the chief features of the returns were decreases of 23 in cases of diarrhoea and enteritis and of 30 in cases of whooping-cough. The returns for diarrhoea and enteritis were the lowest since the end of August.

In Northern Ireland a further increase of 40 was recorded in the outbreak of measles in Belfast CB.

Quarterly Return for England and Wales

The birth rate during the September quarter was 19.7 per 1 000 and was the highest recorded for any quarter since 1921. Infant mortality was 35 per 1 000 live births and was the lowest rate ever recorded, being 7 below the average for the third quarters of the ten preceding years. The general death rate was 9.3 per 1 000 which was 0.3 above the corresponding quarter of 1945 but 0.5 below the average of the third quarters for 1940-4.

Week Ending December 21

The notifications of infectious diseases in England and Wales during the week included scarlet fever 1,201, whooping cough 1,586, diphtheria 242, measles 7,728, acute pneumonia 741, cerebrospinal fever 29, dysentery 62, acute poliomyelitis 13, paratyphoid 6, typhoid 4.

A Ministry of Health Circular (230/46) to local authorities points out that under the terms of the National Health Service Act the Minister becomes responsible, from the day appointed for its operation, for the provision of hospital and specialist services as defined by section 3 (1) of the Act. In general the Regional Hospital Boards will administer these services, and regulations will be made under section 68 (1) transferring officers employed immediately before the appointed day "solely or mainly at or for the purposes of any hospital transferred to the Minister under the Act (other than teaching hospitals)" to the Boards. The officers referred to include (a) those employed at central offices or elsewhere in the authority's hospital service, as well as (b) those on the staff of individual hospitals. Authorities are asked to provide particulars, not later than Jan 31 1947, of officers in the former class, whom they consider likely to be liable to transfer, excluding officers of the mental hospital and mental deficiency services, who will be the subject of a separate inquiry.

Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Umbilical Swelling

Q—A male child was born apparently healthy but separation of the cord was delayed and a fleshy finger of tissue remained protruding from the umbilicus. Now three months later all that is visible is a small rounded knob which has a somewhat cystic appearance. The umbilicus however weeps continually and sometimes there is a slight flush around it suggesting inflammation. Is it safe to use silver nitrate to cauterize the umbilicus or is there any danger of eroding a Meckel's diverticulum and producing a faecal fistula?

A—The first point to determine is whether the constant weeping is or is not due to the presence of a fistula. Since there is no faecal discharge there can hardly be any opening of the vitello intestinal duct but one must remember that occasionally the opening of a patent urachus may be found at the umbilicus. It is not stated whether the swelling is bright red in colour, if it were so one might be dealing with the small denoma which is sometimes found at the umbilicus in young infants. The most likely explanation is that the swelling is a granuloma which ought to develop into fibrous tissue if the parts are kept clean and aseptic. It is unlikely that the application of silver nitrate would do harm, but perhaps the shrivelling up of the tumour might better be obtained by painting with a solution of alum or dilute formalin. If, however the condition persists, it should be dealt with by a competent surgeon who would make quite sure of the deep relations of the swelling.

Pigmentation in Pregnancy and Lactation

Q—A patient of mine had marked pigmentation of the face particularly over the eyebrows and round the mouth when she was pregnant. Now that the baby is seven months old (breast-fed) the pigmentation is a little lighter but still persists. Can anything be done about it?

A—All authorities agree that there is a tendency to pigmentation during pregnancy. It is suggested that this is due to expansion of the melanophores or pigment-bearing cells of the skin probably in response to a hormone derived from the posterior pituitary. The most severe and distressing form—chloasma gravidarum—affects the face in the form of yellow or bronze patches. Ballantyne J W and Browne F J (*Trans Edin Obstet Soc* 1919, 40 74) showed that blondes and brunettes are equally liable to this affection thus disposing of the commonly held idea that such pigmentation occurs mainly in those whose skins are dark.

The pigmentation of the face generally clears up within a few months of confinement. De Lee J B (*Principles and Practice of Obstetrics* 1940 seventh edition Philadelphia), states that it tends to disappear when the menses are re-established but mentions that it may persist for years. This particular patient may therefore expect improvement when lactation is discontinued. No treatment seems to be of any avail but the judicious use of cosmetics and possibly of the newer preparations which are supplied in the form of a flat cake applied with a damp sponge may help to cover the dark patches and thus alleviate the patient's distress.

Menstrual Mollimina

Q—A woman of 30 with one child of 2 years has had for the past five months flooding of thin almost colourless fluid at her periods. After the third day the loss becomes gradually normal in colour amount and consistency. Is there any explanation or treatment for this condition?

A—The fluid is probably the natural secretion of the tubal body of uterus and cervix—one or all. This secretion is at its maximum in the days preceding the onset of the menstrual flow proper and to a limited extent is a normal phenomenon. Thorough examination is indicated to exclude erosion of the

cervix chronic cervicitis and any lesion causing pelvic congestion. If the findings are negative it is doubtful whether any treatment is necessary apart from simple measures to reduce pelvic congestion. Saline aperients active physical exercise and cold baths might help.

It would be interesting to know if this patient shows during the premenstrual phase signs of abnormal fluid retention—increased weight oedema and a sensation of abdominal swelling. If so it is just possible that the discharge might be part of the general excretion of previously retained fluid which usually occurs at the onset of menstruation in such cases. If this is so, then restriction of the intake of fluid and sodium salts for seven to ten days before menstruation is indicated.

Vitamin A Concentrates

Q—How can vitamin A be supplied to a boy showing signs of A deficiency who is allergic to both milk and fish?

A—Vitamin A concentrates which do not contain fish oil (e.g., 'carotene tabloid', each tablet of which contains 4,500 i.u.) are available. Foods which are good sources of vitamin A and their contents per 3½ oz (100 g) are as follows: spinach 5,000 i.u., carrot 2,000 i.u., tomato 14 to 16,000 i.u., cabbage 960 i.u., and orange juice 3–400 i.u. Animal livers are also good sources of vitamin A containing from 2–45,000 i.u. per oz (30 g) depending on the type of liver (*Hutchinson's Food and Principles of Dietetics* 1941 p 112).

Increase in Tuberculosis

Q—What were the notifications of all forms of tuberculosis (pulmonary and non-pulmonary) for the years 1939–45? What is the explanation of the increase if any?

A—The figures for 1945 are not yet available. The notifications for the six years 1939 to 1944 were 25,355, 26,260, 28,966, 29,560, 30,121, and 30,044. The number of persons not notified before death but dying of tuberculosis during these years were 2,901, 3,395, 4,383, 3,971, 3,780, and 3,468. The introduction of mass radiography with the consequent earlier discovery of the disease was at first thought to account for the rise but this suggestion cannot explain the persistent higher incidence and there has undoubtedly been an increase in tuberculosis. This increase is generally attributed to the conditions of life during the war but it is impossible to assess the relative importance of the factors such as black-out and lack of ventilation long hours of work, diet etc. which may have contributed.

Rainbow Haloes

Q—A patient aged 65 has been seeing rainbow haloes around lights—the red outside the violet inside—with each eye separately with both eyes and with or without glasses. There is no question of glaucoma or cataract. What is the explanation?

A—Any structure within the eye which acts as a diffraction grating will produce a rainbow-like halo with the red outside and the blue inside. This may equally be produced by a layer of cells or by droplets of fluid. These two types of halo may be differentiated by passing a stenopæic slit slowly across the pupil. In the former only sectors of the halo diametrically opposed to each other will be seen which give the appearance of rotating as the slit passes across the pupil. The latter type of halo remains circular and only varies in intensity with the movement of the slit. Haloes may be due to physiological changes in the corneal epithelium and endothelium lens opacities and possibly fibrillary intersections of the vitreous or to mucus, blood pus, or small air bubbles in the lacrimal secretion or other material on the surface of the cornea or also to oedema of the deeper layers of the corneal epithelium due to glaucoma or photophthalmia from exposure to ultra-violet light.

The diameters of haloes vary, and when measured from the point of origin of the causal incident light the yellow ring of a lenticular halo subtends 6° to 7°. The ring due to material on the surface of the cornea is large—up to 14°—and of course disappears when the cornea is cleaned. A halo without differentiation in colour is common in normal eyes under ideal conditions.

Treatment of Syphilis

Q—*The wife of a G.P.I. has a strongly positive Wassermann reaction but no clinical signs of syphilitic infection. How should she be treated?*

A—With the somewhat meagre details available this question is difficult to answer. We should like to know the age of the patient and her obstetrical history, whether she is past the child-bearing age, and whether there have been any miscarriages. Assuming that the patient is syphilitic but has no cardiovascular lesion and has passed the menopause everything depends on the state of her cerebrospinal fluid. If this is completely negative (Wassermann, cells protein, and colloidal gold reaction) it seems doubtful if any treatment is necessary. As an insurance one or two courses of bismuth each year for a few years might be worth while, each course to consist of ten weekly injections of 0.25 g of an insoluble salt. On the other hand if the fluid is positive, and more particularly if the pathological changes are well marked, active treatment is indicated without delay. This should consist of penicillin and fever therapy—preferably artificially induced malaria. At least 4 million units of penicillin should be given by intramuscular injection, either in doses of 40 000 units three hourly or in doses of 300 000 units twice daily, the malaria should be induced by injection of infected blood and about twelve paroxysms allowed before it is terminated. The follow-up should include examination of the cerebrospinal fluid every six months.

Chemotherapy and Appendicitis

Q—*Now that we have unlimited penicillin and a large range of sulphonamides what is considered the best treatment for acute perforated appendicitis and general peritonitis? Should penicillin be given and which sulphonamide is advised in what dosage (assuming operation has been carried out)?*

A—The answer to this question is implicit in the bracketed phrase at the end of the paragraph. The treatment of acute perforated appendicitis and general peritonitis is still the operation of appendicectomy followed by nasal suction drainage of the upper alimentary tract and adequate fluid and salt replacement by the intravenous route. Penicillin and sulphonamides have added to this management only in slight degree. The systematic administration of penicillin will prevent certain of the pulmonary complications of peritonitis and will control any septicaemic manifestations. This is true even when the dominant peritoneal organism is penicillin resistant, for the metastatic lesions in the chest may well be due to a secondary and penicillin-sensitive infection. Penicillin given systematically does not appear in great concentration in the peritoneal cavity, and if given locally it will be inactivated by the penicillin resistant coliform organisms which complicate peritonitis in its later stages. The soluble sulphonamides may be given by way of the intravenous drip, it has not been clearly shown that the local application of sulphonamides to the peritoneum at the time of operation reduces the mortality significantly. *Str. faecalis* is highly resistant to penicillin and for bacterial stasis of this organism the concentration of penicillin required is difficult to obtain in the peritoneal cavity.

Ultraviolet Irradiation Without Goggles

Q—*Can a carbon arc sunlight lamp be used with safety at say 2 ft (60 cm) from the face for five to ten minutes on alternate days without protective goggles provided the eyelids are kept closed?*

A—If the "carbon arc sunlight lamp" in question does not produce more than a first-degree reaction on the face under the stated conditions, there is no need to wear goggles provided the eyes are kept shut. There always exists the possibility of producing—with the same dosage—a second degree reaction of the more delicate skin of the eyelids. The resulting discomfort and oedema of the loose tissues are easily avoided by smearing the eyelids with cold cream or zinc oxide ointment before irradiation.

Incidentally, it is more effective and more aesthetic to treat the face in two halves with the lamp not directly in front of the patient but over to one side. This can be achieved by making the patient face the lamp and then turn the head through 45° one way, then the other, for the same exposure.

Letters and Notes

Panophthalmitis After Cataract Operations

Dr J T MACLACHLAN (Glasgow) writes: I am of opinion that if Lister's antiseptic technique is employed in operations on the eye panophthalmitis and other complications would not arise. Dr William MacKenzie the famous Glasgow oculist, devised over 100 years ago an excellent antiseptic lotion for diseases of the eye. MacKenzie's lotion consists of bichloride of mercury 1 gr (65 mg) chloride of ammonium 6 gr (400 mg), coccus cacti (cochineal) 1½ gr (100 mg), Aq 6 oz (170 ml). Of this lotion a little—about a spoonful—is diluted with equal parts of warm water, and the eye bathed several times daily with a piece of linen or sponge and the head tilted back and some of the lotion allowed to run into the eye. If MacKenzie's lotion were used several times daily for one week before operation and for some time after the operation, I believe septic complications would not arise. To prevent haemorrhage in the eye after operations for cataract, if the blood pressure is high it can be safely reduced to 120 by giving "liq. trinitrin" 1 or 2 min (0.06 or 0.12 ml) along with some spirits of sweet nitre some time before and after the operation.

Definition of Health

Mr PATRICK SLATER writes: The *Oxford English Dictionary* authorizes the use of the word 'health' to indicate a variable state. I have never known anyone take etymological exception to the question: 'How is your health?' or to qualifying 'health' with such adjectives as excellent, good, indifferent or poor. Indeed, until some qualifying words are added an individual's health remains undefined. Moreover the World Health Organization the Ministry of Health the United States Public Health Service, etc., do not limit their terms of reference to states of complete physical, mental and social well being. If as a result of the decision of the World Health Organization the word "health" is henceforth to be applied only to such a state may I ask: Has the word any connotation whatever? What comprehensive term if any applies universally to all the observable conditions which approximate to or deviate from this perfect state? How can their decision be enforced?

Notes from Russia

Dr W P FORREST, chief medical officer of the UNRRA Mission to the Soviet Ukraine sends us the following medical news from Kiev. The late Prof Alexander Bogomoletz, whose work on the antitreticular cytoxic serum was outlined in this *Journal* (1943, 2, 203), has been succeeded as President of the Ukrainian Academy of Sciences by Alexander B. Palladin, a member of the Ukrainian Byelorussian and USSR Academies of Sciences and of the All Union Academy of Medical Sciences. Palladin has written over 150 scientific papers, and has founded many institutes and societies. His latest work is on vitamins and the biochemistry of muscular action. The son of Prof Bogomoletz is now director of the famous Kiev Institute of Pathological Physiology. Academician V P Filatov is once more installed in the partially reconstructed Filatov Ophthalmological Institute. He has arranged to do several articles in English on tissue therapy in ophthalmology and leprosy. There is an enormous demand here for literature to replace the medical libraries, which were almost completely destroyed by the invaders. Not only are old journals and books required to replace those lost, but recent and current books and journals are more than welcome. They can be sent c/o the UNRRA Mission to the Ukraine, or to I F Kononenko, People's Minister of Health Kiev, Ukrainian SSR.

Corrections

In the article headed "Classifying Causes of Death" (*Journal* Dec 21, 1946, p 957) the chairman of the Medical Advisory Committee Sir Ernest Rock Carling, should have been described as formerly Dean of Westminster Hospital Medical School.

A misprint occurred in the article by Dr A J Suchecki on "Allergic Reactions to Penicillin" (*Journal* Dec 21, 1946 p 938). Under the subheading "Review of the Literature" the word "included" in the second line from the end, should read "excluded".

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: ALLERGY, WESTCENT LONDON. ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone. Authors desiring REPRINTS should communicate with the Publishing Manager, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1 on receipt of proofs. ADVERTISEMENTS should be addressed to the Advertisement Manager, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1 (hours 9 a.m. to 5 p.m.) TELEPHONE: EUSTON 2111. TELEGRAMS: ARTICULATE, WESTCENT LONDON. MEMBERS' SUBSCRIPTIONS should be sent to the SECRETARY of the ASSOCIATION, TELEPHONE: EUSTON 2111. TELEGRAMS: MEDISCEA, WESTCENT LONDON. B.M.A. SCOTTISH OFFICE: 7 Drumsheugh Gardens, Edinburgh.

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THE VALUE OF PENICILLIN IN SURGERY

BY

G A G MITCHELL, OBE, ChM

Penicillin is the nearest approach to the ideal antiseptic yet discovered, and its value can scarcely be overestimated. But it has limitations, quite apart from the physical and chemical properties which hamper its preparation and administration. Only certain organisms are susceptible to it (although, fortunately, the sensitive group includes the majority of organisms of particular interest to the surgeon), and even these may not be inhibited or destroyed unless the drug is properly used and the appropriate ancillary treatments given. Good surgery is still essential, and the lavish expenditure of any chemotherapeutic agent will not purchase an indulgence for therapeutic sins.

Penicillin has now been tested in most of the likely and many of the unlikely conditions, and the literature abounds with records of its successes in small groups of selected cases, usually treated without contrasts or controls. Reports on large groups of surgical cases are almost confined to battle casualties because, until just over a year ago, the bulk of the world production of penicillin was devoted to the treatment of the Armed Forces of the Allies. The countless casualties provided a grim but instructive surgical surfeit, and many Army surgeons did not fail to utilize their unexampled opportunities. The figures quoted below are obtained from such sources.

Value of Penicillin in Prophylaxis

Penicillin, being more active and much safer in use, is a better prophylactic agent than the sulphonamides against the common pyogenic and anaerobic infections, but this theoretical superiority is unlikely to be exploited generally until simple oral methods of administration are perfected for use as aerosols in operating theatres or wards to prevent air-borne infections will be impossible until supplies become ample, although it may be employed more economically in the form of nose and throat sprays as Knott and Blaikley (1946) have suggested in an attempt to prevent infections produced by staphylococcal and streptococcal carriers. The penicillin pastilles recommended by MacGregor and Long (1944) and the tooth pastes or powders devised by Powell and Colquhoun (1945) may also be employed to combat the development of buccal, faucial and dental infections, but these methods have more medical than surgical applications and need not be further discussed.

So far penicillin has been given large-scale prophylactic trials only in battle casualties. All the dangerous pathogens commonly found in war wounds are penicillin-sensitive, and if penicillin can be maintained in contact with them in suitable concentration for a sufficient period of time these organisms should be inhibited or destroyed by the combined

effects of the drug and the normal body defence mechanisms. This knowledge was exploited through all stages of the campaign in NW Europe. Casualties were given parenteral or local penicillin, or both, at the most forward surgical levels as soon as practicable after wounding, and once a course of penicillin was started it was continued, no matter how or where the patient went, until a surgeon had decided that the treatment could be terminated or until the patient had been evacuated to an E M S hospital in the U.K. The preparation and administration of penicillin solutions and powders under active service conditions were not easy, and it was feared that complications due to penicillin-insensitive contaminants might be frequent. Actually, such contretemps were astonishingly few considering that at least 100,000 soldiers received penicillin treatment (Mitchell, 1945), and, apart from some impure batches which produced needless pain and irritation, penicillin justified in every way the remarkable claims made for it by Fleming, Florey, Cairns, and others. Reports from all sources contained comments on the marked absence of severe sepsis and the reduced incidence of all wound infections, and although better facilities, better surgery, better communications, and other factors deserved credit, few doubted that penicillin was the dominant factor in the control of infection—formerly the greatest single problem in war surgery.

Bacteriological Evidence—The clinical improvement was unquestioned, and confirmation was provided by bacteriological investigations (Porritt and Mitchell, 1946). In the Middle East campaigns "no growth" reports on the first wound swabs taken after admission of casualties to hospital were most uncommon. Thus in a series of 100 consecutive personal cases investigated in No. 1 Orthopaedic Centre, M.E.F., in 1942, a positive culture was obtained in every case. In the NW European (B.L.A.) campaigns of 1944-5, "no-growth" reports on wound cultures were common, and staphylococcal, and particularly streptococcal, infections were relatively uncommon (Porritt and Mitchell, 1946). Thus 268 out of 560 wound swabs taken from casualties who had nearly all received prophylactic penicillin gave "no growth" on culture. The findings are contrasted in Table I.

TABLE I

Organisms Isolated	M.E.F. Casualties	B.L.A. Casualties
Strep. cocci	68% (57% haem.)	5% (2% haem., 2% anti-haem.)
Staphylococci	55% (46% aureus)	22% (11% coag. — 5% coag. — 9% no details given)
Clostridia	23%	2%
Proteobacilli	16%	10%
Coliforms	6%	—
Proteus	1%	—
No growth	—	57%

In both the above-quoted series the infections were usually mixed, so the percentages merely give an indication of the incidence of the various organisms in the wounds. And it must be recorded that penicillinase was not employed in many of the cultures, so it is probable that a number of false negatives were obtained. Nevertheless, these laboratory findings confirmed the clinical impression that the great majority of the wounds were cleaner than were those commonly seen in former campaigns. Incidentally it is interesting to recall that in the war of 1914-18 haemolytic streptococci were the predominant pathogens (Fleming and Porteous, 1919).

Factors Influencing Results—Clearly it would be very important to discover the reason for the improvement, and after consideration of all possible factors influencing the occurrence of infection in wounds there is no doubt that the widespread prophylactic use of *both* parenteral and local penicillin at the most forward surgical levels in the NW European campaigns was the principal factor in producing the improved results. Time does not permit discussion of all these factors—nature of wounds and missiles, degree of contamination, terrain, climate, time-distance factors, resuscitation, anaesthesia, primary surgery, pre- and post-operative care, etc.—which do influence the state of wounds, but two common misconceptions must be corrected: (1) that the surgeons of 21 Army Group (the combined British and Canadian Armies constituting the so-called B.L.A.) were all specially experienced, and (2) that the time-distance factors were much more favourable in Europe than elsewhere.

1 The majority of the surgeons, anaesthetists, and transfusion officers who landed in Normandy in June, 1944, had no previous experience of field surgery, and while their work was generally excellent it was no better, for example, than that achieved by the Eighth Army surgeons. Yet their results, as judged by the condition of the wounds, were much better.

2 Some have assumed that more favourable time-distance factors in NW Europe explained all the improvements, it being ignored or forgotten that men wounded in the same theatre in 1940, even before the final disastrous days, had shown no comparable absence of sepsis. Two time-distance factors require consideration: (a) the interval between wounding and primary surgery, and (b) the interval between the primary surgery performed in forward units and the secondary surgery done in hospitals. These in turn are related to important subsidiary factors such as rest, frequency of dressings, etc.

The first interval is the more important in respect of prophylaxis, and, although this may surprise many, it was not significantly different in the N. African, Italian, or NW European theatres, being 12 to 14 hours on an average.

The second interval was often prolonged in the desert, especially in the earlier phases, and this probably explained the almost universal occurrence of moderate to severe wound sepsis. Exhausting journeys, lack of rest, inadequate fluids, frequent pain, and the irrepressible tendency to change dressings in each medical unit on the line of evacuation, all led to inevitable infection. But this state of affairs did not always prevail. At Alamein, where the greatest desert battle was fought, the front remained static for weeks on end. At that time casualties were evacuated to hospitals more easily and rapidly than was often possible during the campaigns in NW Europe, and the Medical Services were as efficient as anywhere during the war, yet the wounds were all infected to a greater rather than a lesser degree when the patients reached hospital.

Air transport was not used in evacuating the wounded from the battlefield to the forward surgical units a few miles

behind and therefore did not influence the more important time-distance factor from the prophylactic point of view—that between wounding and primary surgery. It did influence the period between primary and secondary surgery, however, as from the time of Alamein in 1942 onwards air-ambulances were used increasingly between forward and base medical units. It was possible to obtain information about this interval from special surgical reports submitted by many of the surgeons in 21 Army Group hospitals. Thus, of 2,153 men who had wound sutures performed, 1,290 were operated upon within 1 to 7 days of having been wounded, and 863 were operated upon 8 days or more after they had been wounded. It was the general rule to suture nearly every wound within 1 to 2 days after the patient had been admitted, so it is obvious that about 40% of the casualties in NW Europe did not reach a hospital where secondary closure was possible until about a week or more after they had been wounded. From late 1942 onwards the average intervals in other theatres were not greater.

Penicillin v. Sulphonamides in Prophylaxis—Many surgeons are still undecided about the relative value of sulphonamides and penicillin in prophylaxis, and assume that because the former are of great therapeutic value in many conditions they must also be very effective prophylactic agents. The evidence, however, favours the view that they usually prevent spreading or generalized infections from wounds, but have no appreciable effect on the incidence or severity of local infections. This was well exemplified in the later desert campaigns. By then the administration of prophylactic sulphanilamide was extremely efficient and, although the spreading infections commonly seen in the pre-sulphonamide phase were comparatively rare, the great majority of the wounds showed evidences of active local infection. In the NW European campaign both penicillin and sulphonamides were used and there was a remarkable change for the better in the condition of the wounds. As the one completely new factor was the prophylactic exploitation of penicillin, it must be accorded most credit for the dramatic improvement.

An attempt was made to discover whether penicillin alone was as effective in prophylaxis as penicillin plus sulphonamides. Once the former was freely available it seemed to be unnecessary to give both if penicillin alone was equally effective, especially as the sulphonamides occasionally produced annoying or even dangerous complications. Casualties with comparable wounds were divided into two groups in forward surgical units. Except for the drugs employed these men were all treated alike, but one group received only the routine prophylactic doses of parenteral and/or local penicillin, while men in the other group were given both penicillin and sulphonamides. The wounds of these patients were carefully compared when they were first examined in base hospitals. In the assessment of infection four categories were used: 0 (none), + (slight), ++ (moderate), and +++ (severe). The results compiled from the reports of 17 surgeons are given in Table II.

TABLE II

Agents	Total Cases	Degree of Infection				Percentage 0 and +
		0	+	++	+++	
Penicillin only (parenteral and/or local)	497	298	165	28	6	93.1
Penicillin (parenteral and/or local) plus oral sulphonamides	480	275	159	37	9	90.4
Sulphonamides only (oral and usually local)	157	74	41	25	17	73.2
Totals	1,134	647	365	90	32	88.8

The number of severe infections was highest in the 'sulphonamide only' group, but most of these were in prisoner patients, and it would be misleading to compare them directly with the others. Study of the other groups shows that the men who received penicillin only did not suffer from the absence of a sulphonamide. Although the difference between the results is small, it is significant that a higher proportion of the men in the 'penicillin only' group received parenteral penicillin, suggesting (a surmise confirmed by personal investigations) that this group contained a higher proportion of men with severe wounds, these being the ones more likely to receive parenteral penicillin. Thus the interesting fact emerges that in this series of about 1,000 cases the men with the severer wounds received more prophylactic parenteral penicillin and had less infection. The moral of this and similar observations in many other cases is obvious: in order to secure maximum protection for those with severe open injuries penicillin should be used *both* parenterally and locally.

Anaerobic Myositis—The value of penicillin in prophylaxis, and possibly in therapy, is further confirmed by studying the figures for anaerobic myositis. The high incidence of this serious infection in the war of 1914-18 and in the disastrous struggle in 1940 gave rise to inevitable fears of a similar high rate when fighting was renewed over the same ground. The penicillin memorandum issued for the guidance of medical officers just before the invasion of Normandy in 1944 drew particular attention to the 'gas-gangrene prone' type of case and placed these patients in the highest priority for penicillin prophylaxis. The recommendations were interpreted generously, and the rate of penicillin expenditure was high, but the policy was justified by the results. In the desert campaigns MacLennan (1944) calculated that the incidence of gas-gangrene was 3.4 per 1,000 and in Tunisia 6.7 per 1,000. Jeffrey and Thomson (1944) estimated that the rate in Italy was not less than 10 per 1,000. It is unknown whether the above figures include cases among prisoners. In NW Europe the incidence in Allied troops (Porrirt and Mitchell 1945) was 1.5 per 1,000, and, although no exact figures are available, it was very much higher in enemy troops. Incidentally, it is worth noting that sulphonamides were used freely by the Germans both in prophylaxis and in therapy. The death rate in cases in NW Europe was also exceptionally favourable, being 21.5% in Allied troops—the lowest recorded mortality in any large series of cases. The actual figures for the entire campaign in NW Europe are given in Table III.

TABLE III—*Anaerobic Myositis Cases treated by 21 Army Group Surgeons D Day (June 6 1944) to V E Day (May 8 1945)*

Categories	Cases	Deaths	Percentage Mortality
Allied troops	251	53	21.5
Prisoners	113	59	45.1

The existence of many variables in wounds sustained and treated in the field renders the exact assessment of their individual importance difficult or impossible. But the one really new factor in the NW European campaigns was the widespread prophylactic use of penicillin both parenterally and locally, and in any reckoning it must be accorded a good deal of the credit for the diminished incidence and improved results.

I have deliberately focused attention upon the prophylactic value of penicillin because to date its therapeutic applications have secured almost all the publicity. Penicillin may produce brilliant results when established and hitherto moribund cases but it would be a better bet for the patient if less emphasis is placed on preventing infections or modifying their course. Here lies the greater promise of

penicillin in surgery—to abolish or reduce the incidence and severity of pyogenic and anaerobic infections by the judicious combination of surgery and penicillin.

Prophylactic Administration—In minor wounds local applications are usually adequate. The wound should be dusted with penicillin powder at the first examination, and this procedure may be repeated if necessary, but unnecessary dressings or interference should be avoided. In war wounds we used 5,000 Oxford units of penicillin per gramme, the diluent being sulphonamides or powdered plasma. For the average civilian case, which is treated sooner and is less heavily contaminated, a smaller concentration of penicillin should be adequate. In more severe wounds, particularly in those with much tissue damage, associated vascular lesions, retained foreign bodies, or open bone and joint injuries, penicillin should be used *both* parenterally and locally as soon as practicable after the accident—e.g., on admission to the casualty department of a hospital. For prophylaxis intermittent injections are most often used, and, depending on circumstances, dosages between 15,000 and 100,000 units per injection have been employed, the smaller doses are given three-hourly and the larger every five to six hours. The lower dosages should be sufficient in civilian practice. With the increasing availability of penicillin in slow-release vehicles, such as the oil and beeswax suspensions, these may be employed to reduce the number of injections and give more prolonged protection, they have the disadvantage that they are difficult to inject. Reliable and economical oral methods of administration have not yet been perfected. When they are they will become the method of choice except in those patients who have been exposed to great infective hazards or who show evidence of developing a fulminating infection. If the patient is admitted to hospital continuous methods of administration may be instituted from the start and the prophylactic administration may then merge into the therapeutic, the average daily dosage by this method is 100,000 to 120,000 units, and most practitioners will be familiar with the various forms of apparatus that may be employed.

Penicillin administration should be started at the first available opportunity and should be continued until the satisfactory state of the patient's local and general conditions shows that the danger of infection is past.

In patients with heavily contaminated wounds the initial prophylactic dose may be boosted up to 100,000 units, or, if continuous methods of administration are employed, 300,000 units may be given during the first 24 hours. The larger doses are specially indicated if there has been any delay in instituting treatment or if there are associated vascular lesions. The higher blood titre thereby obtained may produce an adequate penicillin level in partially devitalized or devascularized tissues but it is re-emphasized that surgery is still the main bulwark in these cases both in prevention and treatment. Unless there is some specific indication for their use, prophylactic sulphonamides may be withheld if penicillin is being administered.

Value of Penicillin in Therapy

An enormous volume of evidence has been published regarding the therapeutic value of penicillin in a wide variety of conditions. This being so, there is no need to add wood to the pile of well-established facts, and in any case one could not even summarize all the evidence within an hour. It will be more profitable to discuss an experiment (21 Army Group Memo, 1944) which was carried out by Army surgeons in an attempt to discover the relative value of different agents in eliminating or controlling wound infection. Surgeons were asked to treat alternate cases

(a) with penicillin and (b) with a contrast agent. To avoid complicating the issue, casualties with associated visceral, bony, or articular injuries were excluded. Apart from this, patients treated were consecutive and unselected, and they had wounds of the soft tissues of all grades of severity. The idea was that each surgeon would choose what he regarded as the best alternative to penicillin, and it was emphasized that, apart from the chemotherapeutic agent employed, every other controllable factor, such as surgery, diet, rest, etc., should be of equal quality, with no preferential treatment for any case.

Before describing the results it may be of interest to explain why this investigation was initiated. In the earlier stages of the war surgeons were frustrated by the prevalence of sepsis, and they soon discovered that secondary sutures, grafts, and plastic procedures, however desirable in theory, were not safe in practice. Despite various attempts to evolve improved methods of treatment this state of affairs persisted substantially unchanged until the pioneer work of Florey and Cairns (1943) and their collaborators showed in N. Africa that many wounds could be closed safely under the protective mantle of penicillin. By the time of the invasion of Normandy the much greater supplies of penicillin available permitted its widespread employment as a prophylactic agent. As a result at least 9 out of 10 wounds were clinically clean when they were first examined at base hospital level, and secondary closures became the commonest operations performed. They were carried out regularly and with impunity not only on clean wounds but on many which, in pre-penicillin days, would have been regarded as quite unsuitable for suture. This notable advance conferred untold benefits in the prevention of pain, in providing better functional and cosmetic results, in avoiding prolonged suppuration with consequent visceral damage, and in shortening convalescence. As Porritt, Debenham, and Ross (1945) commented: "The results achieved led to a saving of man-power, a reduction in wound complications, and an economy in hospitalization, in supplies of drugs and equipment, in surgeons' and nurses' time which it is quite impossible either to compute or to appreciate fully."

All this is now generally known, but when the medical plans were being made for the invasion of Normandy penicillin was merely a name to most surgeons. Preliminary reports about it were very encouraging, but many surgeons held that the case in its favour was unproved, since the earliest casualties treated had received preferential treatment—e.g., they had been retained in forward hospitals for longer periods than comparable casualties not treated with penicillin, and they had benefited from unusually specialized medical attention. It was therefore decided that the relative value of penicillin could not be assessed accurately until it was tried out on absolutely equal terms against other popular agents. This was the background behind the decision to initiate the investigation mentioned above.

The results proved the superiority of penicillin beyond reasonable doubt as Tables IV and V reveal.

TABLE IV—Results of Wound Sutures in 4432 Cases

Agents Used	Total Cases	Grade I		Grade II		Grade III		Percentage Grades I and II
		No.	%	No.	%	No.	%	
Penicillin local applications only	2 359	1 881	79.73	348	14.75	130	5.52	94.48
Penicillin local and parenteral	1 485	1,221	82.22	185	12.46	79	5.32	94.68
Penicillin, parenteral only	107	92	85.98	12	11.21	3	2.81	97.19
Sulphonamides local and systemic	141	88	62.41	30	21.27	23	16.32	83.68
Sulphathiazole-proflavine mixtures—local	183	99	54.09	51	27.88	33	18.03	81.97
Nil	157	114	72.61	25	15.92	18	11.47	88.53

The results may be shown more simply by contrasting the penicillin cases with all the others.

TABLE V

Agents Used	Total Cases	Grade I		Grade II		Grade III		Percentage Grades I and II
		No.	%	No.	%	No.	%	
Penicillin	3 951	3 194	80.84	545	13.79	212	5.37	94.63
Others	481	301	62.57	106	22.04	74	15.39	84.61

The wounds were assessed on a uniform standard.

Grade I (Success)—Wound healed and completely dry at the end of 14 days. This period was selected as sutures were often performed under some tension and then the stitches were not removed until the eleventh or twelfth day.

Grade II (Partial Success)—Wound incompletely healed at the end of 14 days (slight moistness, small gaps, mild stitch suppuration, etc.), but healed and completely dry at the end of 21 days.

Grade III (Failure)—Wound incompletely healed at the end of 21 days.

Anyone with experience would regard Grades I and II as successes for the delayed suture of war wounds, so both were included when computing the percentages in the final column. As originally planned the investigation should have provided results in almost equal groups of cases. In fact, they were unequal, and the reason was simple. Most surgeons became so impressed at a relatively early stage by the superiority of penicillin that, for the sake of the wounded, they abandoned the use of contrast agents. Despite this a clear answer was obtained to the problem under investigation. In this large series of cases treated by many different surgeons penicillin proved itself superior to all other agents tested. This result is more evident if the highest standard (Grade I) is regarded as the criterion of success, and the superiority of penicillin over the other agents becomes less evident if the standard is lowered and both Grades I and II are regarded as successes.

The results in the group of patients whose wounds were sutured without any adjuvant agent are interesting, but they cannot be compared strictly with the others as this group contained only minor cases. It represents what can be accomplished by unaided surgery in small clean wounds and it must be remembered that the wounds were clean when the patients reached hospital, because the men had probably received prophylactic penicillin in some forward surgical unit. On the other hand, the penicillin groups—and particularly those treated with parenteral penicillin—contained almost all the major wounds, yet these showed the highest standard of success. In the light of this knowledge the penicillin results appear to be still better.

Analyses of other features connected with these cases supplied the same answer—that penicillin had no serious rival—and, if time and space permitted, figures could be quoted relating to other injuries and diseases which all support the belief that penicillin is of supreme value. Time and space, however, are finite in medical if not in mathematical affairs, and perhaps the facts and figures I have given, together with those already known to you, will strengthen your belief that Fleming, by an inspired vision discovered what had seemed until then a biological impossibility—the almost perfect antiseptic.

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A REVIEW OF THE DIETETIC FACTORS IN LIVER DISEASE

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II—THE APPLICATION OF NUTRITIONAL PRINCIPLES IN TREATMENT*

Acute Necrosis of the Liver

Acute necrosis of the liver is an anatomical diagnosis which cannot be made with certainty without biopsy or necropsy. Usually, however, we must rely on the indirect evidence of acute hepatic insufficiency. Jaundice is intense and the serum bilirubin rises to 20 mg per 100 ml or higher. The patient is critically ill with delirium, stupor, coma, and up-going toes. There are ascites, oedema, purpura, and occult blood in the stools. If we confine the terms "acute necrosis" and "acute hepatic insufficiency" to such cases—and I believe we shall make no therapeutic advance until we establish rigid criteria—we shall find ourselves dealing with a hepatic disorder which is uncommon and which has a mortality of 50 to 100%. From a sample analysis of death certificates carried out for the Jaundice Committee of the Medical Research Council by Dr W. H. Bradley and Dr Percy Stocks in 1944 (unpublished report), it appeared that there were approximately 400 deaths a year from acute hepatic insufficiency, of which only about 8% were toxic jaundice, whereas the greater part were probably due to the viruses of infective hepatitis, homologous serum jaundice, and post-arsphenamine jaundice. The average number of deaths from notifiable toxic jaundice during the years 1940–4 was fewer than six a year. I stress the rarity of fatal toxic jaundice in man in view of the fact that so much of our present information has been derived from toxic jaundice in animals.

The difficulties of carrying out therapeutic trials on a disease which is uncommon and hard to diagnose are great. Much of the literature on the subject is worthless, recording isolated successes, changes of fashion, and the surprising capacity of the organism, even in sickness, to withstand onslaughts on its integrity. This state of things should improve as a result of the careful collection and study of morbidity and mortality statistics which is occurring in several parts of this country. More is to be hoped from animal experiments, which are still curiously incomplete in the matter of treatment. The drawbacks to animal experiment are the dissimilarity of animals and man, and the failure to transmit infective hepatitis to animals. Another possibility, which it is to be hoped we shall be spared, is the occurrence of epidemics of infective hepatitis with a mortality of the order of 15%, such as have lately appeared in Denmark and Switzerland.

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It will be simplest to begin by discussing orthodox therapy with glucose. The untreated hepatectomized animal always dies of hypoglycaemia, and life may be prolonged for many hours by the administration of glucose. Dextrose therapy in diseases of the liver in man has been reviewed by Althausen (1933), but perhaps the most convincing data are those of Chester Jones (1936). He collected 56 cases of acute hepatic insufficiency from the records of the Massachusetts General Hospital and showed that the mortality had fallen from 95 to 63% over a period during which glucose therapy had been made more intensive. In the final period an attempt had been made to give the patient 450 to 500 g of carbohydrate by mouth, usually combined with intravenous therapy, with solutions of glucose ranging from 5 to 25%.

There is no magic in glucose, whether it is given by mouth or intravenously, but there are, nevertheless, circumstances in which the intravenous injection of glucose may be of special value. There is normally a careful adjustment between the level of blood sugar and the release of sugar into the circulation by the liver. When the liver is damaged it may require a much higher concentration of blood sugar than normal to inhibit the formation of hepatic sugar. Such levels may not be attainable by oral feeding, and the intravenous infusion of dextrose may be essential. The fact that the hyperglycaemia so produced may lead to glycosuria is of no moment, and insulin should not be used as a rule or it will defeat the very purpose for which the glucose was given (Soskin and Hyman, 1939). A small number of human cases of acute hepatitis was treated by Minot and Cutler (1929) on a meat-free diet rich in carbohydrate, accompanied by oral administration of calcium lactate, but the work does not seem to have gone very far. Nevertheless it has become standard practice in acute hepatic insufficiency to administer calcium intravenously, usually in the form of 10 ml of 10% calcium gluconate, though few who carry out this procedure have read Lamson's (1930) advice on the need for extreme care and slowness.

The remarkable success of a high intake of certain proteins and protein derivatives in the prevention of acute necrosis in animals and in the treatment of cirrhosis in man has naturally given rise to the hope that these substances might be of value in acute hepatic insufficiency. Many theoretical objections can be raised against this new heterodoxy. The metabolism of proteins and amino-acids demands work from the liver, and it is a cardinal principle of therapeutics to rest a damaged organ. There is abundant evidence that meat and meat extracts may be positively harmful to animals with acute or repeated damage to the liver from carbon tetrachloride. The patient with acute hepatic insufficiency is liable to extrarenal azotaemia and uraemia, though opinion is divided whether this should indicate or contraindicate the administration of protein (Leitus, 1946; Zondek, 1946). In some cases of severe damage to the liver a state of acute renal failure develops which is known as the hepato-renal syndrome and which has been attributed to toxic derivatives of protein (Helwig and Schutz, 1932; Reich, 1941; Trueta *et al.*, 1946).

In this atmosphere of doubt the ordinary clinician will do well, in the treatment of acute hepatic insufficiency, to concentrate on the relief of shock and the restoration of the normal internal milieu of the organism by fluids and glucose. Milk protein appears to be harmless and milk should therefore form part of the fluid intake, though it is unlikely that more than 30 to 40 g of protein will be supplied in this way. The therapeutic value and application of nitrogenous materials such as choline, amino-acids, protein hydrolysates, and plasma still await demonstration in

animal experiments and in controlled trials in man, and are the province of the research worker. No one knows yet whether they are helpful or harmful.

It would nevertheless be cowardly to leave the subject here without reviewing such data as are available. It is true that there is no evidence, even in animals, that proteins or amino-acids influence hepatic necrosis favourably once it has been established, though there is good evidence that choline accelerates recovery from fatty change. On the other side of the slate the research worker would note that 90% of deaths from infective hepatitis occur relatively late, when the disease has lasted more than 20 days (Lucké, 1944). The necrosis of experimental carbon tetrachloride poisoning may be repeatedly repaired, perhaps up to 40 times, but in the end there is a final phase of exhaustion when the rat is no longer able to restore the liver to normal (Cameron and Karunaratne, 1936). This suggests that patients with necrosis may run out of critical materials for regeneration of liver tissue. Regenerative ability doubtless varies from individual to individual owing to differences in hereditary and acquired characteristics, of which the previous state of nutrition is the most obvious. Death in acute necrosis may therefore be due either to temporary hepatic insufficiency or to exhaustion of the recuperative power. In our orthodox treatment we concentrate on tiding the patient over the period of hepatic insufficiency. In the future we may learn to fortify the recuperative power.

Acute Infective Hepatitis

Far and away the commonest disease of the liver in this country is infective hepatitis, or catarrhal jaundice. During the war acute hepatitis was made notifiable in Region IV, which had a population of over two and a half millions. Notification has been in force over two complete years, 1944 and 1945. The number of cases decreased from 3,559 in 1944 to 1,626 in 1945, and the incidence rate fell from 1.3 per 1,000 to 0.6 per 1,000. Voluntary notifications showed that the incidence had been higher in 1943 than in 1944. Practically all the cases notified were acute infective hepatitis. From these and other data we can assume that there were somewhere between 25,000 and 50,000 cases of infective hepatitis a year in Great Britain during the war. The mortality of infective hepatitis is about 0.2 to 0.4%, that of homologous serum jaundice and post-arsphenamine jaundice is probably higher. Owing to its low mortality and its prevalence in children, infective hepatitis is not usually regarded very seriously. During the war, however, epidemics occurred amongst our troops overseas which came near to disabling whole armies and air forces. Moreover, there was a high incidence of homologous serum jaundice and post-arsenical jaundice. These last two forms of jaundice are due to a virus which is similar to but probably not identical with the virus of infective hepatitis, and I shall consider the treatment of all three without discriminating between them.

The therapeutic problem in infective hepatitis is not mortality but the long period of disability, which averages 40 days. Various experiments have been carried out with diets and dietary principles, but no specific effect on the disease has been discovered. There is a general impression that strict rest is more important than strict diet. All that has been done—and this is undoubtedly gain—is to prevent patients being made miserable or unwell by unnecessary dietetic restrictions. Two observations can be offered in partial explanation of the failure of dietetic therapy in infective hepatitis. The main onslaught of the disease has usually occurred by the time the patient comes under treatment, and it is unusual to encounter the metabolic disturbances which arise in severe injuries and infections.

Pollock (1945) has shown that bromsulphthalein retention, biliruria, and a qualitative change in serum bilirubin may be present in the pre-icteric stage of infective hepatitis several days before the onset of jaundice. There is also a pre-icteric rise in phosphatase (Higgins and O'Brien, 1946). The earliest biopsies show gross changes in the liver, and Dible, McMichael, and Sherlock (1943), in their account of aspiration biopsy studies, say that the liver inflammation probably begins with the prodromal symptoms which are so often regarded as gastro-intestinal in origin. With the onset of clinical jaundice all the functions of the liver are found to be disturbed—carbohydrate metabolism, biliary excretion, hippuric acid and protein synthesis. Recovery usually occurs in the sequence of falling bilirubin, recovery of carbohydrate metabolism, normal hippuric acid excretion, normal level of albumin and globulin. I have already described carbohydrate as the great source of energy for the metabolic activities of the liver, and the impairment of carbohydrate metabolism, coupled with the restricted food intake, may be the cardinal event in the general depression of liver function.

Interest has recently been revived in the great loss of nitrogen which sometimes occurs in acute illnesses and after operations, accidents, and burns (Cuthbertson, 1944). The reason for this nitrogen loss, which reaches its maximum about the middle of the second week after the incident, is not known. It is not mere shortage of calories, and there is a suggestion that body protein is broken down to supply scarce substances for repair. Not only is weight lost during this phase but the healing of wounds, burns, and fractures may be retarded. Peters and his group (Peters, 1945) have made a particularly interesting study of the biochemical lesion in experimental burns. They found that there were heavy losses of nitrogen on the basal diet which could be largely prevented by a high-protein diet. They suggested that the losses were due to the raiding of tissue stores of nitrogen for one or more essential amino-acids, and showed that these could be prevented by the addition of 1% methionine to the basal diet, but not by cystine. The administration of high-protein, high-calorie diets has been recommended for general use for human convalescents (Stevenson, Whittaker, and Kark, 1946), and it is natural that similar diets should have been specifically recommended for infective hepatitis, where there is considerable cellular damage to the liver.

We have found no evidence of toxic destruction of protein in infective hepatitis. My colleagues Higgins and O'Brien (1946) found a negative nitrogen balance in three out of six of our patients, but in only one was it serious; the other three patients were in positive balance. The patients were studied as early as practicable, and it is unlikely that a negative phase was missed. Creatinuria, though frequent, was variable in degree and capricious in appearance. The evidence suggests that only occasionally is there a serious nitrogen imbalance in infective hepatitis, and in the majority of cases the negative balance which is apparent in the early stages is a reflection of the duration of the nausea rather than the severity of the hepatitis as judged by the bilirubinaemia. Similar rather negative conclusions were drawn by Higgins and O'Brien from a study of the plasma proteins in our patients. All the patients with serum bilirubin over 5 mg per 100 ml showed a slight to moderate fall in serum albumin and a slight rise in globulin. In cases followed from the pre-icteric stage the first event was the fall in plasma albumin. Albumin quickly returns to normal when the bilirubinaemia declines, but globulin may be much slower. The fall in serum albumin is certainly not entirely due to nausea, for it continued in patients who ate well and had a high protein intake, and in others who

had additional amino-acid therapy. It is probably related to a failure of manufacture of plasma proteins due to impairment of the liver and not to a shortage of raw materials.

The technique of therapeutic trials in infective hepatitis is now more or less standardized. We cannot use the death rate, and must rely on the duration of illness, the occurrence of relapses, and the frequency of permanent damage. The disease varies greatly in severity, but satisfactory criteria can be established for duration of biliuria, anorexia, hepatic enlargement, etc., comparability of cases, and the requisite number of cases and controls. Using such a technique Darmady (1945) found no difference between a high-calorie, high-protein, high-vitamin diet and a classical low-fat diet. Hardwick (1945) found no difference in patients allowed 180 and 50 g of protein a day. Wilson, Pollock, and Harris (1946) found no difference in groups of patients on 202 and 68 g of fat a day.

Results with dietary supplements are likewise disappointing. Higgins *et al* (1945) and Wilson, Pollock, and Harris (1945) observed no effect from methionine, 5 g a day by mouth, and Hoagland and Shank (1946) were equally unsuccessful with methionine, 5 g a day intravenously. Rennie (personal communication, 1945) had no success with cysteine, 15 g a day by mouth. On the other hand Peters and his co-workers (Peters, Thompson, *et al*, 1945) observed significant improvement of results with cysteine, 2 g daily by mouth, and with methionine, 2.5 to 5 g daily by mouth, and Wilson, Pollock, and Harris (1946) observed significant improvement with cysteine, 5 g daily by mouth. The latter group of workers noted that the improved figures were largely explained by a smaller number of exacerbations or relapses in the treated series, and in both series the difference between the treated cases and the controls was not great. Viswanathan (1945) claimed improvement from intravenous injections of protein hydrolysate. Richardson and Suffern (1945) and Hoagland and Shank (1946) had no success with choline, 1.5 to 5.0 g daily by mouth. Lenz (1944) had no success with insulin and glucose, and Gordon (1944) none with insulin, glucose, and vitamin C. Hoagland and Shank (1946) also had no success with intravenous liver extract.

These therapeutic trials have not escaped criticism. The diets which were being compared were not always isocaloric, but that is chiefly because a low-fat diet is unappetizing. It is objected that the intake of protein was so low that the methionine or cysteine could do little more than compensate for this. Protein intakes in our patients varied at different times from 34 to 120 g a day, with an average of 80 to 90 g. The high-protein diets used in jaundice are not very high in comparison with the 300 g a day forced in by Taylor (1944), but anything more than 150 g a day is a *tour de force*. Finally it is calculated that the curative dose in man would be 20 g of choline a day for two or three weeks, or 20 to 60 g of methionine (Barclay *et al*, 1945). Such large amounts are impracticable of ingestion and would require intravenous administration. This technique would be justifiable as part of a planned research on the treatment of acute necrosis of the liver, but surely not for so benign and common a disease as infective hepatitis.

My practical advice (Witts, 1945) on the treatment of infective hepatitis is that neither the fat nor the protein should be too low. A low-fat diet is unappetizing and commonly implies undernutrition. A very low protein diet is undesirable in a patient who has to regenerate shattered columns of liver cells. "Clinical experience has confirmed Bollmann's (1943) conclusions from the treatment of animals whose livers had been damaged by carbon tetrachloride

that 'the caloric value of the diet should be as high as possible, and the ratio of carbohydrate and protein in the diet seems to be of less importance than the total caloric intake furnished by these substances. The basic rule in the treatment of acute hepatitis is that the intake of fluid and food should be adequate to protect the patient from dehydration, acidosis, and tissue breakdown from malnutrition. The damaged liver is coping simultaneously with two tasks—the day-to-day needs of metabolism and the repair of its own substance—and it must be neither starved nor overburdened with material. A light diet with plenty of milk from which the top layer of cream has been removed fills the bill admirably. Self-selected diets also work out well, and it seems the patient will take no harm if he eats what he likes, whether he behaves like Jack Spratt or his wife. The real problem is when he does not want to eat at all. Turner *et al* (1944) believe that if the patient were given an infusion of dextrose for every meal avoided or vomited some disasters might be obviated."

Treatment of Cirrhosis

Cirrhosis of the liver is not a common disease in Great Britain, for the number of deaths from this cause has fallen below 1,000 a year. The average duration of life of our Oxford patients is about two years after coming under treatment, so that the total number of cases being treated in the country at any one time is probably about 2,000. The small number of cases makes it difficult to carry out therapeutic trials, for in a chronic disease like cirrhosis the results are best assessed by the determination of survival rates, one year, two years, three years, etc., after the patients come under observation, and this technique necessitates a large number of cases. Moreover, we ought, if possible, to distinguish between alcoholic and non-alcoholic cases, between portal cirrhosis and postnecrotic fibrosis, and this is not always easy, even after post-mortem examination. British figures are not comparable with American figures owing to the much lower incidence of alcoholism in this country. Dr A. R. Kelsall (personal communication, 1946) has reviewed the 48 cases of cirrhosis which have been admitted to the Radcliffe Infirmary in the last six years, and not more than two could be attributed to alcohol. The non-alcoholic cirrhoses have a closer affinity with postnecrotic fibrosis than with fatty infiltration or portal cirrhosis, and their course is more protracted and variable than that of alcoholic cirrhosis.

The changing character of cirrhosis of the liver must be borne in mind when we use past experience, such as the excellent data of Ratnoff and Patek (1942), to assess the value of new therapeutic procedures. These authors have also provided figures for the usual length of survival after the onset of ascites, jaundice, or haematemesis. There is great variability, and a small number of patients survive five years or more after these alarming symptoms. The chief desideratum, therefore, in any experiment on the treatment of cirrhosis is a large and unbiased sample of cases, which can be divided into treated and control groups and from which results of statistical significance can be deduced. In the study of individuals, chemical observations on the blood, in particular the level of serum proteins, afford objective evidence of the course of events.

Hurst (1946) has written of a precirrhotic condition of the liver, and on theoretical grounds we should expect fatty infiltration to do better than cirrhosis, but this can hardly be diagnosed clinically without biopsy. A fatty liver may be expected to be a large liver, but it is all too easy to confuse a large liver with a hard liver, and the determination of the size of the liver is a more difficult feat than many people have realized. Ravdin and co-workers (1943) proved by

biopsy that approximately 30% of patients with long-standing gall-stone disease had abnormally large amounts of lipid present in the liver, and they showed that this could be reduced by a diet of 74% carbohydrate, 20% protein, and 6% fat, in which bananas and casein figured prominently

It has long been taught that milk is the ideal diet for cirrhosis (Rolleston and McNee, 1929). Beginning with this observation, we may omit description of the groping advance through regimens of low fat, high carbohydrate, adequate calories and vitamins, and high protein, and skip at one bound to the impressive studies of Morison (1946). Morison treated three groups of cases of cirrhosis. There were about 20 patients in each group, and about half of each group had ascites. The first group was given a high-carbohydrate diet and diuretics. The second group was given a high carbohydrate high protein diet, liver extract, and vitamins. The third group had a maximum intake of protein, liver extract, and vitamins, plus methionine and choline, of each 2 g daily. In patients without ascites the intensive combined treatment in the third group resulted in the remission of all signs and symptoms in 7 out of 11, as compared with 1 out of 11 in the first (control) group. In patients with ascites complete remission occurred in 4 out of 9 of the third group, as compared with 0 out of 12 in the first. The death rate was very greatly reduced in the third group. The second group occupied an intermediate position. Morison's maximum protein regimen comprised a diet of 2,500 to 4,000 calories with 200 to 300 g of protein, 300 to 500 g of carbohydrate, and 50 to 100 g of fat, and included 6 glasses of skim-milk a day.

Other workers have given much less protein than Morison, and they have not obtained such dramatic results, though their figures have shown an improvement on the past. Fleming and Snell (1942) found that among 150 patients treated with a high-carbohydrate and low-protein diet plus diuretics, they had good results in 30%, whereas among 50 patients treated with a diet including 350 to 500 g of carbohydrate, 110 g of protein, chiefly in the form of milk and vegetable protein, plus vitamin supplements, the results were good in 44%. Beams (1946) treated 20 patients on a regimen similar to Morison's second group, giving them in addition 30 to 45 g of brewer's yeast, and choline and cystine, of each 1.5 to 3 g a day. He found that 12 of the 20 patients whose livers were not enlarged gave no response, whereas 7 of the 8 who had large livers made a good recovery. Patek and Post (1941), in a statistical study which should be a model to later workers, gave a regimen similar to Morison's second group—i.e., 120 to 140 g of protein, without thio-amino-acids or choline—and presented convincing evidence of improvement over previous treatment with high-carbohydrate and lower protein diet. Homburger (1946) studied carefully a patient who had been stabilized on a high-protein regimen. He produced evidence that substitution of the protein by an isocaloric amount of carbohydrate was attended by deterioration of the clinical and biochemical state.

In view of the many factors employed it has not been possible to isolate the effects of choline and methionine. Small series of cases treated with methionine with apparent benefit have been reported by Broun and Muether (1942), Herrmann and Rockwell (1945), and Russakoff and Blumberg (1944), the last giving up to 6 g a day. On the other hand, Man and co-workers (1945) gave choline in large doses, 10 to 25 g a day, to three patients with cirrhosis without demonstrable effect. Echaurren and Jorquera (1943) found the daily administration of 600 mg of inositol helpful.

I will conclude with an account of our own efforts in the treatment of subacute and chronic hepatitis. Of the 48 cases admitted to the Radcliffe Infirmary in the last six years, 35 provided records suitable for analysis. Twenty-two of the patients were treated with high-protein diets, combined in most cases with a high carbohydrate and low fat intake and often supplemented by vitamin A and D concentrates, synthetic vitamin K, and food yeast. Protein intakes averaged 125 g a day, but were supplemented by 30 to 60 g of food yeast over long periods. No methionine was used, and a very small number received choline or protein hydrolysate, and then only for short periods. Thirteen patients received the classical treatment with relatively low protein diets and diuretics. The numbers are small, but there is no significant difference between the two groups, whether one compares the mortality, as in the following table, or the average duration of life in the various subdivisions. The results of dietary treatment in non-alcoholic cirrhosis are therefore discouraging.

	Alive	Dead	Total
Treated	15	7	22
Untreated	8	5	13
	23	12	35

Discussion

Disorders of the liver similar to those produced in experimental animals by dietary deficiency occur in man over wide territories of the world as a result of inadequate food supplies. The incidence of juvenile cirrhosis and primary carcinoma of the liver may well come to be regarded as indexes of nutrition. The problem must now be attacked by social engineering rather than medical science. It is merely one symptom of world pressure on food supplies, and it will not be solved by bread alone but by a completely different way of life among crowded people with high birth rates. The number of isolated dietary defects which are known to produce disease is already great, but we are still learning the simple arithmetic of nutrition and are not yet able to permute and combine the various factors so as to discover how they reinforce or neutralize one another. In the relatively simple problem of blood formation we are just beginning to realize how iron requirements may be affected by the protein and vitamin content of the diet. It therefore seems unlikely that fortification with individual principles will be as cheap or as effective as a general improvement of the diet in the prevention of hepatic diseases. Our knowledge is more likely to be useful in the selection of those natural foods which can be most expeditiously used to increase the biological value of the diet.

It is too early to assess the value of the new knowledge in the treatment of hepatic disease in the better-nourished populations of the world. Among them infective hepatitis and allied virus infections vastly predominate over all other forms of disease of the liver, and advances are more likely to come from bacteriology than from the science of nutrition. Alcoholism is a symptom of prosperity rather than austerity, and can be overcome only by a general improvement in the art of living. Nevertheless, we can still hope that appreciation of the nutritional requirements of the hepatic cell, and of the body as a whole, will enable us to improve the chances of recovery in the acute phases of hepatitis and to accelerate regeneration and repair at a later stage.

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SURGICAL ASPECTS OF ROUNDWORM DISEASE

BY

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Cap an R.A.M.C.

During my last two years as surgeon to the native population of Cyrenaica I repeatedly came across roundworm infestation either simulating surgical conditions or indicating, and in my opinion justifying surgical intervention. The following three case reports illustrate these points.

Case 1

A boy aged 13 was seized by spasmodic abdominal pains and violent vomiting while at school on Dec 12, 1945. He was brought to hospital about an hour after the onset of symptoms. Inquiry revealed that he had been suffering from similar attacks of less intensity for the last ten months. They used to come on about twice weekly at odd times, his pain apparently being localized in the epigastric region. For the same period he had shown no appetite and had been constipated.

Examination showed a thin, very pale boy. The temperature was normal, pulse 100 weak. The tongue was coated and moist. Chest N.A.D. The abdomen was not distended, its excursions on respiration were noticeably restricted, and it was very tender with rigidity especially in the right iliac fossa. Per rectum the pouch of Douglas was slightly tender, but no effusion was palpable. An acute appendicular attack with peritoneal irritation was assumed. Following resuscitation, the patient's general condition improved and operation under open ether anaesthesia, was performed about four hours after admission.

A right pararectal incision was made. The abdominal cavity contained much turbid fluid but no pus. Coils of small intestine presented, thronged with roundworms. The caecum was found above the level of the umbilicus. The appendix was in the retro-caecal position, and not adherent. Its tip was swollen and covered with a pink serosa. After appendicectomy the presenting loop of ileum, which was crammed with worms, was opened, and the worms (*Ascaris lumbricoides*) were removed. Masses of worms contained in other parts of the small gut were 'milked' towards the opening and taken out. The longitudinal opening of the bowel wall was closed transversely, a rubber drain was inserted into the pouch of Douglas, and the abdominal wound was sutured. Altogether 91 worms were removed. The appendix contained a fecalith the size of a cherry stone. The mucous membrane underneath was blackened with ulceration, which however macroscopically did not involve the deeper contents. The post-operative course was uneventful but the patient now and again complained of abdominal spasms. Following a course of anthelmintic treatment two weeks after operation several more worms were passed. There has been no abdominal discomfort since, and he was discharged cured.

Case 2

A little girl aged 5 was admitted to hospital on May 2, 1946, having been sent by her physician, who diagnosed appendicitis. She had had abdominal pains and retching for the preceding two days. The bowels were normal. The mother stated that she had never noticed worms in the child's stools. The temperature was 99.5° F (37.5° C), pulse 90. The general condition was fair. Chest, N.A.D. The abdomen was moderately distended, with tenderness and slight rigidity in the right iliac fossa. On deeper palpation intestinal coils containing longitudinal masses, like bundles of pencils, and very suggestive of roundworms, could be felt through the thin abdominal wall. Santonin and castor oil were given on three subsequent days. Masses of ascarides were passed in several motions. Immediately after treatment the abdominal pains disappeared and the temperature fell to normal. The patient was discharged cured on May 10.

Case 3

A male child aged 3 was admitted to hospital on May 27, 1946 Two days before admission he had had abdominal pains and vomiting and his last bowel motions occurred three days previously The temperature was 101° F (38.3° C), pulse 100 regular The general condition was fair He had abdominal facies, the tongue was coated and respirations were of the thoracic type The abdomen was distended, diffusely very tender, with rigidity especially in the right iliac fossa There was free fluid on percussion Per rectum there was no appreciable disease On the assumption of an inflammatory intestinal condition involving the peritoneum, possibly of appendicular origin, laparotomy was performed under general open-ether anaesthesia

A right pararectal incision was made, and a fair amount of heavily blood stained turbid fluid of slightly faeculent odour was found on opening the abdominal cavity The caecum and appendix did not show any abnormality A loop of ileum belonging to the middle portion of that gut was found to be distended and intensely red, its wall was thickened with inflammatory infiltration, and on the serous surface a thread like whitish network of swollen lymph vessels was visible The loop involved measured about 18 in (45 cm), a kink forming a double barrel shaped incomplete intestinal obstruction about 1/2 in (1.25 cm) long The wedge of mesentery belonging to it was grossly thickened to approximately 1/3 in (0.8 cm) in diameter and appeared white with fibrinous purulent infiltration The mesenteric glands were swollen to the size of a cherry or walnut A mass of partly curled up worms was palpable in the diseased gut and there was worm infestation of less intensity in other sectors of the small intestine, which, however, did not look inflamed The coil of worms was removed through a small incision, it contained about 30 ascarides of various sizes The near by loops were emptied by "milking" the worms in them towards the original incision, the latter was then closed A rubber drain was inserted, and the wound closed around it After the operation a course of 500,000 units of penicillin was given On May 31 the drain was shortened only sero sanguinolent discharge being seen There was one normal motion The drain was removed on June 2, and next day the general condition was satisfactory The abdomen was soft and not distended The patient took and retained his food, and the bowel action was satisfactory On the 5th he vomited five small ascarides Two days later his general condition deteriorated and he vomited worms on several occasions Next day there was further deterioration and he vomited twelve worms during the night On June 9 the patient died, extremely cachectic, choked with ascarides creeping in masses out of his nose and mouth

Discussion

Diseases due to roundworms play a considerable part among the abdominal troubles of the native population in the Middle East The clinical picture they produce may mislead the observer, unless he bears in mind their relative frequency in this part of the world as compared with Europe, and the possible variety of accompanying symptoms

In Case 1 it did not occur to us that roundworms might be the cause of the frequent abdominal spasms The boy's mother made no mention of their presence in the faeces, and examination led us only to the conclusion that operation was indicated because of clear signs of appendicitis with peritoneal involvement From previous experience we concluded that the masses palpable through the thin abdominal walls in Case 2 consisted of conglomerates of roundworms, the only disquieting sign was the raised temperature, which we had not found before in roundworm disease The success of the anthelmintic treatment confirmed our assumption and suggested that roundworms may cause inflammatory intra-abdominal changes, and the tenderness on palpation may be significant in that connexion The intense inflammatory changes in Case 3 reminded one of Crohn's disease However, the presence of a big mass of roundworms in the diseased intestinal loop led me to believe that they were the aetiological agent, not only grossly damaging the bowel wall but also causing the most severe inflammatory infiltration of the related mesentery Through an unfortunate accident we lost a swollen mesenteric gland which had been removed for histological examination during the operation Therefore and because the relatives refused permission to perform a post-mortem examination, no histological details are available

Summary

Roundworm infestation may become of surgical importance not only by causing mechanical obstruction of the small gut but by producing inflammatory changes varying in degree from trivial (Case 2) to the most serious conditions (Case 3) It is usually

difficult to distinguish this variety of inflammation from that of other origin Correct diagnosis will be facilitated if in regions with prevalent roundworm infestation one will bear that possibility in mind, and go into the history of the case accordingly, using also the laboratory methods for investigation

Surgical treatment will have to consider removal of as many worms as possible from the bowel, by "milking" them from adjoining loops towards an incision made over their biggest accumulation

I would not hesitate even to make more incisions in cases where very extensive infestation renders removal through one opening impracticable

At times the prognosis seems to depend to a considerable extent on the thoroughness with which the worms were removed during the operation As medical anthelmintic measures are not advisable for at least two weeks after incision and suture of the gut, the remaining worms have ample time to grow and flood the organism They may decide the fatal issue in cachectic individuals whose resistance through chronic roundworm infestation has already been lowered a long time before sudden developments compel them to seek medical advice

MESENTERIC VASCULAR OCCLUSION

BY

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Mesenteric vascular occlusion is one of the less common abdominal emergencies It is extremely difficult to diagnose and the mortality rate is high, consequently scant attention has been paid to it in most surgical works In the past five years I have had two cases which recovered, and I feel that wider recognition and earlier treatment would do much to improve the gloomy prognosis

The first case was recorded by Tiedmann in 1843, but it was not until fifty years later that the first resection was performed (Elliott, 1895) In 1913 Trotter presented 359 cases collected from the literature, with seven personal cases Cokkims (1926) published a monograph embodying an exhaustive description of mesenteric vascular occlusion and the mesenteric circulation A series of cases was reported by MacLeod (1937) and by Atkins (1937), a case complicating labour was described by Grey Turner (1937), and two cases were recorded by Fallis (1940) A review of the literature was given by Brown (1940), and Moore (1941) followed with another, supported by eight cases In 1943 Luke described a case treated with heparin

Anatomy

For a proper appreciation of the possible consequences of mesenteric vascular occlusion an understanding of the anatomical arrangement of the blood supply of the intestine is necessary The whole of the small intestine and the large intestine as far as the middle of the transverse colon are supplied by the superior mesenteric artery This artery rises at an acute angle from the abdominal aorta behind the pancreas, crosses the third part of the duodenum, and passes forward into the root of the mesentery It gives off ten to fifteen intestinal branches and ends near the caecum by anastomosing with one of its own branches—the descending branch of the ileocolic artery One of its early branches—the inferior pancreaticoduodenal artery—anastomoses with the superior pancreaticoduodenal artery, which has its origin in the gastro-duodenal branch of the coeliac axis, and this forms a collateral channel if the superior mesenteric artery is occluded The branches of the superior mesenteric artery form numerous arterial arcades in the mesentery by anastomosing with each other These are more numerous in the lower ileac than in the upper jejunal region From the arcades the vasa recta which are true end arteries with no anastomoses, run to supply the gut-wall The large bowel as far as the middle of the transverse colon is supplied by the ileocolic, right colic, and middle colic branches of the superior mesenteric artery, the last-mentioned of which anastomoses with the left colic branch of the inferior mesenteric artery which is a separate branch of the abdominal aorta This is therefore another important anastomosis should the superior mesenteric circulation be interfered with Other anastomoses occur with the lumbar arteries in the retro-

peritoneal plexus. The venous drainage of the intestine follows closely the arrangement of the arterial supply, with the important difference that all the blood empties into the portal vein and not direct into the systemic circulation. This places the liver as a filter between the intestines and the systemic circulation, and any abnormality in the liver may have a profound effect upon the mesenteric venous circulation. Venous anastomoses between the portal and systemic veins occur in the haemorrhoidal and oesophageal plexuses and in the retro-peritoneal plexus, between the para umbilical veins and the abdominal wall, between the splenic and left renal veins, and between the left colic and capsular veins. Cokkinis (1926), in his injection experiments, found that the arterial collateral circulation, excluding the vasa recta, was considerable, and that the venous circulation was of even greater volume.

Pathology

The pathological manifestations of interference with the mesenteric circulation are various. When the circulatory obstruction develops slowly and gives time for the establishment of a collateral circulation, the changes in the intestine may be minimal consisting of oedema and congestion of the gut wall, patchy or diffuse, and intramural haemorrhage. Compensated vascular occlusion may be manifest clinically by a temporary ileus and complete recovery is possible if further extension of the damage does not occur.

More usually the vascular disturbance, whether caused by thrombosis or embolism, either arterial or venous results in gross pathological changes. The most common of these is haemorrhagic infarction of the wall of the intestine. The gut is at first congested swollen, and oedematous, then follow rupture of the capillaries and extravasation of blood throughout its wall. The gut becomes dull, plum coloured, stiff and inelastic, and gradually passes into a state of infective gangrene, becoming green or black. The changes are in fact the same as those in strangulated hernia. The extravasated blood also passes into the lumen of the intestine and into the peritoneal cavity. Some of that in the lumen may be passed on by a distal healthy portion of gut and give rise to bleeding per rectum, or it may be found in a diagnostic enema—an important point in differential diagnosis. The blood and oedema fluid in the peritoneal cavity give rise to a haemorrhagic peritoneal exudate, which is a very common finding. The affected portion of mesentery also undergoes gross changes, it becomes oedematous and friable, may be 1 in (2.5 cm) or more in thickness, and contains thrombosed vessels.

A very rare change is the development of anaemic gangrene in which a pale, bloodless infarct occurs, followed by putrefactive changes. The portion of intestine most commonly involved is the ileum, although in my own two cases it was the jejunum. No part of the intestine from the duodenum to the lower colon is exempt, and the extent of the affected area may be from a few inches to almost the whole of the intestine. An important point when considering treatment is that the limits of the infarcted area are not usually sharply defined but merge gradually into the normal portions.

Aetiology

The vascular occlusion may be primarily arterial or venous, the latter being the more common. As soon as the condition is developed however, both arteries and veins become thrombosed. This is owing to the tendency of the thrombosis to spread when the circulation has been slowed down, and is responsible for some of the failures after operative treatment. Arterial occlusion is usually embolic and affects the superior mesenteric artery more often than the inferior. It may result from mitral stenosis, mural endocarditis, atheroma, pulmonary vein thrombosis or pyaemia. Arterial thrombosis is usually associated with arterial degeneration, atheroma and arteriosclerosis being the common lesions.

Venous thrombosis may be due to a variety of causes. In many cases of mesenteric venous occlusion however no definite cause has been demonstrated. The number of such cases will probably diminish with a more diligent search for a causative factor. An important cause, and according to Cokkinis the most frequent, is peripheral sepsis in the portal area, arising

from appendicitis, pelvic infection, or diverticulitis. Any of these may lead to portal thrombosis or portal pyaemia. All the blood in the mesenteric venous circulation has to pass through the liver. There are many possible causes of obstruction to the portal vein by pressure from without, the most frequent and important being cirrhosis of the liver. Peripheral venous thrombosis may sometimes be a cause. Changes in the blood itself may predispose to thrombosis, and in this connection a blood disease such as polycythaemia rubra, leukaemia, splenic anaemia, or severe primary or secondary anaemia may be the initial lesion. Predisposing factors are debility, degenerative diseases such as alcoholism, inflammatory lesions, neoplasms, and occasionally mechanical factors such as trauma.

Symptomatology

Mesenteric vascular occlusion has the reputation of being almost undiagnosable. Its recognition is certainly difficult, but in a typical case there are features which should enable a diagnosis to be made if the disease is borne in mind.

No age is exempt, but the condition occurs most frequently between the ages of 20 and 50 (Cokkinis, 1926). Brown (1940) however, in an analysis of cases of venous occlusion found that the most common age incidence was between 50 and 60. The onset is associated with severe abdominal pain, colicky in character and centrally situated. This is often accompanied by considerable shock, and is followed by periodical recurrence of the colicky pain and vomiting. Borborygmi are often marked. The pain usually overshadows the vomiting, and this distinguishes the condition from most other types of intestinal obstruction. There is in some cases absolute constipation without passage of flatus, in others a motion may be passed containing altered blood. Melaena is an important diagnostic point and if blood is not passed spontaneously it may be found on the examining finger or be obtained from a high enema. Abdominal distension becomes apparent, and the abdomen is tender and rigid, often more so on the left side. The affected coils of gut may be felt as a palpable lump. Free fluid can usually be demonstrated. Leucocytosis is usually present and x-ray examination may show multiple fluid levels. As time goes on the patient becomes severely ill with marked shock, subnormal temperature, rapid pulse, and low blood pressure. In fact he resembles a late case of intestinal obstruction with peritonitis. In cases of massive occlusion the element of obstruction may be overshadowed by the signs of internal haemorrhage due to the large amount of blood which may be lost into the infarcted intestine. Some of this haemorrhage may be external and become evident as haematemesis or melaena.

Diagnosis, Prognosis, and Treatment

In Trotter's large series the correct diagnosis was made in less than 5%. In the cases described by Cokkinis the diagnosis was established in approximately 15%, but many others in this group presented symptoms which should have made a diagnosis possible.

Important points to note in attempting to establish a diagnosis are (1) a history or signs of a possible causative lesion—for example, endocarditis or cirrhosis, (2) the presence of blood in the bowel, either passed by the patient or found on examination by the enema test, (3) the presence or previous history of vascular occlusion elsewhere, (4) the presence of a blood dyscrasia, (5) severe pain often greater on the left side, associated with signs of intestinal obstruction, free fluid, and sometimes a palpable lump. The differential diagnosis from other causes of intestinal obstruction, perforated peptic ulcers, and acute pancreatitis has to be made.

Of untreated patients more than 95% die, only those with a mild attack in whom an adequate collateral circulation is established will survive. With treatment the general mortality in cases of venous occlusion is approximately 68% (Brown 1940), with a higher figure obtaining for arterial embolism. The mortality depends in part upon the amount of gut involved and the prognosis improves if the length infarcted is less than 3 ft (0.9 m), although recovery with normal function has followed the removal of half of the small intestine.

Exploratory laparotomy should be undertaken early. The time factor is as important as in cases of perforated ulcer, and

more important than in most cases of obstruction. The patient should be rendered as fit as possible by intravenous therapy before operation. As soon as the abdomen is opened free blood stained fluid will be encountered in considerable quantity. The affected portion of intestine is usually quite obvious, and if it does not actually present in the wound it can easily be found. Wide resection of the bowel should be performed, leaving a good margin of healthy tissue on each side of the infarcted segment, together with similar treatment of the affected portion of the mesentery. The presence of a second infarct in some other segment must not be overlooked. Continuity can be re-established by means of end-to-end or lateral anastomosis. If the large intestine is involved resection, with external drainage, should be performed, and continuity established at a later date. Exteriorization is not good treatment for the small gut, in one such case described by Atkins the complications were many and troublesome, although the patient finally recovered. Even the most desperate cases may be given a slender chance by the establishment of an enterostomy.

Case I

A printer aged 50 experienced a sudden attack of abdominal pain working all night. The pain was colicky in nature and became so during next day he vomited three times, but his bowels had not opened. Two high wash outs were given by his doctor without result, there being absolute constipation from 9 a.m. No blood was obtained with the wash out. On admission to hospital he was doubled up with pain, the temperature was 97.6°F (36.4°C), pulse 84. His general condition was healthy and there was no pulmonary or cardiac disease, sepsis, or thrombosis. The abdomen was moderately distended and very tender all over. An ill defined tumour measuring several inches across was present in the centre of the abdomen. It was dull to percussion, there was also dullness in both flanks. Borborygmi were heard. The severe colicky pain was relieved by morphine. A diagnosis of intestinal obstruction was made and a laparotomy performed under spinal anaesthesia. On opening the abdomen blood-stained fluid escaped and a large loop of engorged gangrenous small intestine was seen. Further examination showed that 2½ ft (0.76 m) of the lower part of the jejunum was involved with its mesentery, which was much thickened and oedematous. There was a gradual transition to healthy intestine on both sides of the infarcted portion. The affected portion, including its mesentery, was resected, blind ends were made, and continuity was re-established by side to side anastomosis. The abdomen was closed without drainage, and convalescence after operation was uneventful. The patient was discharged from hospital seventeen days after operation, and at the time of writing was quite well and leading a normal life.

Case II

A regimental sergeant major aged 38 was admitted to hospital complaining of abdominal pain. He first experienced pain across the lower abdomen and in the left flank two years previously, it was sudden in onset and shooting in character. The abdomen became very distended and the patient vomited. His bowels had not opened, and the pain was so severe that he fainted in bed. The attack subsided spontaneously. Later he had another severe attack and several milder ones of the same nature, and he was admitted to hospital. As the pain was mainly in the left flank he was subjected to a complete renal investigation, with negative results. The day after his discharge from hospital he had his most severe attack, and then came under my care.

On examination his general condition was fairly good. The tongue was coated and dry and the heart normal, blood pressure 150/90. The lungs were healthy, the haemoglobin was 70%, and the Wassermann reaction negative. The abdomen was moderately distended, rigid, and tender, the maximum tenderness being to the left of the umbilicus, where a vague mass could be felt but not accurately defined. There was dullness in the flanks, and borborygmi were marked. The rectum was empty and ballooned, and there was no blood on the examining finger. An enema produced no blood, mucus, or flatus. A diagnosis of intestinal obstruction was made.

Laparotomy was performed under general anaesthesia. On opening the abdomen a considerable quantity of blood stained fluid escaped. The vague tumour which had been felt on the left side of the abdomen was found to be two coils of deep plum coloured jejunum matted together and covered with flakes of fibrin. The mesentery was more than 1 in (2.5 cm) in thickness, and its vessels were seen to be thrombosed. Some 3 ft (0.9 m) of the upper jejunum was affected and this portion was resected, blind ends were made, and a side-to-side anastomosis was performed, keeping well clear of the infarcted region. After division of the mesentery, it could be picked out of the vessels. The anastomosis was found to be 1 ft 6 in (45 cm) distal to the duodeno-jejunal flexure. A

pint (568 ml) of plasma was given during the operation, followed by intravenous saline and glucose. Convalescence was complicated by a post operative bronchitis, but the patient passed flatus on the third day and the bowels acted spontaneously on the fourth. The chest soon cleared, and thereafter convalescence was smooth. It was a considerable time, however, before this man regained his appetite and began to put on weight. After a period at a convalescent home he was regraded category C (temporary) and returned to his Army duties free from symptoms. Histological section of the tissue removed showed a primary venous thrombosis, the cause of which could not be determined.

Discussion

Both of the above cases had a primary venous thrombosis of limited extent. Consequently they responded well to early operation and resection of the affected segment of the bowel. Fortunately, no further spread of the thrombosis occurred after operation, as sometimes happens. An important point in preventing this is to make the resection through healthy bowel and to remove all the affected portion of mesentery. In neither case was the diagnosis made before operation, although it was immediately obvious on opening the abdomen. Both cases presented the appearance of an early intestinal obstruction but in neither was there a key sign such as haemorrhage from the bowel, evidence of cardiac disease, or venous thrombosis elsewhere, to suggest mesenteric occlusion. In the second case the only possible predisposing cause that could be found was a moderate degree of secondary anaemia. The pain in the left flank was a pronounced feature and had led to a complete renal investigation at another hospital before the pre-operative thrombosis occurred. Loin pain was also found by Fallis. It is possible that it occurs fairly constantly on the left side when the upper part of the jejunum is involved. It was noted during convalescence that a considerable time was required for the re-establishment of the appetite and a gain in weight, and this was thought to be due to the removal of a large portion of the active absorption area of the jejunum. The presence of a palpable lump is stated by Cokkinis and others to be unusual, and most of the statistics substantiate this. Its occurrence in both my cases was fortunate, but it is in no way diagnostic since there are so many possible causes of intestinal obstruction associated with a palpable mass. However, if it is associated with evidence of bleeding this sign is of greater value. The occurrence of previous similar but less severe attacks of pain in Case II was thought to be due to a small venous thrombosis in the mesentery resulting in a temporary ileus, with recovery on establishment of an adequate collateral circulation.

Treatment in each case was early operation with resection in an established case this gives the patient his only chance of survival. Both these patients were in quite good condition, and the length of the intestine involved was not great. This contributed in no small measure to the favourable results. If the large intestine is involved resection with drainage of both ends is the treatment of choice, but if this method is applied to the small bowel it is liable to be followed by troublesome complications (Atkins, 1937). What can be accomplished by bold surgery is shown by a consideration of Grey Turner's (1937) remarkable case complicating pregnancy in which 10 ft (3 m) of small intestine was resected and a Caesarean section performed at the same time. The patient survived, led a normal life, and had another pregnancy. The possibility that an anticoagulant such as heparin may be of use in the treatment of this condition has been considered, and Luke (1943) published a case treated by this means. The case was an early one of venous thrombosis involving the jejunum, and was proved by laparotomy. The wound was then closed, and 21,000 units of heparin were given in 21 litres of saline during the succeeding 10 days. The coagulation time was estimated six-hourly and was found rather difficult to control owing to variations in the rate of drip. A complete recovery ensued. Any case in which this treatment is adopted must necessarily be an early one, before serious infarction has occurred, otherwise there is a danger of profuse bleeding into the infarcted bowel or peritoneal cavity. Haematoma formation may occur in the laparotomy wound. It is doubtful whether cases can be obtained early enough for this treatment. However, it does seem that there is a possible field of usefulness for heparin when combined with operation, with a view to preventing any extension of the thrombosis. Earlier diagnosis and prompt

treatment are the keynotes to success in this very serious abdominal emergency

Summary

The anatomy, pathology, and aetiology of mesenteric vascular occlusion are described, and some of the literature is reviewed

Symptomatology and diagnosis are considered and a plea is made for the earlier recognition of the disease. The importance of signs of cardiac, vascular, or blood disease, or of any evidence of haemorrhage from the bowel, is stressed

Two personal cases, with recovery, are presented

Treatment is discussed and the possibilities of the use of heparin are considered

I wish to express my thanks to Surg Lieut C J Bintliffe and Dr J G Winternitz for their help in the treatment of the patients to Dr S J Scurlock, medical superintendent of Ronswood Hospital, for his kind assistance in the preparation of the paper and to the Director General of Medical Services, Ministry of Pensions, for permission to publish

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MYOPATHY WITH SPINA BIFIDA

BY

RONALD G PALEY, MB, MRCS
Capt R A M C

The following is an unusual and interesting case of myopathy associated with spina bifida

Case History

The patient was a soldier, aged 30, formerly a country bus-driver. His paternal grandfather lived to a healthy old age. His father died of 2 meningitis at 28, his mother at 45 from "tumour" of the uterus. He had no brothers, but there were two half sisters by the same mother, both healthy. The patient had no knowledge of any familial disease.

In childhood he had no serious illness, but at school he noticed weakness of his legs. He became a gardener, but found the work too hard. In February, 1941, he had pneumonia and was in bed five weeks. During a protracted convalescence there was increased weakness, with wasting of the muscles of the chest and abdomen. For the last two and a half years the condition had steadily progressed. At no time had his muscles been bulky.

His height was 65½ in (1 66 m). His face was thin and expressionless, and wasting of the muscles of the shoulder girdle and winging of the scapulae were present. There was no wasting of the forearm or small muscles of the hand. Active and passive movements were free and power good. Marked wasting of the erector spinae was obvious (see figs). The abdomen was scaphoid, with wasting of all muscles except the erector abdominis. The muscles of the pelvic girdle all showed pronounced wasting, those of the lower leg and foot were not wasted, but there was a mild pes planus. Movements were full and power only slightly reduced. No muscular fibrillation was observed.

The spine showed scoliosis and a depression in the region of dorsal vertebrae 11 and 12, with a palpable gap. In this depression there was a non-hairy, non-pigmented mole. Radiographs confirmed non union of the posterior arches of these two vertebrae.

The blood WR was negative, the CSF normal and WR negative, and the urine normal. No electrical reactions were taken. Although the cardiovascular system was normal, there was moderate tachycardia. The blood pressure was 120/80. Chest expansion was poor—only half an inch (1 25 cm) in the nipple line. The breathing was almost entirely abdomino diaphragmatic. Radiographs showed some evidence of chronic bronchitis at the bases. Diaphragmatic movements normal. All the cranial nerves were normal and all reflexes were present, although the abdominal reflexes were very weak. There was no sensory disturbance. No vasomotor or trophic changes were present.

Discussion

Exhaustive search through the literature of the last 25 years revealed only one other case of this association of conditions. Urechia and Dragomir (1942) described a case of myopathy

with a spina bifida occulta of the first sacral vertebra. With respect to the regions of muscular atrophy and the absence of sensory disturbance their case resembled the one now reported. In certain features it was different: there was a heredo-familial trait, one sister and a nephew suffering from myopathy. A hypertrophic stage had occurred. The progress of the disease was more rapid, and the patient was bed ridden at the age of 25. Their case was remarkable for a large pigmented hairy mole covering the right half of the abdomen.

The location of the bifida in the thoracic spine is not common. Wheeler (1920) found no evidence of spina bifida in 3 000

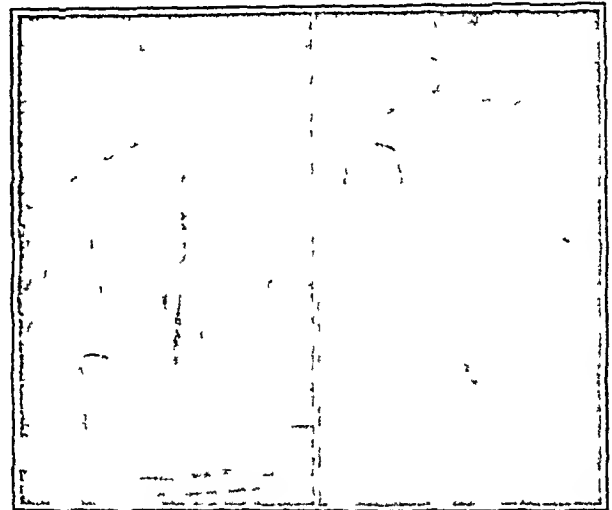


FIG 1

FIG 2

thoracic vertebrae seen at the National Museum, Washington. Hadley (1941), examining a series of 1,500 consecutive spinal cases, found 3 instances of spina bifida in the thoracic region.

It is interesting to note that in the literature over the same period there are two recorded cases of spina bifida associated with a different form of muscular atrophy. In 1925 Guillain, Mathieu, and Garcin described a case of Charcot-Marie muscular atrophy with spina bifida of the first two sacral vertebrae. Heuyer Hurez and Feld (1942) reported a similar case.

It is difficult, if not impossible to decide whether the occurrence in the same patient of two uncommon pathological conditions (myopathy and spina bifida) is due to chance concurrence or to some common aetiological factor—e.g. genetic make-up. Urechia and Dragomir (1942) quote numerous authors who have described various osseous deformities in cases of myopathy. Nevertheless during the last 25 years this particular association has been noted only once before in the literature on myopathies. This suggests that chance concurrence is the more likely explanation.

Summary

A case of myopathy with spina bifida is reported. The literature has been examined. One other reported case has been discussed and compared. The comparative rarity of spina bifida in the thoracic region has been noted. The association of the two conditions is thought to be a coincidence.

I wish to thank the Director General Army Medical Services, and Lieut Col M I Silverton R A M C for permission to publish this case.

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The Hospital Survey and Construction Act of the United States which authorizes the nation-wide building of hospitals, requires that standards for the construction of all those built with Federal assistance under this scheme shall be defined by the U.S. Public Health Service. These standards which are minimal, were recently drafted by the Federal Hospital Council has now accepted them. They fall into five classes: site, architectural, structural, mechanical (e.g. ventilation, plumbing, electrical fittings) and drawing specifications.

Medical Memoranda

An Unusual Case of Intestinal Myiasis

A primipara aged 40, during a routine visit to the antenatal clinic of Queen Mary's Hospital, London, E., produced a bottle containing three small white grubs about 5 mm in length which on cursory examination were thought to be the larvae of some fly. I questioned her as to the history of these grubs and she told me the following story.

For the last two weeks she had been suffering from frequent attacks of diarrhoea and constipation accompanied by some general abdominal pain of a colicky nature. After noticing a few flecks of bright blood in her stools she had examined them more carefully and on about four occasions just before seeing me she had passed two or three of these grubs, all of which showed signs of life. This alarmed her considerably, and she saved some of the specimens for further examination. I questioned her very closely as to the possibility of outside contamination, and she stated that this was absolutely impossible as all the specimens were quite fresh. As she is a patient of very clean habits and of average intelligence I consider her story to be true in every respect.

The treatment consisted in giving one fluid ounce of liquid paraffin at night for seven days, and this appeared to clear up the condition, for she has had no further symptoms or signs to date.

The grubs were sent to Dr Fritz Van Emden at the Imperial Institute of Entomology, British Museum. They were identified as the larvae of *Pinus tectus* Boield. The adult is a yellowish-brown coleopterous insect about 3 mm in length. Dried cereal foods are its favourite habitat, and upon these the eggs are laid. It is difficult to understand how the larvae can withstand passage through the stomach, but it is possible that the eggs, which have a resistant chitinous coating, may do so with subsequent hatching in the more alkaline portion of the bowel. Survival and growth here would be possible. The larva is covered with a growth of fairly thick pubescence arising from each segment of the body. The six legs each contain a single sharp claw and the biting jaws are quite formidable. By reason of this armament larvae can remain in the intestine for a considerable period, clinging to the villi and thus resisting peristalsis. The photomicrograph demonstrates some of the points mentioned.



Photomicrograph of larva of *Pinus tectus* Boield, from the above case. Magnified 10 diameters, dark background illumination.

From the above short description of this unusual case it would seem that the infestation of the intestine by insectivorous larvae, which though recognized in the textbooks on parasitology is not, I believe, given much thought in this country, should be considered when one is diagnosing a case of diarrhoea accompanied by colicky pain and the passage of blood per rectum. One has only to consider the enormous population of flies and other insects which inhabit this country in the summer and autumn, gaining access to all manner of foodstuffs no matter what precautions may be taken, to see how easily infection could arise. To give one example we all know how swarms of flies besiege a tree of ripening plums, feasting themselves upon the fruit, and as most insects lay their eggs on their foodstuffs in order that their larvae may gain sustenance, it would appear that these infected fruits would become an excellent vehicle for the infestation of man—especially when one considers how many children eat fruit without inspecting its contents. Thus it would seem that intestinal infestation with insectivorous larvae, known as myiasis, may be by no means as uncommon as we are led to believe.

My thanks are due to Dr Fritz Van Emden for his part in identification of the larvae to Dr J S Sharpe for preparation of this specimen for examination by the microscope and for the photograph and to Mr Andrew McAllister FRCS, FRCOG for his permission to publish the case.

D S SHARPE, MRCS, LRCP

Severe Adult Diphtheria with Polyneuritis

During September, 1945, to February, 1946, inclusive, 100 cases of acute adult diphtheria were admitted to the 94th British Military Hospital, Hamburg. In the December and January there had been an epidemic type of severe faucial diphtheria the clinical picture being gross toxæmia with membrane covering tonsils, uvula, and palate, bull neck adenitis, and severe polyneuritic complications. Sporadic cases of this type had been observed in Holland and Belgium during the previous winter. Another important feature was the late onset of polyneuritis in cutaneous diphtheria. On admission the average duration of disease was three days, 60% were direct admissions.

TREATMENT

The minimum period in bed was five weeks, and four clearance swabs were taken from the twenty-eighth day of disease. Uncomplicated cases were discharged to the convalescent depot at the end of seven weeks and complicated cases were evacuated to the U.K. when fit to travel.

Antitoxin Dosage—Nasal and aural 24 000 units, intramuscularly. Mild faucial unilateral membrane 24,000–48 000 units intramuscularly. Moderate faucial, bilateral tonsillar membrane with little toxæmia 48 000–80 000 units intramuscularly. Severe faucial all cases received 80 000 units intravenously, repeated if necessary, the standard being the shrinkage of membrane and decrease of the bull-neck adenitis.

Penicillin Dosage—All severe cases of faucial diphtheria were also given 200,000 units of penicillin daily for three days by continuous intramuscular drip. Cutaneous diphtheria cases had four hourly penicillin spray, 500 units per ml applied to the ulcers, as well as intramuscular diphtheria antitoxin.

The type of Klebs-Loeffler bacillus showed no relation to the severity of the disease. Of the severe faucial cases six were of the gravis and five of the mitis type, although in the whole series the gravis type predominated. Of the mild faucial cases one had polyneuritis after eight weeks. Four of the moderate faucial cases had polyneuritis, beginning as early as the end of the fifth week and as late as the twelfth week. Ten of the severe faucial cases had polyneuritis beginning from the end of the fifth week to the tenth week. The typical picture was a palatal paralysis at the end of five weeks followed by a pharyngeal paralysis at the end of six weeks and generalized polyneuritis at the end of seven or eight weeks. Five patients had to be fed by nasal catheter for 15 days. Two had respiratory paralysis one having to stay five days in the Both iron lung, being fed by nasal catheter. In all cases complicated by polyneuritis the period in hospital before evacuation to the U.K. was from 12 to 18 weeks. In the 100 cases recorded there was one death, due to early cardiac failure on the twelfth day.

Intramuscular penicillin did not seem to have any dramatic effect in preventing the spread of faucial membrane, reducing toxæmia, or preventing polyneuritic complications. Similar results have been reported by Dodds (1946) and Christie and Preston (1946), but as *C. diphtheriae* is penicillin sensitive (MRC War Memo, 1944, No 12), penicillin should be given in all cases of severe diphtheria. Three of the 15 severe faucial cases had positive KLB in the throat after 28 days in spite of 600,000 units of intramuscular penicillin.

Three of the seven cases of cutaneous diphtheria developed polyneuritis, and in each the original ulcer began on the penis. These cases were seen late and had large ulcers of the penis and suprapubic area. From previous experience penicillin spray four hourly healed the ulcers quicker than the local application of diphtheria antitoxin. Owing to the late onset of polyneuritis the standard adopted was that, when the ulcers had healed, that date was put on the patient's chart as the first day of disease. Local paralysis around the ulcer areas was observed and also visual paralysis along with the polyneuritis.

SUMMARY AND CONCLUSIONS

Faucial diphtheria can be a very dangerous and prolonged disease of adult life.

Cutaneous diphtheria cannot be missed in the early stages and severe as those of faucial diphtheria. Dosage mentioned has no dramatic effect or in reducing the convalescent carrier rate.

Early intravenous diphtheria antitoxin is still the best line of treatment although it does not prevent polyneuritic complications.

I should like to thank Lieut Col Porter, R.A.M.C. Major Hinson R.A.M.C. and Dr A.H.G. Burton late M.O.H. for Ilford for their great help and advice.

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Reviews

GRAY'S ANATOMY

Gray's Anatomy Descriptive and Applied Edited by T B Johnston, M D, and J Whillis, M D, M S Twenty ninth edition (Pp 1597, 1359 illustrations, of which 642 are coloured and 47 are x ray plates 70s) London Longmans Green and Co 1946

The appearance of the twenty-ninth edition of *Gray's Anatomy* will be welcomed by students practitioners, and teachers of anatomy Well-illustrated and with a descriptive text in which all essential facts are plainly stated without verbosity, it has from its first appearance in 1858 been one of the most deservedly appreciated textbooks which make up a medical student library The present edition, revised and brought up to date by the inclusion of much recent work, has been edited and in parts rewritten by Prof T B Johnston and J Whillis of Guy's Hospital, while the section on the digestive system has been undertaken by Prof Francis Davis of the University of Sheffield

The need for a good textbook of systemic anatomy in addition to a book on regional anatomy or a dissection manual is well supplied by the present volume, which, though not aiming at the completeness of some of the larger Continental works published in several volumes, each comprising a particular system, nevertheless forms a reliable guide to much new matter which is of practical importance and to which adequate references are supplied as footnotes to the text The notes also on applied and surface anatomy are a feature of special value as giving indications for the examination of patients for fractures or dislocations, and also for medical or surgical examination of internal organs In this last connexion we should like to mention the excellence of the numerous plates reproducing radiographs of the epiphyses, movements at articulations, and the relative positions and shape of internal organs

The section on embryology comprises much new matter on the early stages of development, and many new illustrations, such as those showing the method of homotypical and heterotypical division of chromosomes, and photographs of various stages in the embedding of the human ovum in the uterine mucosa, representing recent work of American authors such as Hertig and Rock and also early stages of development of the heart and blood vessels by Heuser, Streeter, and C L Davis The role of chromosomes in sex determination and in human genetics has been ably dealt with in a short account of the theory concerning the mode of distribution of genes in the various blood groups, and the effects of their transmission from both father and mother through the oosperm to the embryo and foetus The description of the central nervous system has been amplified by the inclusion of current conceptions of the functions of the various nuclei of the brain and spinal cord, and more particularly of the basal nuclei and hypothalamus, including a description of the routes by which co ordination of these functions by tracts of nerve fibres may be effected these tracts being clearly indicated in the figures by the use of distinctive colours

Any points in the book that call for critical comment are rather in the way of omissions than commissions—e.g., in the description of the breast one would have liked to see an account with illustrations of the successive stages in its development *in utero*, and also of the microscopic structure of the lactating gland for comparison with the resting condition of the organ, moreover from the morphological standpoint an account of the evolution of the glands as indicated by a study of their condition in lower mammals and the significance of the development of nipples in the male would have added greatly to the general interest of the purely anatomical description The addition of a glossary also would in our opinion be a very welcome feature in any subsequent editions or reprints of the present volume *Gray's Anatomy* considered as a whole is an authoritative standard work suitable for the use of both junior and senior medical students and a most valuable book of reference for practitioners and for all teachers of human anatomy

INSTRUCTION IN GYNAECOLOGY

Textbook of Gynecology By Arthur Hale Curtis, M D Fifth edition (Pp 756, 455 illustrations, chiefly by Tom Jones including 36 in colour 40s) London and Philadelphia W B Saunders Company 1946

Prof Curtis's popular textbook has been extensively revised in its fifth edition, which is as beautifully produced as its predecessors The illustrations throughout are superb, the coloured plates being particularly so The text is clear and for the most part dogmatic—a feature that will commend the book to many readers but lessen its value to others Most teachers will agree that undergraduates not only desire but require such teaching General principles clearly and unequivocally expressed provide a foundation on which a more detailed knowledge can be built but none the less the undergraduate should be encouraged to develop a critical mind He should be taught the difference between facts and theories, and if these are not separated in the teaching of his mentors he cannot be blamed if he rejects as doubtful or inaccurate and unorthodox instruction he may be given

Senior students and young specialists are likely to be even more critical of this book and for the same reason It is not enough for an author to deny the value of endometrial biopsy as an aid to diagnosing genital tuberculosis, when increasing numbers of publications from many different workers in various parts of the world are drawing attention to its importance nor is it convincing to be told that urethroplasty is an adequate method of treating all cases of stress incontinence of urine when the results in good hands are so notoriously uncertain that many more extensive operations of the sling type have been designed for intractable cases Similarly the bald statement that abortion is a common cause of sterility is one which has been accepted for a long time but in view of the national and international importance of the whole subject of fertility the accuracy of such statements is now being widely questioned If it is true it should be confirmed by facts but none is offered It is somewhat strange in this connexion that the author states that the average intelligent physician should learn to care for his sterile and subfertile patients with results closely rivaling those of his highly specialized colleagues Surely the whole subject of fertility is now so complex that this is barely possible nor would the guidance given in this book to the practitioner be sufficient to make it so The statement that, if a subtotal hysterectomy is performed on a patient in whom carcinoma of the corpus is suspected, the operation should be performed so as to avoid "spill" and the specimen opened in the theatre is another illustration of strange teaching

In spite of the criticisms given, this is an excellent book and already widely popular, as such it should be careful to raise the standard of practice and not imply a willingness to compromise to the possible or probable detriment of the patient's welfare If the surgeon is not competent to perform a total hysterectomy he should not be operating on a case of suspected carcinoma of corpus, and if he is competent he should be able to diagnose the condition before resorting to an inadequate hysterectomy A textbook such as this should give guidance in such matters

PSYCHIATRY FOR NURSES

Psychiatry Theory and Practice for Nurses By H C Beccle, M B, M R C P, D P M (10s 6d) London Faber and Faber

This book purports to be a textbook for mental nurses training for their final examinations In the preface the author bemoans the lack of understanding of human behaviour and the curious attitudes which men and women take towards life which lead to so much unhappiness from the nagging wife or irritable father to major war In the book however we find a comprehensive summary of the anatomy and physiology of the nervous system and practically all nervous and mental illness compressed into 240 pages If a doctor knew all the "facts" contained in this volume he would have the basic knowledge needed for specialism but whether he would be a competent neurologist or psychiatrist is another matter It is still more doubtful if the acquisition of this knowledge by a nurse would make her a competent person to alleviate the miseries of those who are "sick in spirit"

If this book, whose author displays so much erudition and indeed clarity and accuracy of exposition is needed for the training of the mental nurse, it forces us to ask ourselves whether we are not entirely on the wrong lines in the training of nurses. So far as mental illness is concerned the real understanding of the general nurse is conspicuous by its absence through no fault of the nurse and only gradually is the psychiatrist himself beginning to know how to deal with true sympathy with his much afflicted patient. Is his chief assistant best trained by cramming her head with bare facts? Time alone will tell. Meanwhile, the aspirant to nursing qualification will find in this book all the factual material she requires. What she will make of this, and how she will use it, probably depends more on herself than on her teachers.

FIRST LINES IN BACTERIOLOGY

A Textbook of Bacteriology and Immunology By Joseph M. Dougherty, M.A. Ph.D., and Anthony J. Lambert, M.S. (Pp 360, 102 illustrations 22s 6d) London: Henry Kimpton 1946

Bacteria in Relation to Nursing By C. E. Dukes, M.D., M.Sc. D.P.H. (Pp 186, 20 illustrations, including 12 in colour 12s 6d) London: H. K. Lewis and Co. 1946

Aids to Bacteriology By H. W. Scott-Wilson, B.Sc., B.M.B.Ch. Seventh edition. The Students' Aid Series (Pp 300 6s) London: Baillière, Tindall and Cox 1946

A Textbook of Bacteriology and Immunology by J. M. Dougherty and A. J. Lambert, of Villanova, Pa., U.S.A., is based on experience in teaching 'premedical' and 'pre-dental' students and those 'preparing to teach the biological sciences'. As an introduction to the subject for such students it is excellent, for the medical student in his clinical years it is inadequate. It is a very readable book, in which the authors' aim to make the subject both interesting and easily intelligible has been well achieved. The introductory chapter on the development of the science is particularly good, as are those on general principles and methods. The descriptions of individual bacteria and of their relation to disease and laboratory diagnosis are simple and incomplete. To give examples, there is no mention of the coagulase test, the serological classification of haemolytic streptococci, types of diphtheria bacilli or how to interpret the results of an agglutination test in the diagnosis of enteric fever. This book is therefore only introductory, and its title might well be altered to convey this.

Bacteria in Relation to Nursing by C. E. Dukes, is intended for those training to be sister tutors, but may be found useful both practically and in preparing for examinations by nurses generally. It is written in a clear and pleasant, almost conversational, style and is attractively produced and well illustrated by drawings. There are only two photographic illustrations both showing nurses in uniform working in a laboratory. The main subjects are methods, the characters of the principal pathogenic bacteria, immunity, the collection and examination of various kinds of specimen, and sterilization and disinfection. A final chapter outlines a suggested course of practical instruction. The necessary simplification has been achieved without sacrifice of truth, but there are a few minor inaccuracies. It is said that agar is obtained from algae and that diphtheria bacilli will not grow in broth. It is hard on Dubos to describe gramicidin as a purely Russian discovery, and the mention of convalescent serum for the treatment as well as the prevention of measles may mislead. In the next edition we should like to see at least a paragraph explaining what viruses are (they are only incidentally mentioned in two places) and perhaps something similar might be done for protozoa.

The seventh edition of *Aids to Bacteriology* by H. Scott-Wilson, is said to have been completely revised but almost archaic features of much earlier editions survive in it and many modern advances are unmentioned. The characters of growth in gelatin and on potato are regularly described, one would prefer in connexion, for instance, with typhoid and dysentery bacilli to be told of some of the highly selective media which now facilitate their isolation. The greater part of the book 'dates' to twenty or more years ago and if it is to be of use to medical students it should be rewritten preferably by a teacher familiar with their needs.

BOOKS RECEIVED

[Review is not precluded by notice here of books recently received]

Phases in the Drinking History of Alcoholics By F. M. Jellinek, Sc.D. (Pp 88 \$1.00) Connecticut: Hillhouse Press 1946

A study of the behaviour of chronic alcoholics based on replies to a questionnaire, from the laboratory of applied physiology, Yale University.

Principles of the Contact Lens By H. Treissman, F.R.C.S. D.O.M.S., and E. A. Plaipe (Pp 88 10s 6d) London: Henry Kimpton 1946

Intended for ophthalmologists. General description of contact lenses, their optical merits, and tests of suitability for patient.

Intelligence and Fertility By Sir Cyril Burt, M.A. D.Sc. (Pp 43 2s) London: Hamish Hamilton 1946

Survey prepared at request of Royal Commission on Population. Investigates problem of whether differing birth rates in different sections of the population will alter the inherited mental qualities of the nation.

Ambulatory Proctology By A. J. Cantor, M.D. (Pp 524 42s) London: Hamish Hamilton 1946

An American study of ambulatory surgical and medical treatment of diseases of anus, rectum, and colon.

Dentistry: An Agency of Health Service By M. W. Carr, D.D.S., and others (Pp 219 \$1.50 8s 6d) New York: The Commonwealth Fund 1946

A survey of the history, present problems, and future trends of dentistry in the United States.

The Hospitals Year-Book, 1945-6 Edited by J. P. Wetenhall, B.A. (Pp 279 No price) London: The British Hospitals Association 1946

The fourteenth issue of this directory of the units composing the nation's hospital services including a review of the last decade and current events.

A Textbook of Clinical Neurology By J. M. Nielsen, B.S. M.D. F.A.C.P. Second edition (Pp 699 \$7.50) New York and London: Paul B. Hoeber (Harper and Bros.) 1946

Designed for students and practitioners. Covers the whole field of clinical neurology. New subjects treated include toxoplasmosis, neuromuscular exhaustion and penicillin therapy. Many illustrations.

Researches on Pre-Natal Life Volume I By Sir Joseph Barcroft (Pp 292 37s 6d) Oxford: Blackwell 1946

Brings together the author's researches on the subject. Topics discussed include function of the placenta, influence of diet on growth of foetus, the foetal circulation, utilization of oxygen prenatally and neonatal circulation.

Nutrition in Public Health By Lucy H. Gillett, M.A. (Pp 304 14s) Philadelphia and London: W. B. Saunders 1946

Intended to instruct parents and teachers in the basic principles of nutrition, the planning of meals, special diets and racial food customs.

Précis d'Anatomie Neurologique By Jacques Huguier (Pp 312 200 francs) Paris: Librairie Maloine 1946

The anatomy of the nervous system in summary and diagrammatic form. Profusely illustrated.

L'Ophthalmologie du Practicien By A. Cantonnet. Ninth edition (Pp 172 100 francs) Paris: Librairie Maloine 1946

A concise outline of ophthalmology for the practitioner.

RKG Rheocardiography By W. Holzer, K. Polzer and A. Marko. English translation by E. M. Kreidl (Pp 43 7 Swiss francs) Vienna: Wilhelm Maudrich 1946

An electrocardiographic investigation of the cardiovascular system.

The Chemistry of Anaesthesia By J. Adriani, M.D. (Pp 530 35s) Oxford: Blackwell 1946

The book is in three parts: (1) inorganic phases of chemistry related to anaesthesia, (2) organic chemistry, and in particular the chemistry of depressant drugs, (3) biochemical aspects of anaesthesia. The fruit of the author's postgraduate teaching at New York University College of Medicine.

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THE PRESIDENTS AND MR BEVAN

The three Presidents of the Royal College of Physicians, Royal College of Surgeons, and Royal College of Obstetricians and Gynaecologists on Jan 2 wrote a letter to the Minister of Health on what the *Times* has described as the growing gulf over the National Health Service between the doctors and Mr Bevan. On Monday of this week the Minister of Health replied to the Presidents' letter. Both communications are published in the middle pages of this week's *Journal*. These two documents are of the highest importance and deserve the closest study by the medical profession. The three Presidents express concern over "the opposition of a substantial part of the medical profession to any renewal of discussions" on the National Health Service. They wish to prevent an impasse arising. They believe that the form of the Service will depend to a large extent upon the Regulations and that several objections of the profession may be met in the framing of these Regulations. They therefore ask the Minister to clarify some points. The first is the fear of many doctors that in entering into discussions on the Regulations they would imply approval and acceptance of the main provisions of the Act. So far as the general practitioner part of the Service is concerned the Presidents bring to the notice of the Minister three points for reconsideration: the basic salary, the tribunal, and "the liberty of movement of general practitioners. As to specialist practice in the new Service, they state: "In the background, just as in the case of general practitioners, there is the general issue of the freedom of the profession and the availability to the people of independent medical advice." They stress the profession's desire for the continuation of independent practice.

The Minister in his reply assures the Presidents that there is no ground for the fear that in discussing Regulations medical men "would compromise their position by implying their approval and acceptance of the main provisions of the Act." He adds: "Every doctor will have to decide for himself when the proper time comes whether or not he should take part in the new Service, and the profession as a whole will be free to determine their views on the Service when they know what it is to be. The resumption of discussions now would not prejudice these eventual decisions." The Minister goes on to ask for the profession's "help and advice in this task"—that is, in framing Regulations. "I shall endeavour," he observes, "to meet any views of the profession which do not conflict with the principles of the Act." He states his readiness to discuss the question of the basic salary, observes that in the new Service the full civic rights of doctors will be preserved, and states "there is no power to direct a doctor to go anywhere or do anything." On the question of professional freedom the

Minister writes: "It is a basic principle of the new Service that there should be no interference with the clinical freedom of any doctor—specialist or general practitioner. It is also a principle of the Service that "independent specialist practice should be free to continue."

We conclude with this comment in a leading article in the *Times* of Jan 6: "Yet a crisis of confidence has been precipitated, and it cannot be denied that Mr Bevan himself has helped to precipitate it. Can this crisis of confidence be resolved, and does the Minister's letter contribute to this desirable end? At their Division meetings before Jan 28 members of the B.M.A.—with the final figures of the plebiscite in front of them (see pp 64-5)—will have to ask themselves this question and decide to what extent the Minister's letter modifies the position."

DIET AND LIVER DISEASE

In reviewing our present knowledge of the significance of nutritional factors in the causation and treatment of liver diseases Prof L J Wits has successfully accomplished a formidable task. In two short articles, published on page 45 of this number and on page 1 of last week's issue, he has covered most of the important experimental and clinical developments in this field and has brought together much valuable information from widely diverse sources. It is obvious that considerable differences exist between the types of liver disease produced artificially in experimental animals and those most familiarly known in human subjects, at the same time the lesions found under experimental and clinical conditions are often sufficiently similar to make their comparison instructive.

The infiltration of the rat's liver with excess of fat, which is taken by Wits as a starting-point in approaching his subject from the experimental side, has been well known to nutritionists for many years. The fat content of the liver may readily be increased tenfold or more by including much fat in the diet and simultaneously withholding substances which facilitate the dispersal of fat from the liver. These "lipotropic" agents include choline, a constituent of lecithin, and methionine, an amino-acid containing sulphur which is present in casein and other proteins of high nutritional value. More recently it has been found that the livers of animals kept for some months on a diet which produces fatty livers eventually develop cirrhosis usually with the formation of a brown pigment known as "ceroid".¹ Since in this country the scarcity and high price of spirits has practically eliminated alcohol as a cause of cirrhosis, it is interesting to speculate whether the 2,000 cases which are usually in process of dying from this disease can be due to nutritional deficiency. Wits points out that while the position in England is uncertain there is ample evidence that liver diseases are associated with faulty nutrition in the Tropics. Thus fatty infiltration of the liver occurs in "kwashiorkor," or malignant malnutrition,² a disease which is common in grossly malnourished African natives. Cirrhosis of dietary origin is common in children in India, Ceylon, and China.

¹ Lillie R D, Daft F S and Sebrell W H. *Publ Hlth Rep Wash* 1941 56 1255

² *British Medical Journal* 1946 1 958

Focal necrosis of the liver is another lesion caused by deficiency of protein in rats, its onset being sudden rather than gradual as in the development of cirrhosis. The missing nutrient here appears to be cystine, another amino-acid which contains sulphur. Cystine, unlike choline and methionine, has no lipotropic action, and its addition to the diet in excessive amounts appears to favour the development of cirrhosis. Witts reminds us that sulphhydryl groups are concerned in the vital enzyme systems of the liver, which may explain why liver cells deprived of cystine and methionine should become unduly vulnerable to the toxic action of chloroform, carbon tetrachloride or arsenical drugs. The whole story of the relation of liver damage to diet, however, appears to cover a wider field. Though dosing with sulphur compounds before or very soon after anaesthesia with chloroform is effective in preventing liver damage in suitable circumstances, it is clear that under other conditions widely different substances may be equally effective. Thus the increased vulnerability to toxic agents due to starvation may be checked by giving carbohydrate.

Information obtained from animal experiments and the application of it to the benefit of human sufferers from liver disease appears to favour the maintenance of sound general nutrition rather than the extensive exploitation of choline, methionine, or cystine as drugs. In regard to cirrhosis better results are obtained by giving a good diet rich in protein rather than by attempting to lighten the work of the liver by giving a diet high in carbohydrates. Treatment with methionine and choline, according to Morrison,³ is beneficial even when the diet is already rich in protein, but the experience of other workers has been less convincing. Acute necrosis of the liver in the human subject is a much rarer disease than cirrhosis and must be diagnosed with care. It is not surprising, therefore, that our knowledge of its dietary treatment should be scanty. In the present state of doubt the clinician may well concentrate on the relief of shock with fluids, glucose, and milk, though the analogy with experimental liver necrosis suggests that research on the value of proteins and amino-acids might be well rewarded. On the other hand infective hepatitis, in common with the closely similar homologous serum jaundice and post-arsenical jaundice, appears to have no parallel in the experimental animal. However, in recent years opportunities for clinical research, particularly among troops, have been all too frequent. The results of treatment with relatively small doses of choline, methionine, and cystine have on the whole been unconvincing, and in view of the benign nature of the disease the intravenous injection of the large doses calculated to be necessary from the results of animal experiments seems quite unwarrantable. Witts advises a light diet with plenty of partially skimmed milk, but considers that it does not matter much what the patient eats provided he keeps on eating. An interesting point, which appears to emphasize the importance of diet in infective hepatitis, was noticed during the war: poorly nourished coloured troops, though relatively free from the disease, had, when once infected, a much higher mortality rate than that of white troops.

While therefore we have considerable knowledge of the specific nutritional factors concerned in the production and

prevention of liver diseases in experimental animals, we can still only recommend that human liver diseases should be treated by a diet which is generally sound, wholesome, and otherwise suitable. Possibly this gap between theory and practice may be explained by the fact that experimental knowledge, though extensive, is still far from complete. The study of experimental liver disease is indeed complex. Thus excess of fat, excess of cholesterol, imbalance of vitamins of the B complex, and even starvation all tend to increase the fat content of the liver. Choline, protein, methionine, the cyclic alcohol inositol, and the pancreatic hormone known as lipocaic are among the substances having lipotropic action, but they are effective in different degrees according to the factors tending to cause the fatty infiltration. Recent work has suggested that the situation may be complicated by the interplay of many other substances. Dam and Kelman,⁴ for example, have claimed that in certain circumstances vitamin E has the same action as inositol, and that it appears to be necessary for the formation of lipocaic. In the production of cirrhosis certain fats are more active than others, and cod-liver oil in particular seems to promote the formation of ceroid pigment.⁵ On the clinical side, moreover, further complications may arise through the secondary effects of disease. Thus the metabolism of vitamin A, stored mainly in the liver, is disturbed by both acute and chronic human liver diseases and in cirrhosis the reserves are often completely exhausted.^{6,7} We are faced therefore, with a complicated network of interrelated biochemical systems for the unravelling of which prolonged and intensive research will undoubtedly be necessary.

THE MEDICAL OFFICER OF HEALTH

In January, 1847, the first medical officer of health in this country took up his appointment. The event was one which had far-reaching effects on the health of the country, and the occasion warrants a brief survey of the circumstances which led up to the appointment and to the results which have been achieved in the field of public health during the last hundred years, discussed elsewhere in this issue.

The starting-point of all our health measures was the cholera epidemic which swept this country in 1831-3. In his *English Sanitary Institutions* Sir John Simon says that its importance "lies chiefly in the circumstance that, during the alarm, many intelligent persons throughout the United Kingdom had occasion to become more critically cognizant than they had ever before been of the sanitary conditions under which the mass of the people were living." Despite the grievous losses occasioned by the cholera, it was not immediately recognized that the Boards of Health which were set up at the time need be anything but temporary institutions. The period between 1834 and 1845 was marked by the labours of Edwin Chadwick in calling attention to the sanitary conditions of the labouring population and in demanding their redress. 1838 saw the issue of the valuable report by Southwood Smith *On some of the physical causes of sickness and mortality to which the*

⁴ *Science* 1942 95 430

⁵ Victor J. and Pappenheimer A. M. *J. exp. Med.*, 1945 82 375

⁶ Wolff L. K. *Lancet* 1932 2 617

⁷ Moore T. *Biochem. J.* 1937 31 155

poor are particularly exposed, and the Royal Commission on the Health of Towns reported in 1844 and again in 1845. Many medical men appreciated that official action would be necessary in order to reduce the mortality which resulted from the prevalent conditions, and it must have been realized by some that what was wanted in each industrial area was the specific appointment of a doctor to co-ordinate the work of prevention which had been shown to be so necessary. It is a significant fact that fifteen years were to elapse between the beginning of the cholera epidemic and the appointment of the first medical officer of health.

Of the men who were active in provincial cities in pointing out the need for sanitary reform few were better known than William Henry Duncan, of Liverpool. Born in 1805, he was Physician to the Royal Infirmary, Lecturer in Medical Jurisprudence in the Medical School, and from 1837-41 he was President of the Liverpool Medical Institution. In 1843 he published the text of two lectures in which he pointed out that the average age at death in Liverpool, Manchester, Leeds, and Bolton was 19 years, and that 20% of the population of Liverpool lived in cellar dwellings. In 1845 he was the principal speaker at a public meeting for the purpose of establishing a Liverpool Branch of the Health of Towns Association. In 1846 the Town Council of Liverpool procured the passing of three private Acts, the third of which—the Liverpool Sanitary Act—empowered the Council to appoint “a legally qualified medical practitioner, of skill and experience” as “the Medical Officer of Health for the Borough of Liverpool.” It was almost inevitable that Duncan should be offered this appointment. He accepted on a part-time basis, and his duties began on Jan. 1, 1847. In the following year his salary was raised to £750 per annum, and he became a whole-time officer. Duncan’s work in Liverpool is worthy of the highest praise. In the year of his appointment there were 5,845 deaths from “fever” and 2,589 from “diarrhoea” in Liverpool, and in 1849 the population of 300,000 suffered 5,245 deaths from cholera. Duncan laboured for the provision of hospital beds, and for facilities to enable the district medical officers to visit the patients. In three years he reduced the percentage of the population living in cellar dwellings from 12 to 2, and in the 16 years of his official work the death rate in the city fell from 39 to 27 per 1,000. Sir John Simon said of him that “with the ungrudging confidence and support of a very public-spirited local authority he established methods of work, and initiated courses of improvement, which have continued to the present day.”

The sequel to Liverpool’s pioneer effort is better known. In 1848 the Corporation of the City of London secured the passing of the City Sewers Act, which empowered it to appoint a medical officer of health. It is interesting to note that the duties and functions of this officer are set out in the Act in terms which are practically identical with those used in the Liverpool Act. John Simon was appointed to the post at the age of 32 years, and he held the office until he was made the first medical officer to the general Board of Health seven years later. In 1855 medical officers had to be appointed to the various vestries and district boards in London, and the Public Health Act of

1872 required every provincial sanitary authority to appoint a medical officer of health. In this way the appointment of professional health officers throughout the country was at last established—forty years after the inroads of cholera had directed the attention of enlightened members of the public to the necessity for some such measure.

Sir Allen Daley, who has himself been a medical officer of health for the long period of 35 years, has dealt sympathetically and authoritatively with the story of the health officer in his presidential address to the Society of Medical Officers of Health. In comparing the important statistics for 1847 and for 1945 respectively he points out that, though the birth rate has declined by almost half, the death rate has fallen from 24.7 to 11.4 per 1,000, the infantile mortality rate from 164 to 47 per 1,000 live births, and the maternal mortality rate from 4.52 to 1.84 per 1,000 live births. These are striking figures, and they should not be obscured by the fact that the statistics for certain conditions which are more prevalent in later life—and which were incidentally much more difficult to diagnose correctly in 1847—have shown a marked increase. Nevertheless, these adverse statistics occur as pointers to the directions in which research and improved administrative measures are most likely to achieve successful results.

The Medical Officer of Health has never been the most lauded member of the medical profession. The title in itself is cumbersome and does not describe his work accurately. Presumably the Liverpool Corporation of 1846 was responsible for coining the title, though the influence of Whitehall cannot be excluded. In any event, the unfortunate choice had come to stay. Weighted during each successive decade with increasing administrative responsibilities, with staffs grown to proportions sometimes almost unmanageable, he has developed into a professional administrator with the heaviest of responsibilities—that of the health of his fellow citizens. In such conditions most of our distinguished officers have continued to retain the scientific outlook, and many have added to the sum of knowledge. Perhaps never in their long career have the virtues of the Medical Officer of Health received such spontaneous recognition from the public at large as during the late war, when bombing led to conditions which were apparently so conducive to the spread of infectious disease. The spontaneous gratitude which was often then expressed by members of the public was a source of gratification to hard-worked heads of health departments.

The period between 1930 and the present day has been one of much increased responsibility for the medical officers of health of large hospital authorities. Under their guidance, and frequently their active administrative control, the municipal hospitals have been altered beyond recognition. Now, under the provisions of the new Act, these responsibilities will pass to the officers of Regional Authorities, but the chief health officer of the area will probably have other onerous duties placed on his shoulders.

Perhaps the chief danger besetting the M.O.H. is that he may see administration as an end in itself and not as the means for helping the individual citizen, but despite criticisms of their work in detail—sometimes deserved—medical officers of health have made substantial contributions to the nation’s well-being.

A FORETASTE OF CONTROL?

That determined opponent of administrative medicine, Dr Foxell, of Birmingham, gives, through the courtesy of Sir Ernest Graham-Little, a further illustration in this week's correspondence columns of the awkward situation in which the administrator places himself (or herself) in attempting to intervene in the treatment of the individual patient. It must, of course, be recognized that the Ministry of Food in times of shortage has to see that available supplies are evenly distributed and that no unfair discrimination is made in the case of any one member of the community. It is recognized, too, that categories for favoured treatment must be drawn up and that there must be some guiding rules for the extent to which extra allowances can be granted. To criticize the recent action of the Ministry of Food is not to ignore the valuable work done by it under the initial inspiration of Lord Woolton during the war years. But the writers of two letters criticizing the view expressed in the annotation in the *Journal* of Dec 28 seem to us to have missed the principle at stake. It is almost unnecessary to say in these columns that the extra fat demanded by Dr Foxell for his patient would not have saved the patient's life—Dr Foxell believed it would prolong it. The practice of medicine is first and foremost a humane art, and the doctor treating a sick person does not treat a disease but an individual. Let us recall the facts once more. Dr Foxell's patient with carcinoma of the oesophagus was, on expert advice, given a certain diet in hospital which included two ounces of fat a day in the form of butter or margarine. When he was discharged from hospital this regime was continued on the grant by the local Food Office of the extra fat. The details were then sent from the local Food Office to the Ministry of Food, and the medical advisers, when consulted, quite properly gave the Ministry an impersonal assessment of the case. Armed with this, the Parliamentary Secretary to the Ministry of Food gave an impersonal ruling, and the patient—a person—is deprived of what his own doctor has considered to be necessary for him. We do not question the good faith of the administrators, but did they for one moment stop to consider the state of mind of a man who probably knew he was doomed to die and who therefore clung to every chance of prolonging what little life there was left to him? Here was a sick person who had been carefully and conscientiously treated in hospital and who had been receiving a certain diet as the result of a full consideration of his case by the medical men directly responsible to him. When his regime was rudely interrupted by administrative interference what must that patient have thought first of all of his own doctors, and secondly of the State, whose function it is to safeguard the rights of the individual? Dr Back, in his well-argued letter, seems to miss the point that the patient had been granted the increased fat recommended. The situation would have been different if he had not received the extra ration. But as he had received it the intervention of the State must first of all make him lose confidence in his medical advisers, and for the State to do this to a dying man would seem to us to be grossly inhuman.

What has worried thoughtful medical men during the past years' discussion on a National Health Service has been this very question of interference of the State with what is called the doctor-patient relationship. Some sceptics have believed that this was a mere slogan, and those in our own profession who have believed this have usually not been practising doctors. Dr Foxell's case expresses better than anything else what this doctor-patient relationship is and what happens when the State, through well-meaning persons who have never seen the patient, interrupts a regime of treatment. If this can happen here and now, what will happen when the medical profession is nationalized and the responsibility of every doctor is divided between the State and his patient—with the State as paymaster?

Dr Foxell's further illustration in this week's correspondence columns once more shows the dilemma of the administrator who tries to treat a sick person. The details are there for all to read. What conclusions can be drawn from them? The Ministry's medical advisers are eminent, high-minded men, widely respected by their professional colleagues. They have done no more than give the Ministry of Food the correct examination answer to a question, and for this, if it may be said without undue flippancy, they deserve full marks, but, as in the case of all answers to examination questions, the answer must be incomplete because the one essential piece of evidence is missing—namely, the patient himself. No sick man or woman or child can be treated on textbook lines. The clinician's job is to treat a person, and this cannot be repeated too often. Even Dr Watson, Sherlock Holmes's professional colleague, would have regarded such a statement as elementary.

RINGWORM OF THE FEET

It would be a diverting exercise to consider the many different treatments of foot ringworm during the last thirty years. Few have outlived the two established favourites. Whitfield's ointment and Castellani's fuchsin paint. Ringworm of the feet was recently a matter of consequence to military efficiency, because though a minor affection it can become sufficiently disabling to incapacitate. Experience gained in war medicine does not always advance civilian practice, but treatment of parasitic diseases provides an exception to this generalization. A contribution¹ from Johns Hopkins Hospital on sodium caprylate in the treatment of dermatomycosis of the feet is a case in point. A complementary paper² shows the frequency and significance of this form of ringworm in North America. (We have recently³ commented on other American work on the treatment of fungous infection of the feet.)

Of 871 entrants to the U.S. Naval Academy evidence of foot ringworm—peeling of the skin, fissures, or maceration—was present in 59.9%, corresponding to figures⁴ of the incidence among male entrants to California University in 1928. Of the naval cadets 17% who were clinically negative gave positive results on direct microscopical examination. This suggests they might be carriers, or persons in whom

¹ Keeney E. L., Ajello Libero Lankford E. and Lois Mary Johns Hopkins Bull. 1945 77 422.

² Ajello Libero Keeney E. L. and Broyles E. L. ibid p 440.

³ British Medical Journal 1946 2 700.

⁴ Legge R. T., Bonar L. and Templeton H. J. J. Amer. med. Ass. 1929 92 1507.

the fungus will become active only under environmental changes—an observation throwing new and perhaps disconcerting light on the prophylaxis and treatment of *uneped*

The paper by Edmund L. Keeney and his colleagues¹ on sodium caprylate arose out of observations on its effectiveness against *Monilia albicans*. The fungistatic effects tested by the agar cup-plate technique of Ruehle and Brever showed remarkable inhibiting action on the causal trichophyton, and an associated incomplete bacteriostasis of streptococci and staphylococci. For the clinical investigation at the US Naval Academy ninety-one midshipmen with foot ringworm, confirmed by laboratory tests and culture, were divided into two groups, forty-six were treated with sodium caprylate ointment, forty-five acted as controls. Direct examination of the treated group gave 27.5% after two weeks and 9.3% after four weeks with slides showing the trichophyton, or 90.7% entirely free from the fungus. The later records were less satisfactory: after five and six weeks' treatment 14.2% and 12.8% positive slides respectively were obtained, due to a tendency to the irregular use of the remedy after the first enthusiasm and the clinical aspects had declined. This result must have meant that some of the 90.7% symptomless were either reinfected or not entirely free from the fungus. The authors' belief that the ointment, the formula for which is given below, provides a new and improved method of treatment is supported by their published results.

Sodium Caprylate Ointment

Caprylic acid	10.00%
Sodium hydroxide (90% of theoretical amount required)	2.45%
Diethylene glycol mono-ethyl ether	3.00%
'Carbowax (6000)'	47.50%
n-propyl alcohol	10.00%
Zinc caprylate	5.00%
Water	22.05%

Note—10% of the above caprylic acid is left free for a final pH adjustment to 8.0

METABOLISM AND THE LIVER IN "MEDICAL SHOCK"

In an interesting paper Davidson and his colleagues¹ report studies on "peripheral vascular failure," by which they mean apparently "states of low blood pressure." Their cases include such varied conditions as pneumonia, pericarditis, myocardial infarction, and barbiturate poisoning. They found that the blood sugar was raised, as was the lactic acid of the blood, while the bicarbonate reserve was lowered. The alpha amino-acid nitrogen of the blood was often elevated, and there was sometimes considerable azotaemia. The prothrombin time was lengthened, and there was often a slight rise in the icterus index. In the fatal cases there was usually some change in the liver, such as focal necrosis and degeneration, especially in the centres of the liver lobules. Blood alpha amino-acid nitrogen does not normally rise with increases in nitrogen metabolism, but if the recognized increased nitrogen catabolism of peripheral vascular failure is associated with a failure of deamination due to impaired liver function, then an increase in alpha amino nitrogen might be explicable.

From the same school there had previously been reports of similar biochemical changes in cases of burns and in haemorrhagic shock, anoxia, and acidosis.² In a severe

case of burns the blood sugar may reach as high as 300 mg per 100 ml. These patients, however, are sensitive to insulin, and when more glucose is given it seems to be normally metabolized. An increase in protein catabolism and gluconeogenesis from protein was thought to be possibly responsible for this rise in blood sugar. Alpha amino nitrogen is an intermediate product in gluconeogenesis from protein, but it does not normally accumulate in the blood as it is easily dealt with by the liver.

These changes then are all secondary consequences of anoxia or of a depressed circulation, particularly when associated with low blood pressure. A good deal of attention has been given in America to the contribution these metabolic disturbances may make to the morbid process of shock. It is well known that when some cases of haemorrhagic shock have gone on too long with a low blood pressure they may not recover despite apparently adequate transfusion, at this stage they are said to be "irreversible." The recognition of profound metabolic disturbances associated with liver damage in shock in animals and in man led to the idea that these biochemical changes might be an important factor in the "irreversible state."³ This hypothesis has been put to the test by Frank, Seligman, and Fine.⁴

If bled dogs are kept with a blood pressure down to 30 mm Hg for sufficiently long they will certainly die even if transfused. Frank and his colleagues arranged that such dogs should be *vivi-perfused* by cross-circulation from donor dogs without raising the blood pressure of the recipient. Blood from the carotid artery of the donor dog was led into a recipient vein through a pressure-reducing valve, while blood flowed from the femoral artery of the recipient into the femoral vein of the donor as soon as the recipient's arterial pressure rose above 30 mm Hg. By connecting the donor dog's artery to the splenic vein a rich arterial blood supply was assured to the liver, though otherwise the animal was still "shocked." Of 12 dogs whose livers were thus maintained 11 survived when transfused after a period of shock ordinarily long enough to render transfusion ineffective. Of 17 dogs similarly treated except that the donor's blood entered the jugular vein 15 died after late transfusion. This seems to demonstrate clearly that loss of liver integrity is a significant factor in the collapse of the organism in advanced haemorrhagic shock and that the preservation of liver function is of crucial importance in recovery.

These experiments gave Frank and his co-workers an opportunity to investigate the part played by biochemical changes in contributing to death from shock. Disturbances in intermediary metabolism were less marked in shocked dogs being *vivi-perfused* than in dogs not so treated but in an equally severe degree of haemorrhagic shock. The presence of a healthy liver did not completely prevent the development of these metabolic changes, and it therefore seems unlikely that they contribute specifically to the fatal issue. The exact way in which the liver protects the organism against "irreversible shock" is not clear, but disturbance of some unrecognized "detoxicating" function is a possibility.

These experiments render unlikely the hypothesis previously suggested by Wiggers and Werle⁵ that "irreversibility" is brought about by heart failure from prolonged depletion of coronary flow. They also make a weighty contribution to the problem of low blood-pressure states and bring a deeper understanding of the final mechanisms common to a variety of different types of circulatory failure.

¹ *New Engl. J. Med.* 1946 234 279
² *Ibid.* 1944 231 437

³ *J. exp. Med.* 1944 79 9
⁴ *J. clin. Invest.* 1946 25 22

⁵ *Amer. J. Physiol.* 1942 136 421



William Henry Duncan (1805-1863)

A PUBLIC HEALTH CENTENARY

On Jan 1, 1847 Dr W H Duncan was appointed by the City of Liverpool as the first salaried medical officer of health in Great Britain

The interest of the State in the physical health of its citizens is a comparatively modern development. It dates from the early nineteenth century and broadly speaking may be traced to three causes. Throughout the country there was an increasing reaction against the anarchy of the Industrial Revolution. There was also the steady development of a humanitarian spirit, as evidenced by John Howard's work on prison reform, the agitation for the abolition of the slave trade, and the attempt by Sir Samuel Romilly and others to infuse some humanity and common sense into the old penal laws. To these two general trends was added a clear threat. Asiatic cholera had appeared for the first time in Europe and had spread to England.

This prompted the setting up of the Consultative Board of Health in 1831. Its advice however was no more useful than that of the College of Physicians at the time of the Great Plague and it was soon superseded by the Central Board of Health which was almost equally impotent. More important than either of these short-lived bodies was the Central Poor Law Commission which was set up in 1834 and more important than the Commissioners was their Secretary, Mr Edwin Chadwick.

Chadwick believed that pauperism was largely connected with disease and that the Poor Law Commissioners must largely concern themselves with questions of communal health. He therefore persuaded Dr Southwood Smith to conduct an inquiry in 1838 into an outbreak of fever in the slums of Whitechapel. The next step was a long medical report again instigated by Chadwick and prepared by Dr Southwood Smith on the causes and effects of "Fever in Twenty Different Metropolitan Boroughs and Unions". There followed in 1840 an Act authorizing under the control of the Poor Law Commission free vaccination against smallpox. Two years later the Secretary to the Commissioners made his classic "General Report on the Sanitary Condition of the Labouring Population" of Great Britain. This document of which 10 000 copies were published, forced into public prominence the part played by sickness and

ill-health in the production of poverty and insisted that the prevention of disease was one of the first duties of the State. It led to the appointment in 1843 of a Royal Commission, with the Duke of Buccleuch in the chair to inquire into the public health generally. The Report of the Royal Commission amply confirmed what Chadwick had already made clear that every where there were defective water supplies and a lack of any kind of sanitation, that the harvest of the slums was too many widows and orphans, a high infantile mortality and a low expectation of life, so that 'the loss of working ability among large classes cannot be less than 8 or 10 years'. Legislation followed, and in 1848 the General Board of Health was established for a first term of five years when what had been known as the Health of Towns Bill became the first Public Health Act.

Meanwhile the City of Liverpool had moved one step ahead of the rest of the country in creating the appointment of which the centenary is now being celebrated. Under a Private Act of 1846 Liverpool appointed Dr William Henry Duncan, an Edinburgh graduate, as the first salaried medical officer of health in Great Britain. He took up his duties on Jan 1, 1847, at a salary of £300 a year.

The Corporation of the City of London followed the lead given by Liverpool. Dr John Simon became London's first medical officer of health in 1848. John Simon was later to take over the task begun by Edwin Chadwick. The General Board of Health had its statutory five years of life. At the end of this time the Government of the day was defeated on a Bill intended to renew the existence of the General Board. The very qualities which had distinguished Mr Chadwick and made him so effective an administrator had also made him and the Board extremely unpopular.

The Board was reconstituted without Chadwick and in 1859 a Medical Department under the Privy Council was established. This was the reaction against bureaucracy, or rather, against the bureaucratic despotism which Chadwick was held to personify. This new Department continued to act under the skilled guidance of Sir John Simon until the formation of the Local Government Board in 1871. The Local Government Board replaced the Medical Department and the Poor Law Board and continued the functions of both as the principal central authority for public health until the creation of the Ministry of Health in 1919. Clearly, then, all the earlier developments in public

Sir John Simon (1816-1904)



health legislation and practice in this country branched from the work of two outstanding individuals—Edwin Chadwick and John Simon

Edwin Chadwick was born at Longsight, near Manchester, on Jan 24 1800, just four years after Dr Percival and Dr Ferrar and their friends had set up the Manchester Board of Health, a voluntary society intended to deal with factory hygiene and to bring before Parliament the urgent need for reform and regulation. He was educated for the Bar, but his essays in the *Westminster Review* on different methods of applying scientific knowledge to the business of government brought him to the notice of Jeremy Bentham, who engaged him as a literary assistant and ultimately left him a handsome legacy. In 1832, the year of the great Reform Bill and the year in which Charles Hastings founded the Provincial Medical and Surgical Association, Chadwick was employed as an investigator by the Royal Commission on the Poor Law, and a year later he was made a full member of that body. With Nassau W Senior, the Oxford Professor of Political Economy, he drafted the report which procured the passing of the Poor Law Amendment Act of 1834. His special contribution was the institution of the union as the area of administration. He favoured, however, a much more centralized system of administration than was adopted, and complained often that the reform of 1834 was badly marred by the rejection of his scheme, which involved the management of poor law relief by salaried officers centrally controlled with the board of guardians acting only as inspectors. The country and the Government rejected Chadwick in 1854. Recognition of the value of his work came only towards the end of his long life. He was made K C B in 1889, and he died at East Sheen, Surrey, on July 6, 1890. He had given public health administration a series of clear-cut objectives by showing how the census and bills of mortality could be used to diagnose those public ailments which required for their control various public health measures.

Sir John Simon was born in London on Oct 10, 1816. In the spring of 1844 he was awarded the first Astley Cooper prize for a physiological essay on the thymus, and the following year he was elected FRS. He was appointed lecturer on pathology at St Thomas's Hospital and subsequently became a surgeon on its staff. He published many clinical surgical lectures and might easily have become well known as a surgeon had he not elected to serve sanitary science in the City of London in 1848. His most notable book was *English Sanitary*

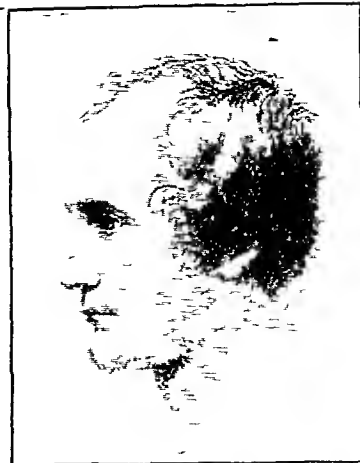
Sir Edwin Chadwick (1800-1890)



Institutions which among other things pointed out that before the passing of the Medical Act of 1858 there were 'Twenty one disconnected corporate Authorities within the United Kingdom using their heterogeneous credentials of qualifications (more or less) for responsibilities in Medicine'.

It was Simon who described preventive medicine as 'the province where Medicine joins hands with Common Sense' and who most appreciated the work of Chadwick in establishing preventive medicine in Great Britain. Sir Edwin Chadwick he wrote, 'was the first to awaken our statesmen of those times to the duty of caring for the Public Health, and the first to bring Health under the protection of the Law'.

Photographs are reproduced by courtesy of The Wellcome Historical Medical Museum



Thomas Southwood Smith (1788-1861)

NUTRITION IN VIENNA

Dr HARVEY S COLLINS an American nutrition expert addressed an Unrra conference in London recently on conditions in Vienna. On arrival there in April, 1946 he found the people listless, but in the following June their spirits appeared to be greatly improved a circumstance which seemed inconsistent with the official ration and the known decrease in food obtainable off the ration. He therefore made a survey of a statistically representative sample of the community selected at random. Some 10 000 people in all consumer groups were invited to come for medical examination, and some 7,500 did so, while visits were made to the homes of those who did not attend to find out whether they were prevented by illness, 2,000 dietary histories were taken. The results of the medical survey showed retarded growth in children, particularly in the 7-13 age-group. Adults over 40 were under weight, the degree of deterioration increasing with age. On the other hand, there was not much evidence of malnutrition. Oedema of the ankles was present in a number of individuals, but in all but 0.3% could be accounted for by varicose veins, heart disease, or other ailments. In the 0.3% the condition was consistent on medical history and examination, with protein or calorie deficiency, and was the so-called 'famine oedema'. Clinical evidence of deficiency of vitamin B complex was rare. 0.8% showed signs suggestive of riboflavin deficiency. Scurvy was not found in any case but vitamin C deficiency was suggested in 0.62%, and vitamin A deficiency in 0.71%. There was little evidence of the vitamin D deficiency in young children which was so marked after the First World War. The improvement was presumably due to preventive measures in the form of distribution of cod-liver oil and other vitamin sources and preferential milk distribution.

Dr Collins summed up the state of nutritional health of the people of Vienna in the summer and early autumn of 1946 as maintenance at a level below normal but not at such a low level as would constitute actual nutritional disease. The allocation of food to the city had been the smallest in any large European community during 1946. In spite of this the medical catastrophe which might have been expected had not happened, probably because the average citizen had managed to secure extra food through channels outside official distribution such as factory meals of more value than the coupons surrendered voluntary society contributions and produce obtained from gardens or farmers, or from the black market. These sources might be expected to diminish during the winter, but in part this would be compensated by a recent increase in the ration to 1 550 calories. The maintenance of this standard, with the winding up of Unrra would be the responsibility of the Austrian Government and the Occupying Powers.

FINAL RESULTS OF THE PLEBISCITE

The following tables show the results of the plebiscite up to and including Jan 6 1947

Table I—Civilian Practitioners Only, showing voting in categories under years qualified

Description of Category	0-7 Years						8-14 Years						15-21 Years					
	England and Wales		Scotland and N Ireland		Group Totals		England and Wales		Scotland and N Ireland		Group Totals		England and Wales		Scotland and N Ireland		Group Totals	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Consultant or specialist	72	74	20	11	92	85	427	299	55	43	482	342	461	514	42	72	505	586
General practitioner principal	327	532	68	112	395	644	818	1 458	114	181	912	1 639	1 193	2 268	173	251	1 366	2 519
General practitioner assistant	433	640	103	142	536	782	231	314	28	48	259	362	75	95	12	10	87	105
Whole time vol hospital	1 324	1 090	198	214	1 522	1 304	388	184	71	42	459	226	49	22	5	4	54	26
Whole time local auth gen hosp	516	351	76	47	592	398	240	82	20	9	260	91	95	30	3	4	98	34
Whole time local auth spec hosp	234	127	51	32	285	159	177	70	26	14	203	84	129	39	18	4	147	43
Whole time public health service	121	51	21	13	142	64	238	120	37	23	275	143	277	152	44	27	321	179
Whole time government service	92	39	26	15	118	54	94	29	21	9	115	38	75	32	14	4	89	36
Whole time teacher	63	31	19	11	82	42	60	31	18	3	78	34	52	15	10	12	62	27
Whole time research	91	25	12	11	103	36	48	11	6	1	54	12	16	3	2	1	18	4
Whole time non govern post	29	27	3	4	32	31	41	39	7	6	48	45	60	55	0	4	60	59
Medically qualified dental surg	6	23	—	3	6	26	12	22	5	9	17	31	14	34	3	2	17	36
Retired	10	18	6	5	16	23	26	25	4	3	30	28	42	42	8	14	50	56
Unclassified	505	344	127	100	632	444	210	174	41	30	251	204	98	95	10	16	108	111
Totals	3 823	3 372	730	720	4 553	4 092	3 010	2 858	453	421	3,463	3 279	2 638	3 396	344	425	2 982	3 821

Table I (continued)

Description of Category	22 Years and Over						Period Not Stated						Grand Total Yes	Grand Total No	Grand Total Yes and No
	England and Wales		Scotland and N Ireland		Group Totals		England and Wales		Scotland and N Ireland		Group Totals				
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No			
Consultant or specialist	917	1 221	100	209	1 017	1 430	28	32	7	4	35	36	2 131	2 479	4 610
General practitioner principal	2 329	4 505	374	609	2 703	5 114	77	91	6	17	83	108	5 479	10 024	15 503
General practitioner assistant	72	120	12	18	84	138	9	12	3	5	12	17	978	1 404	2 382
Whole time vol hospital	43	28	9	10	52	38	23	19	6	7	29	26	2 116	1 620	3 736
Whole time local auth gen hosp	83	33	2	1	85	34	15	8	4	—	19	8	1 054	565	1 619
Whole time local auth spec hosp	163	67	16	7	179	74	7	4	6	2	13	6	827	366	1 193
Whole time public health service	456	328	64	41	520	369	33	9	1	1	34	10	1 292	765	2 057
Whole time government service	170	116	30	13	200	129	9	5	5	1	14	6	536	263	799
Whole time teacher	61	33	21	12	82	45	6	2	2	3	8	5	312	153	465
Whole time research	32	25	3	1	35	26	4	1	1	—	5	1	215	79	294
Whole time non govern post	77	78	9	13	86	91	6	1	—	1	6	2	232	228	460
Medically qualified dental surg	28	80	6	24	34	104	5	2	—	—	5	2	79	199	278
Retired	1 032	1 634	123	232	1 155	1 866	26	44	14	9	40	53	1 291	2 026	3 317
Unclassified	166	275	23	41	189	316	17	21	2	5	19	26	1 199	1 101	2 300
Totals	5 629	8 543	792	1 231	6 421	9 774	265	251	57	55	322	306	17 741	21 272	39 013

Table II—Civilian Practitioners Only, showing voting in categories under countries

Description of Category	England and Wales		Scotland		Northern Ireland		Category Totals		Grand Total Replies Yes and No
	Yes	No	Yes	No	Yes	No	Yes	No	
Consultant or specialist	1 907	2 140	201	283	23	56	2 131	2 479	4 610
General practitioner principal	4 744	8 854	587	972	148	198	5 479	10 024	15 503
General practitioner assistant	820	1 181	135	190	23	33	978	1 404	2 382
Whole time vol hospital	1 827	1 343	248	241	41	36	2 116	1 620	3 736
Whole time local auth gen hosp	949	504	94	48	11	13	1 054	565	1 619
Whole time local auth spec hosp	710	307	95	53	22	6	827	366	1 193
Whole time public health service	1 125	660	146	90	21	15	1 292	765	2 057
Whole time government service	440	221	85	38	11	4	536	263	799
Whole time teacher	242	112	66	35	4	6	342	153	465
Whole time research	191	65	23	11	1	3	215	79	294
Whole time non govern post	213	200	18	23	1	5	232	228	460
Medically qualified dental surg	65	161	14	36	—	2	79	199	278
Retired	1 136	1 763	140	240	15	23	1 291	2 026	3 317
Unclassified	996	909	171	174	32	18	1,199	1 101	2 300
Civilian totals	15 365	18 420	2 023	2 434	353	418	17,741	21 272	39 013

Table III—Civilian Practitioners Only Some important percentages

	Total Voting	Voting Yes	Voting No	Not Voting	Of those who Voted	
					Voting Yes	Voting No
All Civilian Categories	81	37	44	19	45½	54½
Great Britain	83	38	45	17	45½	54½
England and Wales only						
Groups 1 to 4 (Consultant or specialist General practitioner principals and Assistants Whole time vol hospital)	92	37½	54½	8	41	59
Great Britain	94	38	55	7	41	59
England and Wales only						
Groups 2 and 3 only (General practitioner principals and assistants)	88	32	56	12	36	64
Great Britain	90	32	58	10	35½	64½
England and Wales only						

Table IV—Services Only, showing voting in categories under years qualified

Description of Category	0-7 Years		8-14 Years		15-21 Years		22 Years and Over		Period Not Stated		Grand Totals		Grand Total Yes and No
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	
Services—Perm commission	36	31	126	101	89	69	219	116	4	6	474	323	797
Services—Temp comm spec	152	47	113	36	35	7	15	9	5	2	300	101	401
Services—Temp comm graded spec.	164	115	16	7	3	—	—	1	4	—	187	123	310
Services—Temp comm gen duty officer	633	768	26	22	10	10	94	14	13	12	776	826	1 602
Totals	965	961	281	166	137	86	328	140	26	20	1 737	1 373	3 110

Table IVa—Services Only, showing voting in categories

Description of Category	Yes	No	Grand Total Yes and No
Services—Perm commission	474	323	797
Services—Temp comm spec	300	101	401
Services—Temp comm graded spec	187	123	310
Services—Temp comm gen duty officer	776	826	1 602
Services totals	1 737	1 373	3 110

Services Only Some important percentages

Total Voting	38%
Voting Yes	21%
Voting No	17%
Not Voting	62%
Of Those who Voted—	
Voting Yes	56%
Voting No	44%

Overall, Civilian and Services Practitioners, of all those who voted (42,123) 46% voted Yes and 54% voted No

MEDICAL NEW YEAR HONOURS

The names of the following members of the medical profession were included in a New Year Honours List published in the *London Gazette* on Jan 1

Knighthood

Major-Gen HUGH CLIVE BUCKLEY CSI, FRCSed, IMS Principal (retired), Medical College, Agra United Provinces
CHARLES ERNEST HERCUS, DSO, OBE, MD Professor of Bacteriology and Preventive Medicine, University of Otago, and Dean of the Medical School
EARDLEY LANCELOT HOLLAND MD FRCP, FRCS Past President of the Royal College of Obstetricians and Gynaecologists

C.B (Military Division)

Surgeon Rear-Admiral HERBERT RICHARD BARNES HULL MRCS L RCP, RN Honorary Surgeon to the King
Major-Gen EVELYN ALEXANDER SUTTON CBE, MC MRCS L RCP late R.A.M.C.

C.M.G.

PATRICK ALFRED BUXTON, FRS, MRCS, L RCP Professor of Entomology in the University of London and Director of the Department of Entomology, London School of Hygiene and Tropical Medicine

MELVILLE DOUGLAS MACKENZIE MD Principal Medical Officer in charge of epidemiology and international health, Ministry of Health

ALBERT RAY SOUTHWOOD MD MS Chairman Central Board of Health State of South Australia

C.I.E.

Major FREDERICK AUGUSTUS BERRILL SHEPPARD, OBE, FRCSed, IMS Surgeon Government General Hospital, and Professor of Surgery, Medical College Madras

Lieut.-Col WILLIAM JOSEPH WEBSTER MC MD, IMS Senior Assistant Director Central Research Institute Kasauli and Officer in Charge Serum and Vaccine Section

C.V.O.

DANIEL THOMAS DAVIES MD FRCP Physician to HM Household

FRANK ANDERSON JULER FRCS Surgeon Oculist to HM Household

C.B.E (Military Division)

Acting Air Commodore HENRY OSMOND CLARKE FRCS R.A.F.V.R. Consultant in Orthopaedic Surgery, R.A.F.

C.B.E (Civil Division)

ELDRED CURWEN BRAITHWAITE OBE MSDurh FRCSed Colonial Medical Service Senior Specialist Nigeria

JAMES HARDIE-NEIL DSO, MB, ChB Medical practitioner Auckland New Zealand

O.B.E (Military Division)

Lieut.-Col (Temporary) ERIC FRANCIS EDSON MB ChB R.A.M.C.

Acting Squad Ldr ROBERT ALLISON MOOREHEAD MB BCh R.A.F.V.R.

Major ERNEST SOYSA MB BS Ceylon Medical Corps

O.B.E (Civil Division)

FREDERICK AUGUSTUS LESTRANGE BURGESS MBE MRCS L RCP Post Office Medical Officer for the Hockley and Hands worth districts of Birmingham

PERCIVAL PASLEY COLE FRCS Senior Surgeon Dreadnought Seamen's Hospital, Greenwich

JOHN WILLIAM HAWKESLEY GRICE, MRCS, L RCP British subject resident in China

CURTIS DANIEL JOHNSTON MD, CM Medical Officer Black River District Jamaica

PATRICK WILLIAM ROBERTSON PETRIE, MB ChB For medical services in the Aden Protectorate

PIERRE FRANÇOIS JOSEPH LOUIS RATHIER DU VERGE MC MRCS, L RCP Medical Superintendent, Victoria Hospital Mauritius

JAMES GRAHAM WILLMORE MD, CM Lately Principal Medical Officer, Ministry of Pensions

M.B.E (Military Division)

Major JOHN HENRY COWDREY NZMC

Major (Acting) ROBERT MACFIE MARQUIS MB, ChB R.A.M.C.

M.B.E (Civil Division)

ISAAC BOATENG ASAFU ADJAYE MRCS, L RCP For political and social services in the Gold Coast

ALEXANDER SAMILL FRATER MB, BS For medical and public services in the New Hebrides

LEON GILLIS MChOrth, FRCS Senior Surgeon, Ministry of Pensions

CECIL VERNON JUMEAUX LMS Government Medical Service For services during the enemy occupation of Malaya

CHARLES STUART OGILVY L RCP & SEd L RFP S Glas Civil Medical Practitioner Military Detention Barracks Sowerby Bridge

HUGH WANDS MB ChB Medical Officer Sandakan North Borneo For services during internment

Kaiser-i-Hind Gold Medal

MARGARET GILLESPIE McMILLAN MB ChB In charge of Women's Mission Hospital, Ajmer

An interesting account of Kislovodsk—one of the spa towns in the Russian Caucasus—is given by Alexander Werth in the *Manchester Guardian* of Dec 31. The sanatoria 'are as clean and efficient as anything in Switzerland—and even duller,' and some are 'almost unbelievably luxurious.' The equipment of all kinds seems to be excellent. The spa is dealing with 100,000 people a year—from patients with a variety of ailments to those who simply need a rest—as compared with 150,000 in 1939. There are also a number of men seriously wounded in the war still receiving treatment there. He draws attention to the question of how people are selected for treatment at the spas for the Government attaches great importance to what we should call rehabilitation. Medical boards of Government departments and trade unions select suitable patients not only from the point of view of whether their health will benefit but also regarding their particular value in their jobs. Thus the proportion of directors and important technicians is relatively much higher than that of ordinary workers. Stikharinovites also get preference.

NATIONAL HEALTH SERVICE ACT

PRESIDENTS OF ROYAL COLLEGES AND
MR. BEVAN

We print below correspondence between the Presidents of the three Royal Colleges and the Minister of Health on the National Health Service Act

Jan 2, 1947

My dear Minister,

The opposition of a substantial part of the medical profession to any renewal of discussions with the Government regarding the National Health Service is causing us concern. We fear that it may lead to an impasse and we wish to do what we can to prevent such an impasse arising.

We recognize that certain of the principles of the new Service are incorporated in the Act, but there are other issues of importance which will be determined by regulations, and the form of the Service will depend to a great extent upon what the regulations contain. We feel that there is an opportunity in framing the regulations to meet several of the objections of the profession. Moreover, the implications of some of the proposals for the new Service are not clear to the profession and clarification of these points would be helpful.

We hope therefore, that you will clarify for us any of the points referred to later in this letter on which there may be misunderstanding and that you may be able to give us an assurance that you will endeavour, within the framework of the Act, to meet the views which are held strongly by many practitioners.

Our first point is a general one. We believe that behind the opposition of members of the profession is the fear that to enter into discussions would compromise their position by implying their approval and acceptance of the main provisions of the Act.

In the general practitioner part of the Service there are three points on which we think that some statement from you would be helpful.

The first is the method of remuneration. This is left to be dealt with by regulations, and is therefore presumably open for discussion, but you have made clear your preference for a basic salary, apparently making it generally applicable because of your difficulties in particular cases. There is general agreement that there are circumstances in which a basic salary or a guaranteed minimum may be necessary, but this is not regarded as justifying a universal basic salary. Cannot the circumstances in which a basic salary is appropriate be left open for discussion?

Secondly, a large element in the opposition of some practitioners is the fact that if the Tribunal recommend the expulsion of a practitioner from the Service, his appeal is to be judged by the Minister who has appointed two of the three members of the Tribunal. Neither the words nor the spirit of the Act prevent you from agreeing to seek the advice of the General Medical Council on every such appeal.

In the third place there is a widespread and not unfounded fear that there will be serious interference with the liberty of movement of general practitioners. It would be useful if you would explain how you anticipate that this part of the Act will work in practice, with particular reference to partnerships and groups.

Among specialists there are also certain points giving rise to anxiety. In the background, just as in the case of the general practitioners there is the general issue of the freedom of the profession and the availability to the people of independent medical advice. The whole profession regard it as essential that independent practice should continue and that independent practitioners should have the necessary facilities for the treatment of their patients. We were therefore glad to receive from the Lord Chancellor and from yourself assurances that independent practitioners would be free to remain in attendance on their patients when admitted to the private wings of hospitals, and also to learn that consultants holding honorary positions on the staffs of hospitals would be at liberty to use all the facilities provided. You know our anxiety to induce specialists to do practically all their work within the precincts of hospitals, it is because of this

anxiety that we stress these points. Any information you can give us on the practical operation of the consultant and specialist part of the Service will be helpful.

We hope you will forgive us for intervening, but we feel that the importance of the cause justifies this step.

Yours sincerely,

MORAN,
President Royal College of Physicians
ALFRED WEBB-JOHNSON,
President Royal College of Surgeons
W GILLIATT,
President Royal College of Obstetricians
and Gynaecologists

MR. BEVAN'S REPLY

Jan 6, 1947

My dear Presidents,

Thank you for your letter. I agree with you that an impasse between the Government and the medical profession would be a grave misfortune. I believe that some at least, of the opposition on the part of the profession to discussions is due to a misunderstanding of the proposals, and I am glad to answer any questions if by so doing I can make clear what is in doubt.

You say that some members of the profession fear that discussions would compromise their position by implying their approval of the main provisions of the Act. There is no ground for such a fear. Every doctor will have to decide for himself when the proper time comes whether or not he should take part in the new Service, and the profession as a whole will be free to determine their views on the Service when they know what it is to be. The resumption of discussions now would not prejudice these eventual decisions.

As you rightly point out the ultimate form of the Service will largely depend on regulations which have now to be framed. The issue for the medical profession to day is not therefore, whether they will join a service the final shape of which cannot yet be known, but whether they will accept or forgo the opportunity to influence its shaping. I want to have their help and advice in this task, and I can certainly assure you that, if discussions take place, I shall endeavour to meet any views of the profession which do not conflict with the principles of the Act.

Let me here make one point. It has been said that I have not consulted the profession and that I have been unwilling to negotiate with them. That is not so. While the Bill was in preparation and before Parliament, discussions with the medical profession as with other interests were necessarily conditioned. I could not publish proposals before they were submitted to Parliament and I could not pledge Parliament in advance to their acceptance. Nevertheless I and my officers had full discussions with the Negotiating Committee and were throughout in close touch with the representatives of the profession. Thus the Government were at all stages fully informed of the views of the profession, and the original proposals were modified in many important respects to meet those views. Now the position is different. The Bill is law and within its terms I can negotiate freely.

I turn now to the specific points raised in your letter. You ask three questions about the general practitioner part of the Service.

(i) The Method of Remuneration

Clearly both the method and rates of remuneration are open to discussion since they are matters which are not defined in the Act but have to be determined by regulation. I believe however, that the Government's proposals have been misinterpreted. The Government have accepted the view of the profession that remuneration should be based substantially on capitation fees and have thus rejected the conception of a full salaried Service. I have had in mind that the remuneration of all general practitioners should include an element of salary, but that the element should be small. As you yourselves recognize, there are circumstances in which a guaranteed minimum is necessary, and my own view has been that administratively the most convenient method of achieving this object is to make the basic element universal. But this is essentially a matter which I should like to discuss with the profession.

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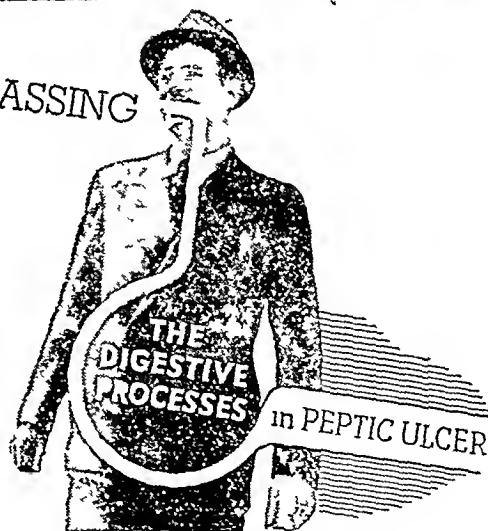
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(ii) The Tribunal

Here again there is, I think, some misunderstanding. The question to be decided by the Tribunal is whether the retention of a doctor in the medical list would be prejudicial to the efficiency of the Service, and I regard the setting-up of an independent tribunal as an addition to the safeguards which have prevailed under the National Health Insurance for the last 35 years. The function of the General Medical Council is to determine whether a doctor has been guilty of unprofessional conduct, and that remains unaffected. Moreover, a doctor, like any other citizen, has his rights at common law enforceable by the courts and these also remain unaffected. It is not true, as has been so widely said, that doctors in the new Service will be civil servants. On the contrary their full civic rights are preserved unimpaired. I will gladly discuss with representatives of the profession the procedure to be followed before deciding an appeal to me from a decision of the Tribunal to remove a practitioner's name from the list, with a view to providing any additional protection possible within the framework of the Act.

(iii) The Fear of Interference with the Liberty of Movement of General Practitioners

There is no power to direct a doctor to go anywhere or do anything. There is a provision in the Act the sole object of which is to avoid an undue concentration of doctors in any one area. Under this provision a doctor who wishes to practise in the public service in a new area will be required to obtain the approval of a central committee of nine, seven of whom will be medical practitioners appointed after consultation with the medical profession. Normally, however, he will make his arrangements locally through the local executive council, the approval of the central committee being formal. The details of how this will work have still to be discussed and settled. I hope in consultation with the medical profession, but I can say that what I have in mind as the everyday procedure is that in the case of a partnership or group of doctors the partners or members of the group will have the initiative in selecting a doctor to fill an approved vacancy and normally their selection will be confirmed as a matter of course. Similarly in the case of a single-handed practice the initiative in selecting the incomer will lie with the local medical committee. You know, of course, that all doctors who, when the Act comes into operation, are already in practice as principals will have an absolute right to enter the new Service in the areas in which they are practising.

You mention finally in your letter the position of specialists and stress the importance to them of ensuring the freedom of the profession and the continuance of independent practice. It is a basic principle of the new Service that there should be no interference with the clinical freedom of any doctor—specialist or general practitioner. It is also a principle of the Service that independent specialist practice should be free to continue—specialists being free to remain outside the Service or to join it either whole or part time and, if they wish, to be on the staff of a hospital in an honorary capacity. In this way the position of consultants desiring to continue their association with hospitals after the age of retirement and of consultants who do not wish to accept more than a limited responsibility will be met. In the case of a consultant on a hospital staff—and I find it difficult to conceive of a consultant not on a hospital staff—he will be able to treat his private patients in the private beds of his own or other hospitals subject to availability and I recognize with you the need for both public and private accommodation as indeed I have made clear in Parliament on a number of occasions.

The details of all these arrangements will obviously need to be discussed with the profession but I am confident that round a table we shall be able to make satisfactory arrangements which will encourage specialists to work within the precincts of hospitals—a point to which, like you, I attach the utmost importance.

If you think it desirable I have no objection to the publication of this correspondence.

Yours sincerely,

ANEURIN BEVAN

HEALTH CONDITIONS IN THE FACTORIES**A Transitional Year**

The almost complete mobilization for war was relaxed in 1945, a year of dramatic change not only in military and political history but in the industrial life of Great Britain. The process of reconverting industry to the normal peacetime pattern was begun. If swords were not exactly turned into ploughshares, factories turned from producing cannon shells to agricultural implements, from machine-gun parts to roller skates and carpet-sweepers, from parachutes to women's skirts from landing craft to prefabricated houses. Such a reversal involved not only vast mechanical readjustments but equally vast and far more complicated human ones for the six million people who continued in factory employment.

The report of H.M. Inspector of Factories for 1945¹ is therefore of unusual interest. Some comparison is made so far as that is possible—which is not very far—of the industrial conditions of the second world war with those of the first. In 1939–45 safety standards were more generally recognized, methods of dust and fume removal were improved, increased mechanization brought about a lessening of fatigue and in some respects, a lessening of hazard and amenities of a kind undreamed of in the earlier war were provided. Of the relative incidence of occupational diseases poisoning and gassing it is impossible to get a true picture until the extent of the production in the recent war is assessed. The average annual number of cases of carbon monoxide poisoning and poisoning by nitrous fumes was three times greater in 1940–5 than it had been in 1917–18 but in spite of the increased number of cases the fatalities were fewer. For every case of toxic jaundice in the recent war there were more than six cases in the earlier war and for every death there were seven deaths.

Accident Prevention

The number of reported accidents (meaning an accident which is either fatal or disables the workman for more than three days) was just upon 240 000 in 1945 the lowest figure since 1940. Of these accidents 851 were fatal. The general accident rate (37 for every 1 000 persons employed) remains considerably higher than it was before the war, especially amongst boys under 18 (54 per thousand). At the other end of the scale a large number of accidents—generally falls on the level—are sustained by old people who have remained on in factory work. Shipbuilding is an accident-prone industry. 17 667 people were injured in shipyards in 1945. Electrical accidents are gratifyingly few. Of 178 known electrical fatalities in 1945, only 31 were in premises under the Factories Acts. Factory accidents are at a high level in the metal engineering and machinery trades, while the aircraft industry adds another 10 000 of its own. Factory accidents at their present level mean a loss to industry of at least 20 000 workers throughout the year. The appointment of safety officers and committees in factories is attended usually by a reduction in the frequency rate.

General Factory Hygiene

A greater appreciation on the part of both managements and workers of the importance of heating in relation to good working conditions is reported perhaps the stringency of the fuel position has now put the clock back. One of the most difficult problems with which the Factory Department is concerned is the removal of dust and fumes by localized ventilation. A general raising of the standard of ventilation has followed the removal of wartime black-out but the factory worker like other Englishmen abhors a draught. In larger factories air-conditioning plants are coming increasingly into use with good results but trouble from draughts may still arise unless the openings through which the conditioned air is delivered are suitably designed and located. More attention is being given to the quality of lighting as distinct from its intensity—that is to say to distribution, direction, diffusion, colour, avoidance of glare and of excessive contrasts and shadows. Yet greater advantage might be taken of recent advances in illumination technique.

¹ Annual Report of the Chief Inspector of Factories for the Year 1945. Cmd 6992 (London: H.M. Stationery Office).

It is stated that industries are becoming more responsive to new ideas, resulting in more pleasant and therefore generally more healthy working conditions. A great transformation has been wrought by the coming of the canteen. From being a rarity the canteen is now a commonplace in factories of any size. In 1945 there were 11,700 factory canteens, and a few hundred others on docks and building sites, all serving hot meals.

Dr E R A Merewether, senior medical inspector, who contributes a section on industrial health, deals with the occasional criticism that the Medical Branch of the Department pays too much attention to specific occupational risks, to the neglect of measures of general welfare. After all, what are the numbers of cases of industrial disease compared with deaths from pneumonia or with absenteeism caused by the common cold? But he points out that the Factories Act is largely aimed at preventing the common ailments and he instances the provisions as to cleanliness, avoidance of overcrowding, ventilation, washing facilities, protective clothing and the like. The number of colds prevented, the lowering of the incidence of rheumatic diseases, the amount of positive health secured by such means cannot be represented in statistics.

Poisons and Fumes

During the year 45 cases of lead poisoning were reported 2 of which were fatal. It is useful to glance back at earlier years

	Cases	Deaths
1900	1,058	38
1910	505	38
1920	289	44
1930	265	32
1940	108	6

One-third of the 1945 cases were in workers engaged in the manufacture and repair of electric accumulators. The dangers of such work are insufficiently appreciated. Only 5 cases of mercurial poisoning were reported. One death occurred in the manufacture of ethyl iodide and ethyl mercuric chloride, a chemical for agricultural use. In the only other considerable group of cases of chemical poisoning (31 cases) aniline was the responsible agent, these cases were among people engaged in the manufacture of TNT and of nitro and amido compounds of benzene and its homologues. All the 6 cases of toxic jaundice (4 of them women) were due to exposure to TNT.

For the first time there was no case of anthrax arising from wool. Five of the 7 cases reported were workers in hides and skins. Penicillin was used in 6 of the cases, but there is not sufficient evidence as yet to show its relative merits as the treatment of choice in this condition. Epitheliomatous ulceration accounted for 215 cases (all males), 9 of which were fatal. Pitch or tar was the agent in 176 of the cases. There were 94 cases of chrome ulceration, mostly among workers engaged in chromium plating.

The number of cases of carbon monoxide gassing—218, with 18 deaths—shows no lowering on the average of the past six years. The continued high level is ascribed to the large use of power gas, which accounted for 82 of the cases. Instances are given of wrong treatment for gas-poisoning such as the indiscriminate use of aspirin or the mistaken zeal of rescuers in walking the semiconscious victim up and down the factory yard in the fresh air. It is remarked that often the rescuers suffer more severely than the rescued, perhaps because of the physical strain involved. The fact that while there is life there is hope is especially true of carbon monoxide poisoning, one case recovered after 29 and another after 24 hours' unconsciousness.

Carbon dioxide accounted for 1 case of poisoning, sulphur etted hydrogen for 6 cases, sulphur dioxide for 12, chlorine for 47, nitrous fumes for 29, all without a fatality. One death occurred from ammonia gas poisoning and one from benzol. Four cases of anoxaemia are related. 3 of them fatal to illustrate the risk from lack of oxygen in confined spaces. Two of the deaths occurred inside a ship's boiler and the other in a coffer dam 38 ft below deck level. Two recent fatalities, one in a factory make it desirable to call attention to the dangers of di-nitro ortho cresol, which is now in demand for

its fungicidal and insecticidal properties. This chemical exerts its toxic action in industrial operations when it is inhaled in dust or fumes or absorbed through the skin—and it is, of course poisonous when taken by mouth.

Other Industrial Diseases

The reported deaths from silicosis numbered 508 (323 of them in coal mining), and the deaths from pneumoconiosis, asbestosis, and other fibroses of the lung brought the grand total in England and Wales to 1,133, a figure higher than in any year since 1940. In 902 cases of deaths from silicosis investigated during recent years the average age at death was found to be 57.6 years and the average period of employment in the pottery, sandstone, metal grinding or other industry concerned (excluding coal mining) 34 years, 943 other deaths from silicosis with tuberculosis were also investigated, and here the average age at death and the average period in employment were lower by three or four years.

The idea that certain dusts have a protective value in pneumoconiosis was first put forward in 1916 and fresh interest has lately been aroused by the publication by three Canadian workers of the results of treatment of a small number of silicotics by inhalation of aluminium powder. On this the report says:

There is a grave danger that the proved methods of dust suppression and control may be neglected on the supposition that all that is necessary to prevent silicosis is to ensure that a sufficient amount of aluminium or alumina dust is inhaled at the same time as the siliceous dust. At the best it [aluminium dust] can only become an ancillary aid in the prevention of silicosis since the mass effects of inhaling dust in gross concentrations, whatever its nature cannot be neglected.

There was a decrease of over 2,000 in the number of dermatitis cases voluntarily reported (5,996) 'Copra itch,' which has been associated in the past with dockers, affected 8 young women engaged in cleaning and repairing sacks which had been used for copra. There are grounds for thinking that 'copra itch' may be an allergic reaction to a mite containing dust or that it may be more directly initiated by the mites during some phase of the life cycle, the same applies to cheese and grain 'itches.'

Blood examinations have been made on over 500 x-ray workers and workers with radioactive materials, who are described as 'luminizers'. Anaemia was found to be present in about 10% of the luminizers examined but in at least a quarter of these it could be accounted for by circumstances not connected with employment. Slight skin and blood changes were noted in a few cases. A warning is given against the wearing by luminizers of respirators consisting of cotton gauze material backed by an inner layer of lint. All the masks examined were found to be contaminated with radioactive material, and the use of such masks for work with radioactive materials must be discouraged because of this risk, which is accentuated by handling the mask, for example, to facilitate conversation.

At the close of 1945 the number of whole time works medical officers was 143, covering 242 factories, and 903 part time officers gave substantial service in 1,337 factories. The whole time officers have decreased slightly following on the change over to peace-time production, but there are indications that their numbers are rising again. The work of the examining surgeons is the subject of appreciative comment. In 1945 they examined 235,000 young persons for certificates of fitness for employment, and certified 231,000 of them. The principal cause for rejection was pediculosis (1,986 cases) the runner-up being diseases of the skin (496). Rheumatism was the cause of rejection of only 55, and diseases of the lungs of only 129.

A relatively new feature of the work of the department is the setting up of three expert advisory panels, concerned respectively with dermatitis, ophthalmology and radiology. They are composed of consultant physicians and surgeons basically engaged in these branches of work with other experts in the allied sciences. With the co-operation of industrial concerns they have been able to appraise occupational health problems from their several backgrounds and to give the answer to many questions concerning specific lesions, their causes, and means of prevention.

Correspondence

Foretaste of Control?

The following letter was sent to Sir Ernest Graham-Little. We print it by permission of him and the author.

DEAR SIR ERNEST GRAHAM-LITTLE,

I am taking the liberty of writing to you as my university representative in Parliament because I wish you to know of attempts at bureaucratic control by medical advisers to the Ministry of Food interfering between a patient and his doctor. The facts in this particular case are as follows. About two months ago I wrote to the local Food Office (Birmingham), in accordance with the Ministry of Food's regulations (MED 1, p 7). A detailed medical statement, giving full particulars of the applicant's condition and the medical reasons why extra rations are considered necessary. Such a medical statement will be treated as strictly confidential. As a result of this, my patient was granted two pints of milk a day.

On Dec 12 I received from the Food Executive Officer a copy of a letter to him from the Divisional Food Office, London which reads as under

COPY
MD/RA/588

Ministry of Food,
Divisional Food Office
Dec 6, 1946

Dear Sir,

I refer to your letter of Nov 25 regarding application from Mr —, of —, for permanent priority of 14 pints of milk weekly.

Our medical advisers point out that Mr — is entitled to 1 pint of milk per day as a sufferer from chronic colitis and is classed as 2 D of MED 2. Our advisers are of the opinion the pernicious anaemia is completely controllable by modern therapy, and further that the achlorhydria can also be effectively treated. They therefore cannot recommend that any additional priority should be granted other than 1 pint of milk daily in respect of his colitis.

The medical certificate enclosed with your letter is returned herewith.

Yours faithfully,

(sgd) —,
Assistant Divisional Food Officer

To
The Food Executive Officer,
Birmingham C B

The reasons for my advising two pints of milk a day were that besides suffering from chronic colitis, (?) diverticulosis (which incidentally entitled him to one pint of milk) there is almost complete lack of gastric and upper intestinal digestion, due to total achlorhydria. Therefore the only food he can take is milk glucose cheese eggs when available finely minced meat or fish in very small quantities and sieved vegetables. I give you below an example of a typical day's meals.

Breakfast—milk and fine porridge
Mid morning—milk coffee
Dinner—a little very fine mince and milk pudding
Tea—milk tea only
Supper—finely sieved vegetable soup, made with milk and cheese

With these meals he takes as much glucose as he can manage, and it is necessary even on this diet to take from 3 to 6 dr (10.5–21 ml) of dilute hydrochloric acid daily. Nevertheless, his weight has steadily gone down from 11 st 7 lb to 9 st 9 lb (73 to 61 kg). As regards the medical advisers' remarks about the anaemia being completely controllable by modern therapy etc perhaps I should just give you the history.

In 1927–9 (some years before I became his doctor) he developed signs of degeneration of the spinal cord affecting the muscles of the legs and buttocks which became progressively worse until he had a complete paralysis and was hardly able to stand let alone walk. In 1929 in the New Lodge Clinic at Windsor under Sir Arthur Hurst, pernicious anaemia was diagnosed and he was given by mouth what was then the new liver therapy. Later—about 1932—he was I believe the first patient in this country to receive intramuscular liver in the form of campolon. He has had some form of liver therapy continuously ever since then and his blood has been almost normal for some years. However permanent damage had been done which could not be rectified by the most intensive treatment by Sir Arthur Hurst. Considerable wastage and weakness of the lower limbs has persisted. His total achlorhydria has persisted. Unfortunately, in later years he has developed a chronic colon condition.

I resent the implication contained in the letter from the Ministry of Food that I do not understand modern therapy and that my treatment could have been better. I only wish that the late Sir Arthur Hurst were still alive, so that I could pass on this criticism to him. I apologize for bothering you and for writing at such length, but I am sure you will agree that it is an appalling state of affairs when medical advisers who have not seen a patient advise against the patient's own doctor's advice. In this case, it is virtually a sentence to death by slow starvation.

I am,

Yours truly,

HUMPHREY FOXELL

SIR—It may be thought that any stick is good enough to beat the Government with, but I believe that unbiased commentators, who think before they write, will disagree with the implied verdict in the annotation "It Can Happen Here" (Dec 28, 1946, p 995) and with Dr H Foxell's complaint (p 1001) against the Ministry of Food officials for disallowing the extra 12 oz (350 g) of butter beyond the patient's weekly ration. The Ministry's reason for doing so—that no lubricant was necessary for swallowing—is of course fatuous but if they had given as their reason that the patient was suffering from inoperable cancer of the oesophagus and that he was bound to die shortly, I think most sane people would agree that it would be a serious waste of six persons weekly fat ration for a very doubtful and temporary benefit—I am, etc.,

London W 1

WILFRED HARRIS

SIR—From Dr Humphrey Foxell's letter (Dec 28, 1946 p 1001) we see how a patient may be free to choose his doctor but cheated of his treatment.

The doctor on the spot should be free to use his discretion unhampered by control from above and afar and not worried by the letter of the Law. Why, for instance, are only two forms of pneumoconiosis scheduled (Form MED 2, Schedule 1(b), Silicosis or Asbestosis) as needing extra milk ration?—I am, etc.,

London E 6

C JEROME MERCIER

SIR—So much attention has been paid to Dr Humphrey Foxell (Dec 28 1946 p 1001) and his one unfortunate patient who died of an inoperable cancer that I wonder if some could be paid to incurable tuberculous patients whose deaths are far more numerous. At least as good if not a better case than Dr Foxell's could be made for providing these unfortunate people with an extra ration of 2 ounces of butter per day, yet all they have been allowed by the Ministry of Food is 2 ounces of fat per week and 14 pints of milk.

It may be surprising that Dr Summerskill has not been inundated with personal letters demanding extra rations for them, but although in the area where I am tuberculosis officer two or three die every week, and although many of these are well known not only to me but to experienced general practitioners, distinguished physicians and surgeons, and recognized dietetic experts no personal letter has, so far as I know, been sent to the Parliamentary Secretary to the Minister of Food. Yet I feel sure that all these doctors are just as much concerned about the welfare of their patients as Dr Foxell. I must conclude therefore, that they found other means of helping and encouraging their patients whom they could not hope to cure instead of demanding a vital foodstuff which at the best could do no more as in Dr Foxell's case than prolong an unhappy existence and which the medical advisers to the Ministry of Food considered could be better used for the prevention or cure of diseases or the alleviation of definite symptoms such as difficulty in swallowing.

Many tuberculosis officers did indeed think it right to assist as far as possible in the representations which were made by various bodies to the Ministry of Food in order to obtain as far a deal as possible for the tuberculous. It now seems that we might have armed ourselves with the appeal of a dying patient and faced the Ministry of Food with the dilemma either of acceding to our requests for extra rations, thereby providing

an example which would have nullified their carefully thought-out plans for a fair distribution to the population as a whole or of refusing them, thereby exposing themselves to the criticism that they had made a decision about a patient in defiance of our requests without making a personal examination. Of course this criticism might have appeared even more childish when applied to a large number than it does when applied to Dr Foxell's apparently (though not in fact) isolated case. Moreover this method of forcing the claims of one section of the community might itself have been exposed to the criticism that it was grossly unfair and unreasonable. Perhaps we were deterred by these considerations, and perhaps Dr Foxell would have been deterred from writing his letter if he had looked at the problem as a whole instead of concentrating on one patient. No doubt his devotion to his patient was worthy of praise, but would he have received so much support and flamboyant publicity in your columns if you had not been hard up for a piece of hot propaganda to hurl at the National Health Act? And will this object be achieved by attacking the Ministry of Food, which many people think is an example of co-operation between doctors and laymen in running a necessary national scheme in a very successful manner? During six years of their control there has been little if any complaint of the flouting of medical opinion, and if this is a foretaste of control under the National Health Act it may be asserted that this Act could scarcely have a better recommendation—I am, etc.,

London NW 3

G A BACK

The Plebiscite

SIR—The result of the plebiscite was as much surprising as it was disquieting. It is not so much that so many voted 'Yes' but that so many abstained from voting. Doctors have never been known to pull together, and it is this lack of unity and want of *esprit de corps* that shows up our weakness and leaves us open to attack from any quarter that is intended.

True, the wording of the plebiscite was somewhat ambiguous. I believe that many voted 'Yes' because of the fear of victimization. The wording would have been more appropriate if it had been in two parts: (a) Do you want to negotiate for a complete State Service? (b) Do you want to negotiate for an amended or extended Service? I am perfectly sure that 90% would answer 'No' to (a), for they are very few who want to be the complete Civil Servant. I have no doubt that 100% would answer 'Yes' to (b) for it is time that the Government did something to improve the Service for which we have been so long clamouring and which would be acceptable to the profession. The difference between (a) and (b) is that one is 'tyranny' and the other 'freedom'.

We are a noble profession and not an industry, and it is high time that Mr Bevan was told once and for all that doctors will not tolerate nationalization in any form. If the doctors would stick together and be of one mind, then they, and not Mr Bevan, would do the table thumping—I am, etc.

Nottingham

S J BRENNAN

SIR—The result of the plebiscite has shown that 56% of those who voted were against negotiations. This is only a little more than half and when one considers that 20% of all doctors abstained from voting it is clear that the B.M.A. Council has no justification in refusing to negotiate as it has less than half the profession behind it. Furthermore many of the 'No' votes were given as a result of the recent threatened 'strike' of Insurance Acts practitioners which was successful in winning concessions from the Minister. Many thought that a little more defiance would be good for him and that he would then relent and presumably start all over again. Many more voted 'No' as a political gesture against the Labour Government which they as Tories of the old school dislike so much.

This negative attitude is clearly unreasonable and cannot possibly do the profession any good. Mr Bevan will go ahead to establish the Service in the knowledge that he has about half the profession willing to help. Yet we in the helpful half are debarred by the Council's decision from negotiating with

the Minister on the regulations, and giving him the technical advice which will make the Service a success. Now that the Act is law it is our duty as citizens to make it work, and to clothe the framework, making an administrative skeleton into a humane National Medical Service working solely for the good of the patients and the prevention of disease, and thinking less as time goes by of a mercenary profit motive—I am, etc.

Wolsingham

WILLIAM D GRAY

SIR—Stung by the results of the medical plebiscite Mr Bevan now writes to say that if the B.M.A. will not talk with him he will consult with other interests to assist him to set up the administrative machinery for the new Health Act. Why not say this before? It is exactly what the Negotiating Committee have been asking him to do. And primarily we want to ask him to consider whether some compromise cannot be found over the basic salary. Does this mean that in the long run we are to become Civil Servants, or that the basic salary is to be a means of tiding over the period while ex-Service doctors and young medical men settle down into practice under the new Service? If the latter, will it not be possible to agree for a term of years and then free the profession to such independence as we have had under the N.H.I. Act without restricting regulations which can never meet all the changes and chances of disease in human nature?—I am, etc.

Broadstairs

H M RAVEN

B.M.A. Policy

SIR—In a letter in the *Lancet* on Dec 28, Mr T. B. Layton makes so many confused statements that it is impossible to deal with them in the space of a short letter. However, it is very necessary to correct the loose statements suggesting that the leaders of the B.M.A. have "herded the will" of the profession and influenced the plebiscite vote.

The official B.M.A. communications received by me have always been restrained and non-directive, as have been the editorial articles appearing in the *Journal* on the subject of the recent Act. The correspondence published in the *Journal* accurately reflects the opinions freely expressed at the well-attended Divisional meetings of practitioners. Those of us who know Mr Layton may sit back and smile tolerantly, but statements such as appear in his letter are apt to produce a false impression in the mind of the general public that the results of the plebiscite do not really reflect medical opinion.

A recent article in the *Times* contained the word 'emotional' as applied to B.M.A. policy. If the adjective is accurate it must be applied to the general body of practitioners, and I would point out that situations which conflict heavily with any individual's conviction of right and wrong will usually produce emotional response—I am, etc.,

Stratford

E C TILL

SIR—Dr H. B. O. Cardew in his letter (Jan 4 p. 29) makes several dramatic and unjustified accusations, closing with the sentence "I accuse the British Medical Association Council of adopting a narrow sectional viewpoint at a time of immense social change when it should be leading the profession towards the creation of a great health service." With these words Dr Cardew not only accuses himself but convicts himself of adopting a sectional viewpoint, for he suggests that the Council should lead the profession in a direction which the majority consider to be against the public interest—I am, etc.,

London NW 1

R. HALE-WHITE

The Decision

SIR—To throw light on Dr D. E. Yarrow's Dr. A. L. Jacobs's and Dr S. Lipetz's problem (Jan 4 pp. 29 and 30) let us recall as only doctors of 60 and over can what happened in December 1912 re service under the Lloyd George Act of 1911. Then after a rousing campaign round about 95% of practitioners pledged themselves to refuse service. In the last week of the year word went round in every district that a doctor or two had "gone on the Panel" (Some of these had



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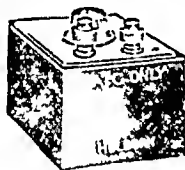
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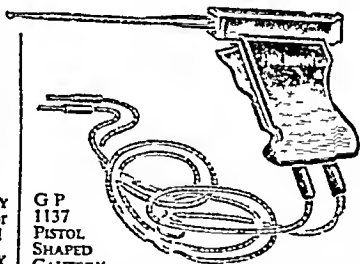


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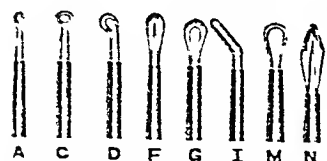
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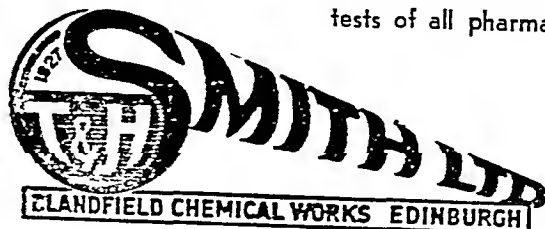
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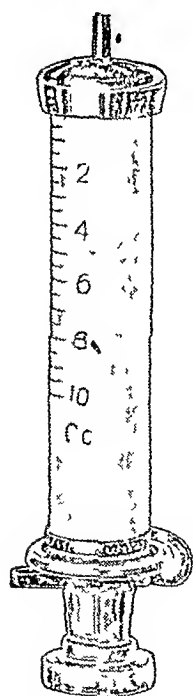
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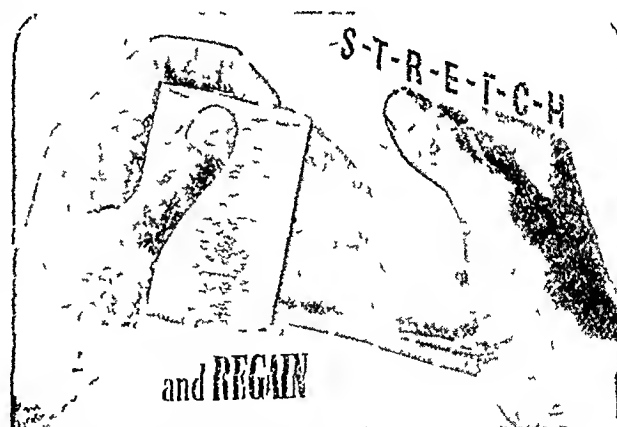
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(not signed the pledge others had) What happened? The est met hastily in groups, considered the situation and—sent n their names With n 10 days over 95% were in the service In short, 19 out of 20 would not serve, 19 out of 20 did The est, the diehards had to choose between retirement, specialism, and starvation I write this not cynically but as relevant history

What then? It is abundantly plain to me that we must negotiate and both for the public's and our own sakes, help to make the best possible Service The Divisions should back negotiation and the S R M Jan 28, either reject Dr Cockshut's motion and call upon the Negotiating Committee to carry on, or amend this motion so that a new (? minority) committee can be appointed, to serve not only the Yes voters but also the Noes if the latter course is adopted I hope to see Mr H S Souttar in its Chair carrying on the great work he did in presiding over the Medical Planning Commission, the foundation on which the new Act is built—I am, etc.,

W ARNOTT
ex Oxford Division

Totland Bay Isle of Wight

National Health Service

SIR—There is one weakness in our armour with regard to our attitude towards the Government Health Scheme which may easily prove our undoing At the plebiscite everybody was of course entitled to vote as he thought fit But if the minority should be allowed to accept service under the present Bill the Minister of Health may easily be in a position to organize a skeleton service and there can be very little doubt that other members of the profession will gradually filter into the Service In such a contingency we would be broken and come under the dictatorship of fifth-rate officials

I suggest therefore, that we should endeavour to persuade the minority not to accept service I suggest that we should insist that we ourselves provide the medical service, and that the Government merely act as representative of the public to see that we carry out our undertakings I am quite sure that such a service would be acceptable to the majority of our profession—I am, etc.,

Liverpool

I HARRIS

SIR—I think it possible that the most important question in connexion with the National Health Service Act is being overlooked in the discussion of the plebiscite results This question surely is whether the Act will provide a better medical service for the nation If an affirmative answer can be given there must be reasons of great moment to justify the leaders of the British Medical Association advising the profession not to participate in the shaping of the Act

Certain obvious benefits will be conferred on the public by the Act most important perhaps will be the ending of the financial burden of illness and the delays in seeking treatment which this sometimes entails The public know also that under the Act they will be able to obtain free specialist advice and treatment when necessary The hospitals will be able to provide a better service as they will not be limited in their work by lack of funds and the general practitioner service will eventually be more fairly spread throughout the country This should reduce the inconveniences suffered by patients especially in the poorer districts which result from overcrowded surgeries and rushed and harassed doctors Furthermore under the Act (Clause XVI) the Minister will be empowered to encourage and finance medical research

The Health Service Act should not be viewed as an isolated piece of legislation but as an integral part of a great legislative plan for achieving social security The people of this country, by their welcome of the Beveridge report and by returning a government to power pledged to introduce social security, have expressed their hopes and wishes in these matters

If the leaders of the B M A should now advise a course calculated to frustrate a vital part of the plan for social security they will I fear incur the anger and contempt of the majority of the people It is to be earnestly hoped that they will not adopt this course and oppose a measure which, in spite of all its defects is so plainly designed to be a great and lasting benefit to the nation—I am, etc

JOHN PEMBERTON

A Bad Press

SIR—It is strange that, although individually the doctor is generally liked and respected, collectively as a member of the medical profession he is everybody's Aunt Sally' The recent reaction to our recoil from a bad Act is only one more illustration Two related factors are, I think, involved First, everyone hates and is afraid of certain diseases Evil spirits cannot be blamed in these enlightened" days, but the old habit of substitution is employed, and upon a scapegoat is unloaded a heavy weight of displeasure What more natural than to choose for this purpose the doctor so closely associated with the trouble I have heard it said "that everyone is afraid of the doctor" meaning, I suppose, that collectively he is used to canalize much dread, and fear easily becomes dislike Secondly, pretended omniscience is always hated Yet from the days of the Delphic Oracle to our own times, say in the case of a medicine man practising in the Australian bush, infallibility has always been courted Once again the doctor willy nilly has been cast for this role Who cannot remember his *obiter dicta* to an assembly of anxiously waiting relations? Perhaps the *Times* leader writer to whom you refer has permitted these or similar considerations to influence him—I am, etc.,

London SW 1

E GALLOP

The Negotiators

SIR—As one of the small majority of general practitioners who voted against negotiation by the present Negotiating Committee with the Minister on the new Health Act I should like to express my point of view, which has not so far been quite the same as other expressed views but may not be unique I voted No as an expression of no confidence in the present Committee to represent the present generation of doctors The point of view of the Committee as I heard it expressed by Dr Dain in this area last summer shocked me as being reactionary muddled and fogging the issue by too many points some relevant others not relevant It is not for doctors to express their opinion at this time about the State control of hospitals I would stand for ever against the deprivation to doctors of the right of appeal to the Courts and against the Minister's power to repress the Annual Report of the Central Health Council But I am not going to stand upon the question of salary or buying and selling of practices provided my living is secured and my professional integrity assured Further I wish my future discussed by men and women of young and middle age, and not by those, however able, over 65—I am, etc

Ruthin

ENID A HUGHES

The Surgeons and the Act

SIR—At the special meeting of Fellows of the Royal College of Surgeons of England on Nov 29 (*Journal* Dec 7, p 869) the President said that 'The Council has to answer in a corporate capacity the question whether it desires the Negotiating Committee to enter into discussion on the framing of such regulations Might one ask why? The President then goes on to say that As a corporate body the Council has answered 'Yes' and later when adversely criticized by a majority of the Fellows present, complains how difficult and distressing the position of leaders of the profession might be If the 'leaders of the profession' make decisions of high policy without first consulting their electors their position will become increasingly difficult and distressing

The President ended by saying that he himself held the view strongly that at this stage it was their duty to negotiate I wonder if he still holds this view after the Willesden episode rightly described in the *Journal* as outrageous If a medical officer matron and nurses can be dismissed for refusing to join a trade union before the coming of a National Health Service anything can happen when and if it does come The Willesden councillors have had to save their face, but they have not changed their heart

If the word 'outrageous' seems a trifle strong to the Socialists think what would happen when a Conservative Government was in power if any municipal employee who joined a trade union was dismissed

The red light is showing, municipalities up and down the country are taking away freedom of action from

employees For some extraordinary reason employees earning over £700 in Rotherham are exempt Let us beware, our turn will come If 23 000 of us stand firm for freedom and stick to our principles, we shall prevail And let us hope that the 'leaders of the profession' will not jump into the big jobs, as they have in other walks of life, until the matter has been thrashed out to the very bottom to the satisfaction of the majority of the profession—I am, etc,

Rotherham

ERIC COLDREY

SIR,—Many practitioners have expressed concern over the ill-informed attitude of the Councils of the Royal Colleges towards the National Health Service Act Mr G Housden's timely letter, 'Surgeons Up in Arms' (Dec 21, p 960), is to be welcomed I have even heard the College Councils referred to in some quarters as the 'Bevan Boys' It is to be hoped that these bodies will realize that they have a serious responsibility towards the public and the profession, and that in medico political matters they will co operate with the better informed BMA

The freemen of the profession are to be congratulated on the wisdom of their plebiscite decision At last the BMA has its mandate, and if the medical profession possesses the courage of the Willesden nurses the Association will not be lacking in strong support United, we have the power to defeat the unhealthy designs of any political party The problem confronting us is not primarily one of health It is a purely political matter, the real motive being to control the doctors and thereby their certificates in order to secure the financial aspects of the social security scheme This should be made clear to the public

I believe I am not alone in the fear of a general moving towards National Socialism in Britain If this is a true conception of recent events we have a clear duty towards the community as well as the profession to resist State control with all the power at our command We must win the first round of the battle against National Socialism Then, and not until then, we can proceed to consider a scheme designed to improve the health of the nation—I am, etc,

Guildford

J O M REES

Medical Students and the Act

SIR—I am a medical student It is not for me to condemn men of wisdom and experience in the profession I have chosen to follow, but medicine is my future and therefore I consider myself justified to take part in the somewhat vitriolic discussion on the National Health Service Act Perhaps the term medical student may lead many to associate me with 'adolescence' May they not be deceived My wife is a general practitioner and I am ex-Indian Army and a liberal

What I abhor in the approach of many doctors is their obvious disregard in their written criticisms for the social problems which exist in our over-industrialized community No alternatives or secondary schemes have been offered to replace the National Health Service Act as it stands Amendments cannot be classified as an alternative scheme Recent correspondence has been metalled with 'for the honour of our profession' "we utterly disapprove," and many similar utterances of indignation The Government has been criticized, but no evidence exists in the public mind of a pitched battle on the grounds that the medical profession have put forward a more palatable scheme and that the Government turned it down

The Act has become law But will any doctor deny the need for a health service for the poor?—not necessarily a scheme governed by politics, such as the National Health Service Act Why not a health service on the scale of an increased panel system to include the wives and families of their menfolk on the panel, or that all persons whose income is below a certain figure be included in the panel? The prestige of the BMA would have risen greatly in the public mind if they had fought the Government with counter-proposals for a National Health Service Instead the public are fogged and remain silent

The public have risen as one body and with one mind over the nationalization of transport Why did they not rise up and oppose the National Health Service Act? I suggest it was because they did not, and still do not, understand the full implications of the Act The poorer classes need such benefits

badly, and the remainder of the public are prepared to accept the Act on those grounds There was no large scale publicity plan to show the public that there were other ways of serving the basic purpose of the Act without the destruction of the profession as it is known to-day Here I must class the medical student He does not know which side to support How can he without any guidance from the BMA? He tends to support the national scheme and looks on the present unconstructive attitude of the instituted members of the profession as the collective protestations of a hen being disturbed on her nest I repeat, the BMA has never enlisted public support against the Act Who, or what body is in a position to stand against the dictatorial impositions of the present Government? A handful of nurses broke up their methods Surely such a powerful organization as the BMA, standing on untouchable ground, can find a way to institute a health service of its own? No doctor can be compelled to enter the State Service, and if all the writers in these columns of past months stand by their maxims of "for the honour of our profession, they will put their heart and soul into any such venture which might give the country one concrete instance that our Labour Government is not an idol to be worshipped under compulsion

Lastly, it would be unwise to forget the small army of mature medical students now studying at universities throughout the country Their support would be valuable to any counter scheme started by the BMA, but that support can never be obtained if they are continuously kept in the dark with regard to their own future—I am, etc,

London S W 6

DAVID McQUEEN

* * Mr McQueen's suggestion in the third paragraph has been BMA policy for many years—ED, B M J

Reiter's Disease

SIR—From the many references to Reiter's disease that have recently appeared in the *Journal* it seems that several misconceptions exist on the subject Much of the confusion would appear to be due to the fact that the disease bears Reiter's name, since the case described by him does not seem to me to have been a true example of "Reiter's disease" as we now know it In his case (described in 1916) the illness was ushered in with severe abdominal pain, diarrhoea and blood stained stools, followed eight days later by a purulent urethral discharge with bilateral conjunctivitis and, on the ninth day, an acute polyarthritides This appears to me to have been a clear case of dysenteric polyarthritides

It is interesting to note that Feissinger and Leroy, in a study of an epidemic of dysentery on the Somme in 1916, noted before Reiter the same clinical syndrome (syndrome conjunctivo urethro synovial) in four of their cases They also described a case of amoebic dysentery with conjunctivitis and arthritis Dysenteric arthritis, often monarticular (it was so in all the cases reported by Bonnin and Kay), is a not infrequent sequel in some epidemics of bacillary dysentery, and although it may occur during the acute stage of the disease it is met with more often during convalescence

Reiter's disease, as it is generally recognized to day, is characterized by a clinical syndrome consisting of non gonococcal urethritis bilateral conjunctivitis, arthritis (usually polyarticular) and occasionally balanitis and keratoderma blennorrhagica This was, in fact, recognized many years before Reiter published his case and was described by Launois in 1899 Launois's case was of venereal origin, and in my experience this is always so with this disease It consists of a variety of non gonococcal urethritis with blood borne complications, it runs a protracted course and sometimes recurs after long periods of remission Urethritis is usually of the Waelchli type and characterized by a longish incubation period and multiple subjective and objective signs and symptoms In some of my cases however, there was a profuse purulent abacterial urethral discharge with pain and frequency of micturition Cases have been reported with upper urinary tract lesions, and a case at present under my care which was admitted with haematuria, non-gonococcal urethritis bilateral conjunctivitis, and polyarthritides, shows dilatation of renal pelvis In my series conjunctivitis was noted between 2 and 16 days after the appearance of the urethral discharge, and arthritis (always polyarticular) 1 to 6 days later In one case however, arthralgic pains in several joints were observed 2 days before the onset of conjunctivitis and definite articular involvement did not occur until 4 days later Fifty per cent of my cases subsequently developed keratoderma blennorrhagica I have also had several cases of primary non gonococcal urethritis with metastatic complications in which the syndrome was incomplete

The venereal syndrome is also seen in association with a gonococcal urethritis, but in these cases there is often a primary mixed infection of both gonorrhoea and non gonococcal urethritis and evidence is accumulating that the latter is the real cause of the condition. Reiter isolated a spirochaete in the blood of his case, but in this respect all subsequent workers have failed. Macfie in 1917 reported a case of primary spirochaetal urethritis with arthralgic pains and iritis; the condition reacted favourably to galyl and mercury. Your annotator refers to this case—wrongly, in my opinion—as being one of Reiter's disease.

Reiter's syndrome has also been noted in cases suffering from staphylococcal septicaemia by Biland in 1905 and Junghanns in 1918. Biland's case a man aged 21 with osteomyelitis of the right acromion process, non gonococcal urethritis bursitis, and subcutaneous abscesses (all due to *S. aph. aureus*) had the primary focus in the acromion process although the author did discuss the possibility of primary urethral involvement. Junghanns himself considered that his case in a boy aged 16 with non gonococcal urethritis, conjunctivitis and polyarthritis was due to a generalized septic infection arising from a boil on the upper lip. Many cases of arthropathic psoriasis have been described wrongly as cases of Reiter's disease but confusion here rests with the differential diagnosis of the skin lesions: the rupoid eruptions may be indistinguishable from the soft parakeratotic patches which are an occasional manifestation of keriodermia blennorrhagica. The syndrome in arthropathic psoriasis is never complete and usually consists of arthritis and skin lesions only.

I described in 1944 the presence of inclusions (initial and elementary bodies) in the urethral discharge, conjunctival secretion and skin lesions and these findings have been confirmed in the investigation of further cases. Dienes and Smith in 1942 cultured pleuropneumonia like organisms from the urethral discharge of a man suffering from arthritis, and Henderson Begg has recently isolated this organism from the urethral discharge of one of my cases of Reiter's disease.

Fever therapy is the treatment of choice. In my experience penicillin and the sulphonamides have no beneficial effects.

In conclusion I would like to put forward the suggestion that a distinct differentiation should be made between cases of venereal origin and dysenteric origin. I advocate that the term Reiter's disease or better still dysenteric arthritis, be applied only to the latter and that the former—those of venereal origin—be described as non gonococcal polyarthritis or the non gonococcal syndrome. Much confusion would, I am convinced, be avoided by such a distinction—I am, etc.

London W 1

A H HARKNESS

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 Reiter H (1916) *Disch med Wschr* 42, 1535

Antibiotics and Canine Distemper

SIR—Some of my colleagues may perhaps be interested in the use of penicillin for the bronchial complication of distemper in their pets. Recently my wire-haired terrier developed distemper complicated with bronchitis of a severe type. The dog was seen by two veterinary surgeons who confirmed the diagnosis and considered his chances of survival were practically nil. Sulphonamides had been given in adequate dosage for about one week the temperature remaining high—105° F (40.6 C)—and with little if any apparent benefit. I suggested intramuscular penicillin 200 000 units of the sodium salt; this was injected and within twelve hours the temperature had fallen to 102° F (38.9 C) and after a second dose of 200 000 units given twenty four hours later it fell to normal—100° F (37.8 C)—and remained there. The terrier had an uneventful recovery and is now (three weeks later) quite well much to its owner's delight.

It is said that penicillin has little or no effect in virus diseases of which this is one so it may have been the secondary organisms in the bronchial complications that were sensitive. I understand that the recent epidemic of distemper in dogs is of Canadian or U.S.A. origin and of a virulent nature and many other dogs have been attacked with fatal results. The effect of penicillin in this one case was so dramatic that the veterinary surgeon in question decided to use it in other dogs' attacks—with equally gratifying results. Though one or two swallows

do not make a summer it may be that, as in this case, penicillin may have a place and many valuable pets or prize dogs may be saved by its use—I am, etc.,

Bournemouth

S A MONTGOMERY

Immunization against Whooping-cough

SIR—Dr H Sugarc (Dec 7, 1946, p 876) will be interested to know that the "field trials" of whooping-cough vaccine (Nov 9, p 699) are now being extended to Leeds, where a new British alum-precipitated vaccine is to be used. Despite the good results claimed in the U.S.A. previous trials in this country have not been very promising, and until a definite assessment of the value of pertussis vaccines is made in Britain it is considered undesirable to associate them in the minds of parents with a procedure of proved efficacy such as diphtheria immunization. When a vaccine of proved value is available the next step will certainly be to test it in combination with diphtheria toxoid as a combined antigen would be of great advantage to the child and to all concerned with immunization schemes—We are, etc.

Public Health Laboratory Service
 London NW 9

W CHAS COCKBURN

Leeds

JOHN F WARIN

Hospital Regions

We print below a letter sent by the King Edward's Hospital Fund for London to the Ministry of Health.

SIR—We are grateful for the opportunity afforded by your letter of Nov 15 to comment on the areas proposed for the regions in the London area.

I am to say that the proposals as they affect the London area are fully in accord with the view which this Fund has from time to time expressed. It is essential that the hospital services of London and the Home Counties should be taken together, and that the arrangements should be such as to secure to the full the advantages expected to accrue from the extension of the university influence upon the standards of hospital work. At the same time we appreciate that the area is as a whole too large to be operated as a single region and we would agree that the division of the area into four regions offers the best practical alternative open to the Minister. In saying this we would not wish to prejudice the question of the advisability of some reconstruction of the boundaries of the regions on the lines now being suggested by the Voluntary Hospitals Committee for London.

The experience of the Fund shows that it is especially in the populous periphery of the Metropolitan area that the need for further development is most apparent. This development must be completely integrated with the hospital services of the central area and we are strongly of opinion that the advantages of such a plan as that now proposed will in the long run far outweigh the possible conveniences of any alternative plan such as might be framed to coincide with the present boundaries of the County of London. This alternative could only tend to perpetuate the defects of the present arrangements (see enclosed paragraphs 11 and 12 of the Statement of Principles submitted to the Ministry in 1944).

11 In the case of London, the regional arrangements must cover part or the whole of the area of the Home Counties however this area may be ultimately defined. It may be that special arrangements will be called for as regards the regional machinery.

12 Although the size of the area of the authorities remains to be determined the White Paper contains a hint that it will be necessary to have regard to administrative convenience, and implies that the area of the London County Council will constitute a single authority. The experience of the King's Fund in the Metropolitan Police District proves unmistakably that such an arrangement would only perpetuate one of the primary sources of the maldistribution of hospital facilities in the metropolitan area. In so far as there is a lack of adequate hospital services in the London area it is to be found on the periphery of London where new populations have sprung up within recent decades—where it has proved difficult for voluntary provision to keep pace with the growth of population and where the local authority has equally failed to meet the situation. If ever there was a case for co-ordinated planning it is over this wide area that transcends the County boundaries.

—I am, etc

A G L IVES
 Secret. y

Obituary

SIR RICHARD CRUISE, GCVO FRCS

Sir Richard, Robert Cruise, who died on Dec 24 at St Mary's Hospital, London, after a brief illness, had been Surgeon Oculist to Queen Mary since 1936 and before then Surgeon Oculist to King George V.

Born at Purneah, India, son of Francis Cruise he was educated at Harrow and St Mary's Hospital, qualifying in 1900 and taking the FRCS three years later after he had worked as house-surgeon at the Bristol Eye Hospital and had spent some time in Paris clinics. He continued his ophthalmic studies at Moorfields Hospital, where he became chief assistant, and he was also for some time senior clinical ophthalmic assistant at St Mary's.



(Bussano Ltd)

During the war of 1914-18 he served with a temporary commission in the R A M C in France and at the 3rd London General Hospital at Wandsworth, and he did valuable work as ophthalmic surgeon to King Edward VII Hospital for Officers. His principal appointment in later years was that of surgeon to the Royal Westminster Eye Hospital, and he was also consultant oculist to the Harrow Cottage Hospital.

Richard Cruise was a most accomplished operator, shown perhaps at his best in cataract

cases. He retained his operative skill and was in harness up to the time of his death. While serving in France he had invented a chain visor for attachment to the rim of the soldier's steel helmet and he described this device in a paper on 'Protection of Eyes in Warfare by Adoption of the Author's Visor' which appeared in the *Transactions of the Ophthalmological Society* in 1917. He also published in that periodical an account of his operation for the restoration of contracted and disorganized eye sockets (1919), and of hinge-flap sclerotomy for glaucoma (1940). Early in his career he wrote a monograph entitled *Clinical Refraction*. He was made a CVO in 1917, a KCVO in 1922 and a GCVO in 1936.

An open air man of wiry physique and polished appearance he hunted regularly for many years, was an expert shot, and a good golfer. Few if any medical men can have ridden so successfully in point-to-point races over a long period. He owned the famous steeplechaser War Gratuity, so named because he bought it with his war service gratuity. That horse won many races with him in the saddle and died while he was riding it in a steeplechase fifteen years ago.

Sir Richard Cruise was popular with his colleagues and always ready to help or advise. He joined the British Medical Association in 1906 but did not hold office at Annual Meetings and took no active part in professional politics. In later life he spent many happy days at his country house Shipton at Winslow in Buckinghamshire, while continuing to practise in Wimpole Street.

SIR HARRY WATERS MRCS DPH

Sir Harry Waters who died recently at Stroud in Gloucestershire, at the age of 78 had a distinguished career as a public health administrator in India and was chief medical officer to the East Indian Railway from 1917 until his retirement in 1923.

Harry George Waters son of Alfred Waters was born at Rathmullen in Co Donegal on April 19 1868 and was educated in England at the Royal Naval School New Cross, and at St Thomas's Hospital. He qualified as MRCS, LRCP in 1892 and afterwards obtained the DTM&H and the Cambridge DPH. Having held house appointments at the Hull Royal Infirmary he went out to India to join the medical service of the EIR. Besides his ordinary duties he

was appointed an honorary magistrate and plague officer at Tundla, in the United Provinces, in 1907, and six years later held the corresponding posts at Jamalpore, in Bengal. He was responsible for the establishment of laboratories at Tundla and at Allahabad and throughout the war of 1914-18 held the rank of Lieut-Colonel in the Indian Defence Force, and was later gazetted as honorary Colonel. Before his return from India he examined in hygiene at Calcutta University for two years and was a member of the Bengal Sanitary Board and president of the Conference of Chief Medical Officers of Railways. In his leisure time he was a keen rifle shot.

During the past twenty-three years Sir Harry Waters took a prominent part in local affairs at Stroud and continued his active interest in the teaching of first aid. He had started the St John Ambulance classes on the East Indian Railway in 1897, was a Knight of the Order of St John of Jerusalem, and received the Volunteer Decoration. At Stroud he had been honorary pathologist to the General Hospital. During the recent war he was medical officer to the local company of the Home Guard with the rank of captain in the 7th Battalion of the Gloucestershire H.G. He was also a JP and at one time chairman of the Stroud Urban District Council. He received his knighthood in 1924 in recognition of long service to public health in India. He married in 1900 Dr Winifred Pierce a medical graduate of Edinburgh University and they had two sons, one of whom has already had a distinguished career in the Indian Medical Service.

Medico-Legal

A RADIOGRAPHER ELECTROCUTED

It is some time since a death from electric shock by an x ray apparatus was reported. The last case of the kind occurred in Wimbledon in the early thirties. A nurse imprudently put a hand too near the cathode when a patient was being screened and she and the doctor were killed. As a result every firm promptly introduced shock-proof apparatus, and most medical men probably assumed that this danger had been eliminated. A radiographer, however, was recently killed by shock at Derby.

According to a newspaper report¹ Dr H G Grace said at an inquest that after he had screened a patient he had told the radiographer Mr V I Marshall that it would be necessary to make certain adjustments to the equipment. Marshall, he said stood at the control table making adjustments and watching results. He then moved away to inspect the meters close at hand. He gave a small jump backwards apparently to make a further adjustment. There was a brilliant white flame and he slumped to the floor. He was at once treated for shock but did not recover. The doctor said in answer to the coroner that certain parts of the apparatus were not shock-proof. Completely shock-proof apparatus was very difficult to acquire.

A representative of the manufacturers said that the machine had been standard equipment when installed in 1936. It would be possible to get an electric shock from a "tremendous number of points on the apparatus, which would transform up to 100 000 volts. The coroner said the corporation had failed in its duty to its employees and everyone else by having a machine like this unless efforts had been made to get a shock proof apparatus. He referred to evidence that other insufficiently shielded machines were in use in the town and hoped that speedy steps would be taken at public hospitals and private institutions to ensure that no danger existed. He expressly excepted Dr Grace from his criticisms.

¹Derby Evening Telegraph Dec 14 1946

Dr George Jessel, of Eccles Lanes who died on June 23, left £30 840. Dr W H Dobie, who died on March 3, left £18 000. Dr Charles James Rovston, of Bournemouth who died on Oct 6, aged 46 years left £20 310. Dr John Barbour Stewart, of Kirkintilloch, Dumbartonshire, who died on Aug 15 last left personal estate in England and Scotland valued at £16 837.

Medical News

UNIVERSITY OF CAMBRIDGE

F. P. S. Powell, M.B., Ch.B. Ed., has been appointed University Demonstrator in Anatomy, and J. A. R. Miles M.B. B.Chir., and G. R. E. Naylor, M.B. B.Chir. have been appointed Demonstrators in Pathology, all three appointments are for three years from Oct 1, 1946. J. H. Dean, M.B., B.Chir., and D. B. Cater, M.B., B.Chir. have been appointed temporary Demonstrators in the Department of Pathology for three years from Oct 1, 1946, and Jan 1, 1947, respectively.

At a Congregation on Dec 14 the following medical degrees were conferred

MD—*R I S Bayliss
MB B CHIR—*C W A Pullan *A S Wigfield H S Eyre
MB—*A F Alsop

* Ву проху

UNIVERSITY OF LIVERPOOL

The following candidates have been approved at the examinations indicated

M CHORTH—J A P Cameron J P Heron C Hollenberg D M Jones
W Lamont R Roaf G D Rowley E W Stouf A K Talwalkar F R Tucker
FINAL M B CHB—*Part I* Mary F Barrie Elspeth M Evans Elspeth M
Hill C O le C Hughes B Kay J H Murray S Plumpton Enid Rees
Millicent M C Regan J N Rimmer S S Swift H Thompson *Pasted in*
Separate Subjects J G Kingan and D N Menzies (Pharmacology and General
Therapeutics) *Part II* C. Jones
DPH—*Part I* L C Allan G H Ball T W Brindle A M Brown Mary F
Brownlie W F Christian D J Doherty Catherine S Ellams D J Fraser
I A Gillett Patricia F M B Gould M D Kirling Ann Pryor Jones B Pujari
K. V Robinson C D Rosenwald K. C Sahu Irene W Simpson W G Taaffe
C Walker S R Warren E B Weeks *Part II* L Findlay (with distinction)
I Norris
DTM and H—W H H Andrews (recommended for Warrington Yorke
Medal) F H Budden E M Crags D Gall F E D Griffiths Margaret E
Holmes W T Jocher S G Loh A McElvie J M S Manson P R Mohan
S Newman P Pattison J N Robertson H B L Russell S D Sawyer D
Scott Alice Speight Margot M Siern R H Strudwick (recommended for
Milne Medal)

UNIVERSITY OF LEEDS

The following candidates have been approved at the examination indicated

FINAL M.B. CLUB—Part I (Forensic Medicine and Public Health) Vera A. Bell, K. A. Fyles, Marguerite J. Glover, Ruth C. Grey, Joan K. Hardy, J. A. Holgate (distinction in Forensic Medicine and in Public Health), Margaret E. Johnson, A. T. Merson, Anne B. Neil, J. Samuel, C. G. W. Sykes, J. K. Walker, Freda Walton, W. F. Weatherill, A. R. Webster, W. Waters.

UNIVERSITY OF DURHAM

An inaugural lecture under the general title of "Industrial Health" will be delivered by Prof R C Browne first holder of the Nuffield Chair of Industrial Health in the University, on Friday, Jan 24, at 4.30 p.m. in King's Hall, King's College, Newcastle upon Tyne. Tickets of admission may be obtained from the registrar of the College.

QUEEN S UNIVERSITY, BELFAST

At a graduation ceremony held on Dec 19, 1946 the following medical degrees were conferred

M D—D A D Montcomery (with gold medal) G F Adams (with high commendation) *W J Allen *E Fletcher *A P Grant *J Jefferson *D F O'Neill W St C Summers *H W Thompson F S Boruchi R J L Ferris, C M N Field, J Gilmore H L B Girvan R H Kennedy J S Logan J F Partridge J R Reulster G A Scott N J Y Simpson R J L Wilson
T Wright

W. H. J. A. W. Bircham
M. B. B. C. B. A. O. R. H. L. Vines + M. G. McGeown T. A. B. Morrison
J. B. P. N. J. A. I. W. T. Bailie Shears Best J. McE. Bill Mary T. Boylin
T. A. B. S. E. Browne Grizel D. R. Carr Nira A. J. Carson J. C. Charlton
K. P. Clarkin G. G. Dallas D. W. Davin J. C. Donaldson R. D. Donnelly
J. W. Dundee Monique L. Dunlop Sheila M. B. Field A. A. Fullerton B.
Gallagher D. T. Gl. X. W. Goldie G. N. J. T. Hamilton J. A. McG Johnston
Hilda W. Jones Filmer P. Kane D. A. Kirk G. J. T. Lawson P. G. J. Lrden
J. M. Love W. J. Lyness Eli abt C. McClell J. T. Loxon P. G. J. Lrden
P. P. A. Gary Martha E. C. McArthur W. M. Lead, E. J. Mir W. M.
P. P. A. D. T. Patton J. Pigott Anna I. Pillow K. R. Riddie O. Rogers veig
D. H. Keith W. B. Russ J. Margaret W. Russ H. Neen M. Simpson R.
Simpson B. S. Imberg J. K. Swart T. A. Thompson Da o'eta M. G. Thorton
B. H. Watson R. F. Whelan A. Margaret I. Williamson Sarah D. Wilson
W. W. C.

* With commendations. † With second-class honors.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS
OF GLASGOW

A Lecture entitled "Surgery of the Thyroid Gland" will be delivered by Mr. Geoffrey L. Keeney FRCS in the Hall of the Royal Faculty of Physicians and Surgeons 2-2, S. Vincent Street, Glasgow on Wednesday Jan. 15 at 4 p.m.

A meeting of the whole medical profession in the Birmingham area will be held at the Nuffield Hall, Queen Elizabeth Hospital Birmingham on Sunday Jan 12, at 6.30 p.m., to discuss the resolution of the Council of the B.M.A. regarding the N.H.I. capitation fee and the action to be taken by the Negotiating Committee and to instruct representatives to the Special Representative Meeting on Jan 28.

A joint meeting of the Food Group of the Society of Chemical Industry and the Liverpool Section of the Society will be held at the University of Liverpool on Tuesday Jan 14, at 6.30 p.m., when Mr P. N. Williams will present a paper on "Synthetic Fats".

The annual general meeting of the Harveian Society of London will be held at 26 Portland Place, London, W, on Wednesday Jan 15 at 8.15 p.m. when the president Brig H. L. Glyn Hughes will deliver his presidential address on "Normandy to the Baltic from a Medical Angle".

A meeting of the Royal Sanitary Institute will be held at 90 Buckingham Palace Road, S.W. on Wednesday, Jan 15, at 2.30 p.m. when a discussion on 'Health Centres' will be opened by Prof. R. H. Parry.

The following radiological meetings will be held in London next week: Thursday, Jan 16 8 p.m., British Institute of Radiology, 32, Welbeck Street W, discussion on "Cardiac Radiology" to be opened by Dr T Holmes Sellers Dr D Evan Bedford and Dr J Duncan White; Friday, Jan 17, at 2.30 p.m., Diagnosis Section of Faculty of Radiologists at Royal College of Surgeons of England, Lincoln's Inn Fields, W.C., paper by Mr J J Mason Brown on "Arterial Injuries with Reference to Arteriography in the Diagnosis"; Friday Jan 17 at 8 p.m., Section of Radiology of Royal Society of Medicine, 1, Wimpole Street, W, papers by Dr S Nowell "Tomography," and Dr A Elkeles, "Disseminated Ossified Nodules in the Lungs associated with Mitral Stenosis."

A meeting of the Eugenics Society will be held at the Royal Society's Rooms, Burlington House, Piccadilly, W., on Tuesday Jan 21 at 5.30 p.m. when Sir Alexander Carr-Saunders, Sir Cyril Burt and Dr J H Fraser Roberts will present a symposium on 'The Relation of Intelligence to Fertility'. All interested in the subject are invited to attend.

The King has appointed Dr Edgar Cochrane to be an Official Member of the Legislative Council of the Colony of Aden

Mr J J Robertson, Labour M.P. for Berwick and Haddington has been appointed to the General Medical Council in succession to Lord Hacking. He is one of the five members of the Council nominated by the Crown. Mr Robertson, a 48-year-old Shetlander has had a varied career—*retail fruit merchant in Edinburgh, middle weight champion of the Navy in 1918, at the Ministry of Supply in the recent war, and M.P. since the general election*

The British Postgraduate Medical Federation is shortly to be recognized by Royal Charter as a school of London University with Sir Francis Fraser as Director. The Maudsley Hospital Medical School will become an Institute within the Federation. For the academic year 1946-7 the University has granted the Federation £147 000.

The Royal Medical Foundation of Epsom College invites applications for a Chalice annuity, present value £32 per annum, which is to be awarded to a medical practitioner who, on account of age has been compelled to retire from professional work. There is no limitation as to age. Forms of application can be obtained from the secretary's office, Epsom College, Surrey.

The Hospital for Tropical Diseases which was closed during the war has now been reopened at 23 Devonshire Street, London W1 (Tel. Welbeck 8371), and is open to all patients suffering from tropical diseases. There is an out patient department for which appointments should be made by telephone or by letter.

A team of medical and public health workers from Ceylon are visiting this country for six months under a scheme arranged between the National Association for the Prevention of Tuberculosis and the Ceylon Government to study tuberculosis control treatment and rehabilitation, as well as sanatorium methods and mass

The Ministry of Health announce the ending of the arrangement whereby relatives of Merchant Navy men dangerously ill in hospital could apply to the police for a railway warrant.

D- Annecke, Chief Malaria Officer for South Africa, recently announced further extensions of Operation Arthur the anti-malarial campaign that has been waged in Eastern Transvaal for the last three seasons. He said that, given the man-power, the whole of the Transvaal and the Union could be cleared of malaria.

Prof O N Holsti, professor of medicine in the University of Helsinki and President of the Finnish College of Physicians, is on a visit, arranged by the British Council, to this country to study British medical developments and, in particular rheumatology, endocrinology, metabolism, and the teaching of medicine. Dr Cruz Coke a former Minister of Health in Chile, is also on a visit to Britain, arranged by the British Council, to renew contacts with British medical authorities.

The Royal London Ophthalmic Hospital, the Royal Westminster Ophthalmic Hospital, and the Central London Ophthalmic Hospital have united under an Act of Amalgamation, and are now called the Moorfields, Westminster, and Central Eye Hospital. The hospital will provide clinical material and facilities for postgraduate teaching and research. 341 beds are available.

The National Collection of Pathological Specimens of War Injuries of the Medical Research Council (Curator, Dr Joan M Ross) is now housed at the Examination Hall, 8, Queen Square, London, W C 1 (Tel Terminus 3270).

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* an increase was recorded in the incidence of measles 812 while there was a decline in cases of scarlet fever 191, diphtheria 87 and whooping cough 78.

Large increases in the notifications of measles were reported from several counties, the largest rises were Warwickshire 195, Northumberland 161, Worcestershire 151, Durham 149, Devonshire 108 and Middlesex 103. The greatest contrasts to the general trend were decreases in Kent 99 and Essex 95.

Small decreases in the local incidence of scarlet fever were recorded throughout the country, the largest return was that of Yorkshire West Riding 38. No marked fluctuations in the local trends of whooping-cough were reported. The largest variations in the incidence of diphtheria were decreases in Lancashire 28 and Yorkshire West Riding 14, with a rise in Durham 14. The only large centre of infection of dysentery was Lancashire, Preston R D 11, only scattered cases were recorded in other areas.

In *Scotland* there were decreases in the notifications of measles 78, whooping cough 42, and diphtheria 18 and rises in the incidence of acute primary pneumonia 30 and dysentery 15. The rise in cases of dysentery affected the eastern area, and Edinburgh reported an increase of 6 cases. In Glasgow the cases of acute primary pneumonia rose from 163 to 185.

In *Northern Ireland* another large increase, 130, was recorded in the measles epidemic in Belfast C B.

Quarterly Returns for Eire

The birth rate during the September quarter was 22.9 per 1,000, which was the same as the rate for the third quarter of 1945. Infant mortality was 54 per 1,000 registered births, this was 4 below the rate of the September quarter of 1945 which was the lowest rate since 1942. Maternal mortality was 1.6 per 1,000 registered births compared with 2.6 for the corresponding quarter of the previous year. The general death rate was 11.5, and was 0.4 below the rate for the preceding third quarter. Deaths from pulmonary tuberculosis were 561, 184 were attributed to other forms of tuberculosis. These figures were 93 and 20, respectively, below the totals for the third quarter of 1945.

Deaths in the United States

During 1945 the total of 1,401,719 deaths in the United States was fewer than in either of the two preceding war years. The principal cause of death was heart disease which accounted for 30.3% of the total, deaths from cancer accounted for 12.7%. The relaxation of rigid wartime driving restrictions coincided with a rise in deaths due to motor-vehicle accidents from 24,282 to 28,076. Deaths from infectious diseases declined and new low records were set up for deaths from pneumonia and influenza, these causes accounted for 68,386 deaths, 16.4% below the total for 1944 and 8.2% below the previous record low level of 1942. Tuberculosis caused 52,916 deaths which were fewer than in any previous year. Deaths in the first ten months of 1946 were estimated to be 1,162,000—as compared with 1,144,373 in the same period of 1945.

Week Ending December 28

The notifications of infectious diseases in England and Wales during the week included scarlet fever 943, whooping cough 1,149, diphtheria 210, measles 7,038, acute pneumonia 760, cerebrospinal fever 38, dysentery 55, paratyphoid 6, typhoid 3.

No 51

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Dec 21.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year for (a) England and Wales (London included) (b) London (administrative county) (c) Scotland (d) Eire (e) Northern Ireland. *Figures of Births and Deaths and of Deaths recorded under each infectious disease are for:* (a) The 126 great towns in England and Wales (including London) (b) London (administrative county) (c) The 16 principal towns in Scotland (d) The 13 principal towns in Eire (e) The 10 principal towns in Northern Ireland. A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1946					1945 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever Deaths	29	4	21	—	—	43	4	13	—	2
Diphtheria Deaths	243	20	69	16	—	569	50	155	4	21
Dysentery Deaths	62	7	31	—	—	230	20	43	—	—
Encephalitis lethargica acute Deaths	—	—	—	—	—	1	—	2	—	—
Erysipelas Deaths	—	—	46	4	—	—	—	30	—	—
Infective enteritis or diarrhoea under 2 years Deaths	91	5	11	6	—	58	4	9	21	1
Measles* Deaths	7,769	239	240	349	—	623	52	92	—	3
Ophthalmia neonatorum Deaths	79	4	15	—	—	46	2	10	—	2
Paratyphoid fever Deaths	6	—	2(B)	—	—	4	—	—	—	—
Pneumonia influenzal Deaths (from influenza)	699	50	12	9	—	1,166	92	6	—	—
Pneumonia primary Deaths	—	57	365	18	—	—	81	192	18	7
Polio-encephalitis acute Deaths	2	—	—	—	—	1	—	—	—	—
Poliomyelitis acute Deaths	13	—	—	—	—	23	—	3	—	—
Puerperal fever Deaths	—	3	9	—	—	—	2	11	—	—
Puerperal pyrexia† Deaths	133	22	6	—	—	136	19	10	—	2
Relapsing fever Deaths	—	—	—	—	—	1	—	—	—	—
Scarlet fever Deaths	1,201	73	330	42	—	1,718	139	251	—	45
Smallpox Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid fever Deaths	4	—	2	—	—	5	1	1	—	1
Typhus fever Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough* Deaths	1,586	103	231	38	—	1,100	92	50	—	—
Deaths (0-1 year) Infant mortality rate (per 1,000 live births)	5.39	7.3	9.6	3.0	—	4.54	6.2	5.2	4.9	1.2
Deaths (excluding still births) Annual death rate (per 1,000 persons living)	5,682	945	721	171	—	6,088	979	665	234	141
Live births Annual rate per 1,000 persons living	9,158	1403	1137	25	—	6,890	956	841	332	239
Stillbirths Rate per 1,000 total births (including stillborn)	2.69	2.9	3.5	—	—	2.27	1.4	3.1	—	—

* Measles and whooping-cough are not notifiable in Scotland and the return are therefore an approximation only.

† Includes primary form for England and Wales (London (administrative county) and Northern Ireland).

‡ Includes puerperal fever for England and Wales and Eire. It is still not possible to publish the return of births and deaths for Eire for the weeks ended Oct 26, Nov 2, 9, 16, 23, 30, Dec 7, 14, and 21. No returns this week for Eire (notifications).

Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Convalescent Serum in Measles

Q—A child 18-months old in a town full of measles—what precautions would you advise? Would you give particulars about the use of convalescent serum?

A—Convalescent measles serum may be used either to give complete protection or to render the attack a mild one in a child who has been intimately exposed to infection. Children of six months to two years of age are highly susceptible both to attack and to the risk of secondary complications such as otitis media and bronchitis or bronchopneumonia. Therefore a child in this age group should if possible be completely protected. This is done by giving, within five or six days of exposure, 5 ml. of pooled convalescent measles serum recently harvested or if not recently obtained dried to preserve the antibody. (If the exposure is a family one the date on which the rash appears in a patient is regarded as the fourth day of exposure of a contact.) Protection lasts for a few weeks only and then the child becomes susceptible again.

A danger attached to the use of human serum is that the serum may contain the icterogenic agent of homologous serum jaundice but in an extensive use of convalescent measles serum the writer has not encountered this condition in young children. Supplies of convalescent measles serum are very limited, and as an alternative a child may be given double the dose of a pooled adult serum, which may not however, give complete protection. For an exposed healthy child over 2 years of age adult serum or a small dose of convalescent serum should be used in order to let the child have a mild infection with resulting immunity to future attack. Serum should not be given unless the child is known to be intimately exposed, and serum is of no value after the onset of clinical symptoms. Inquiry as to supplies of convalescent measles serum or adult pooled serum should be made at the local public health laboratory or from the public health department.

Penicillin Chewing-gum

Q—Is penicillin chewing gum of any value? If so how is it prepared?

A—According to Catherine F. McIntosh and P. W. Perryman (*Pharmaceutical Journal* Dec 7, 1946 p. 345) penicillin chewing gum is best prepared by warming commercial chewing gum to about 40°C and rubbing it in a mortar with 200,000 units of dry calcium penicillin. After thorough admixture the mass is rolled and then cut into 20 pieces each thus containing 10,000 units.

The penicillin content of saliva remained high for seven hours while such gum was chewed. Gum made with sodium penicillin was active for only four hours and a tablet of the same amount of calcium penicillin only with no gum produced an effect for only two hours. It is recommended that each piece of calcium penicillin chewing-gum be chewed for four hours, three pieces daily. The method is said to give good results in Vincent's gingivitis and it has been applied to the treatment of throat infections. This method of administration may well prove with further experience to be both more agreeable and more effective than the sucking of the penicillin tablets now available.

Horripilation and Perniosis

Q—What is the treatment of horripilation or 'goose-flesh'? The patient is a young teacher and the condition persists throughout the year. The upper arms and thighs are chiefly affected and the underlying skin has a dusky red appearance.

A—The brief description suggests that this patient has pernio that is a poor peripheral circulation and an exaggeration of the follicles is a usual accompaniment. It is however not very satisfactory to make a diagnosis from

such scanty information. If my suggestion is correct, then measures directed towards the poor circulation may be helpful: warm clothing, warm environment at home and work, physiotherapy by way of massage exercises, and ultraviolet light, and possibly quite small doses of phenobarbitone and thyroid. Vitamin K seems to exercise a beneficial effect in some cases of pernio. The follicular reaction may also be in part a local nutritional failure consequent upon the poor circulation. In such cases vitamins A and D by mouth are helpful, and a simple emollient ointment or glycerin lotion may be used on the skin.

Ephedrine and Desensitization

Q—If an allergic patient is undergoing non-specific desensitization and ephedrine is given to relieve the headaches which follow injections does this interfere with the desensitization process?

A—The giving of ephedrine or adrenaline to relieve symptoms produced by either specific or non-specific desensitization is an accepted practice and does not interfere with the desensitization process.

Trichomonas Vaginalis and Salpingitis

Q—Despite the fact that the uterine secretions are normally alkaline and so presumably limit the spread of a trichomonas infection upwards does infestation of the uterus occur, and if so might it lead to a salpingitis and to pelvic peritonitis? I have a woman patient who had *Trichomonas vaginalis* in the vagina following laparotomy and salpingectomy after the sudden development of pelvic peritonitis. The thin pus leaking from the funicular end of the Fallopian tube failed to show anything on culture.

A—All the evidence so far available shows that the *Trichomonas vaginalis* does not ascend to the uterus or Fallopian tubes. This point was investigated by E. Allen and S. Butler (*Amer. J. Obstet. Gynaec.*, 1946, 51, 387), who state: 'We have been unable to demonstrate any ascension of the trichomonads above the external os of the cervix. We have examined material from the surgical specimens removed from 28 patients with active trichomoniasis. The material was obtained within a few minutes after operation. It was examined in saline suspension, cultured (technique described by Trussel and Plass) and stained (Leishman's stain described by Liston). The material was taken from the uterine canal tubes, ovarian cysts, pelvic and ovarian abscesses, and amniotic fluid. No trichomonads could be demonstrated.' These authors go on to give a warning against operating in the active stage of a trichomonas infestation since convalescence tends to be stormy. They also suggest that the bacteria found concomitantly with a trichomonas infestation may infect the uterus or tubes especially in the premenstrual phase.

It seems therefore that in the case under consideration some bacterial infection must have been responsible for the salpingitis and pelvic peritonitis. Several points must be borne in mind. A flare-up of a pre-existing chronic or subacute salpingitis is especially likely to occur in the premenstrual phase. Gonorrhoea and trichomonas vaginitis may co-exist. Cultures taken at laparotomy for acute salpingitis are often sterile even when an organism such as the gonococcus can be demonstrated in the cervix and urethra. It seems that in this case some other cause for the salpingitis than trichomonas infestation should be looked for.

Risks of Cellulose Spraying

Q—What dangers are there in the cellulose spraying of motor cars if a proper mask is used?

A—The risk to health in this work is from the volatile components of the cellulose paint and not from the solids. These volatile substances vary widely but from the health aspect probably the most important are benzol, methanol, and butanol. A mask, to be effective, must be designed to prevent the inhalation of vapours rather than dust; hence the usual type of mask with dust-filtering media is useless for this work. Except perhaps for occasional work of very short duration adequate protection is in fact obtainable only when the spraying

operation is effectively under the influence of mechanical exhaust ventilation. In considering the health hazards the fire risks of cellulose spraying should not be forgotten.

Approach to Persecution Mania

Q—*What is the best method of getting a lady with a persecution mania to a psychiatrist? What is the correct attitude to take should one be sympathetic or otherwise?*

A—It is not advisable to use subterfuge in getting the patient to see a psychiatrist. If nothing will induce her to consult a competent specialist, she must be permitted to go her own way. However, the wisest method of approach does not seem to have been used so far. The deluded patient, who is not conscious of feeling ill in any way, commonly resents the suggestion that he or she is 'mentally affected,' or that his or her false beliefs are the result of 'imagination' (which, of course they are not in any case). It is not possible to discuss their symptoms with deluded people unless one accepts some common ground, which includes the reality of their experiences. A sympathetic attitude is certainly best. The suggestion might be made that the feelings in question are not infrequently the result of an interference with the orderly functioning of the nervous system arising from some physical cause for which specialist advice would be helpful. If this is rejected, reasonable excuses for calling in psychiatric aid may usually be found within the logic of the delusional beliefs—e.g., as a suitable preliminary to reporting the persecution to the police.

Alcohol Test for Milk

Q—*What is the alcohol test for the keeping quality of milk? How is it performed?*

A—The alcohol test is carried out by adding 1 ml. of 68% ethyl alcohol to 1 ml. of the milk and inverting the tube once. If precipitation of casein (i.e., discrete particles however small) is observed in the thin layer of liquid adhering to the walls of the tube, the test is regarded as positive. The alcohol is prepared by diluting industrial methylated spirit with distilled water to approximately 68%, neutralizing any free acid and confirming the final concentration by determining the specific gravity, which should be 0.895 at 15.5°C. Freshly drawn milk should be pre-incubated at 20°C for eighteen hours before testing.

Ulcers of the Mouth

Q—*A healthy woman patient has had for a year painful buccal ulcers which take several days to reach their peak and several more days to heal following the most trifling trauma. Have you any suggestions as to aetiology and treatment?*

A—Painful ulcers of the mucous membrane of the mouth appearing in spasmodic attacks which die down and then recur are not infrequent, particularly in women. Bacteriologically they are often associated with a mixed streptococcal and pneumococcal flora, and this type often reacts well to local penicillin. Others show only mixed oral types of organisms, and these do not appear to react so well. The fact that very slight trauma appears to initiate the ulcers suggests that the mucous membrane is not in a particularly healthy state. It might therefore, be advisable to give a course of vitamin therapy, massage of the mucous membrane with glycerin and tannic acid is also at times helpful. Ulcers of this kind are sometimes associated with infected tonsils, which appear to act as a focus of infection.

Treatment of Priapism

Q—*I have seen four cases of priapism. Two were treated by incision, two by bromides and ice-bags. Recovery was slow. Is there any other treatment?*

A—Priapism may be reflex in origin or due to some local cause, such as injury, inflammation, or new growth. Treatment will therefore vary with the aetiology. Persistent priapism due to thrombosis will generally require operation in the way of incision of the swollen corpora cavernosa. As an alternative to this aspiration may be tried using a needle of large calibre. It must be confessed that the treatment of this condition is on the whole unsatisfactory and that convalescence is inevitably slow.

Letters and Notes

Village Longevity

Dr J. PIRIE (Harbury) writes: Looking over my death certificate book I find the ages of my last entries are 89, 77, 75, 89, 82, 90, 74, 84, 74, 77, 87, 78, 40 (pulmonary tuberculosis), 32 (pulmonary tuberculosis), 87, 73 (carcinoma). My practice is a country one in a well known hunting district with only a few industries—mainly cement works—and in many cases very primitive sanitation and a sad lack of decent houses for the working classes.

Record of Service

Dr CHARLES HERBERT HALL of Watford has been secretary of the West Herts and Watford Medical Society since Sept. 18, 1896. This remarkable record of fifty years service to a medical society which will celebrate its centenary in 1948 is, at the least, unusual. It will be interesting to know if any reader can equal or improve on it. Not so unusual is the fact that Dr. Hall has a son who is in practice, and a grandson who has just ceased to be a Naval Medical Officer.

Apparatus for Trichlorethylene in Midwifery

Dr C. F. SCURR (Barnet) writes: Referring to Dr. John W. Scholey's letter (Nov. 9, p. 722) I have used trichlorethylene in the Oxford vaporizer for the production of analgesia in midwifery with excellent results. The machine is used cold, the lever is set for a reading of from 4 to 7 and the mother herself holds the mask on her face. On occasion, by increasing the concentration of trichlorethylene administered full anaesthesia has been produced for the insertion of sutures into the perineum.

Swiss Holidays for Children of Doctors Killed in the War

In connexion with the Swiss Red Cross "Save the Children" scheme a generous offer has been made by the Swiss medical profession to accommodate in Switzerland for three months the children of British doctors killed during the war. The names of children between the ages of 4 and 13 are being recorded at B.M.A. House, and any practitioner who has personal knowledge of a family entitled to take advantage of this offer is requested to communicate with the Secretary of the British Medical Association, giving all relevant details. The scheme already covers the children of French and Belgian doctors who were killed or totally incapacitated in the war.

Re-inoculation with T.A.B.

Lieut. Col. H. G. G. ROBERTSON, R.A.M.C., writes: With reference to the question and answer (Nov. 23, p. 803) regarding T.A.B. inoculation the standard Army practice may be of interest. Primary inoculation consists of one dose of 0.25 ml. followed by a second of 0.5 ml. 10–14 days later. This is regarded as being effective for 12 months. Re-inoculation consists of one dose of 0.25 ml. If more than three years has elapsed since the last inoculation the patient is considered to have lost his immunity and primary inoculation is then necessary again. In the case of tetanus toxoid the doses are two of 10 ml. each at intervals of 6 weeks, and the same rule applies regarding re-inoculation. In both cases immunization is normally carried out only when an individual is proceeding overseas.

Milk Priority

Dr G. A. POWELL-TUCK (Birmingham) writes: May I suggest that all persons who receive the old age pension be permitted to have half a pint (285 ml.) of milk per day. This would at least allow them a warm drink before retiring to bed.

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ENDOCRINES IN GYNAECOLOGY*

BY

ALECK BOURNE MB, FRCS, FRCOG

There is no doubt that the discovery of the sex hormones has conferred an enormous boon on the drug manufacturers, but we cannot be so confident of the benefit to the suffering patient. After the early experiments which demonstrated their striking effects on the structure and function of the genital system of laboratory animals we had high hopes that they would exert comparable effects when used for the treatment of pelvic disorders in women. But with some well-defined exceptions we have been grievously disappointed. The reasons why this should be are not far to seek. This branch of medicine was initiated in 1917 by the observation by Stockard and Papanicolaou that injection of the liquor of the Graafian follicle produced oestral changes in the vaginal mucosa. From this fundamental discovery has been built up our knowledge of the secretions of oestrogen and progesterone, of their effect on the development of the genital tract and on the cyclic changes of the endometrium later of the gonadotrophins of the pituitary and their relation to the ovary. The greater part of this work during thirty years has been done by experimental work on small animals and monkeys.

Difficulties in Clinical Use

Herein lies the first reason for clinical disappointment. It was hoped and expected that the precise result obtained by injecting this or that hormone into rats and rabbits would be similarly obtained with the human patient. But the mechanism of the endocrine system is infinitely complex, not only in the individual species but also in its variations in different species even closely allied. It was soon realized that deductions made from observation of one animal could not safely be made for another species, and still less where the other species was human. Moreover the experimental work has been done on either normal animals or those which have suffered a severe and totally mutilating operation such as ablation of the pituitary gland. Our patients are not normal animals nor have they been subjected to severe surgical mutilation except, rarely, by removal of both ovaries. Clinical experience has shown that deductions made from the reactions of animals to hormone treatment cannot be applied to parallel treatment of the pelvic disturbances of women.

A further difficulty is adequate dosage for the human subject. Whereas the synthetic oestrogens can now be given in any amount it is probable that the substitute pituitary hormones (chorionic gonadotrophin and mare's serum hormone) can be given only in doses totally inadequate for the proportional weight of a woman. As the pituitary hormones—the gonadotrophins—are the prime

movers of ovarian function, it is impossible to influence ovarian function, for example folliculation, except by the appropriate gonadotrophin in sufficient dosage. So far it has been impossible to synthesize these extremely complex bodies and I am told there is also little prospect of success in the future. Fortunately, hormones can be extracted from the urine of pregnant women and the serum of the pregnant mare, which can be obtained in larger amount for clinical purposes than from the pituitary itself, but the available doses of even these pituitary-like hormones are probably far too small to exert an appreciable clinical effect.

The rhythmical secretion of the sex hormones of the pituitary and ovary introduces a further complication in therapy. It is necessary to know the details of the rhythm of normal secretion if we wish with some hope of success, either to apply reinforcement to subnormal activity or to counter the action of an oversecretion. During the first fortnight of the menstrual cycle the pituitary produces its follicle-stimulating hormone and the ovary oestrogen, while during the second two weeks the pituitary secretes its luteinizing hormone and the ovary progesterone with less oestrogen. For any given complaint therefore, we should know not only whether there is an excess or deficit of the particular hormones responsible but also the time in the cycle when the therapeutic hormone should be given. In other words, unless the correct hormone is given at the right time in the menstrual cycle there cannot be any improvement, indeed, the patient may be worse.

But after we have noted the difficulties dependent upon the differences of the species, inadequate dosage and timing, perhaps the greatest of all is the complexity which arises in the human subject by reason of the profound effect of the highly organized emotional system on the hormonal function of the pituitary. We see this in our gynaecological practice almost every day. Amenorrhoea and certain cases of menstrual excess so often follow emotional storms of one kind or another that it is impossible to deny the association. It is probable, too, that toxic goitre, even sterility and many other states, similarly depend on interference with pituitary function by anxiety, fear and anger while *per contra*, we may perhaps attribute a smooth function—or euphonia, as the Greeks called it—to contentment, exaltation and translation out of ourselves. We may be correct in assuming the basic effect of oestrogen in man from the experimental evidence gained from the small animals but the result of any given treatment may be totally different from what we should expect from purely physiological considerations, because of the incalculable effect of emotional interference with the functions of the pituitary body. A good example is the treatment of the

* Annual Address to the Oxford Medical Society given on Nov. 29 1946

menopause by stilboestrol. Sometimes the patient finds complete relief from her flushes and sweats, but those women who are emotional or 'temperamental,' especially if they have had unhappy years, will find little improvement. But at this period the basic physiology is the same in most if not all women. The ovaries atrophy, probably owing to the cessation of the secretion of pituitary gonadotrophins. Menstruation ceases, and usually there are various subjective symptoms. The latter, however, are extraordinarily variable both in degree and in responsiveness to hormone treatment. Their intensity depends less on the actual hormonal imbalance than on the influence of temperament and the level of happiness and content during previous years of married life.

Endocrine Receptors

There is still one more unknown factor which may be important in endocrine therapy. I have seldom seen it mentioned, and never considered, in therapeutics. I refer to what I call endocrine receptors. When, for example, a large dose of oestrogen is injected into an adult female certain definite changes are found in certain organs, and those organs only. The endometrium proliferates, the uterus of the immature animal grows, and the vaginal mucosa cornifies. But there are no other demonstrable changes (except possibly indirect) in most other tissues of the body. It is doubtful if after millions of units the alimentary mucosa, for example, would show the slightest change at all. It is necessary, therefore, to postulate the existence of receptor substances in the vaginal mucosa, the endometrium, and a few other tissues, which are able to grasp the oestrogenic molecule and, perhaps by chemical union, enable it to perform its specific function. I visualize the characteristic changes in the reproductive organs as being the result of a dual and co-ordinated action of two substances—the activator and the receptor. In our therapeutics we consider only the activator—the hormone—but it may be that failure of the expected result to follow is due to absence of its vaginal or uterine receptor, without which it is powerless to exert its specific function. How far subsequent research may reveal and identify visceral receptors we do not know, but until we know something about them our endocrine therapy must remain largely empirical. It is possible that many pathological disturbances, such as amenorrhoea, are due to failure not of the appropriate hormonal secretion but of their necessary receptors in the ovary and uterus.

I have recently investigated a case which illustrates the existence and absence of these receptor substances. Briefly, a woman of 36 had had amenorrhoea for five years due to no apparent cause. Radiography and the sound show the uterus to be atrophied, and the curette could not remove more than the smallest fragments of endometrium for the microscope. The sections reveal no evidence whatever of oestrogenic action, and as the uterus has atrophied both in structure and in function we must assume that it has not received the oestrogenic stimulus. But in this woman the curious thing is that the vaginal mucous membrane manifests quite strongly that oestrogen is circulating in the blood stream. For example, the acid reaction gives a reading of the normal pH 4.5 by the universal indicator, the smear of its secretion shows an enormous number of Doederlein's acid-forming bacilli, and the histology of the epithelium reveals a very large amount of glycogen, similar to that of normal women during the child-bearing period. These features of the vagina are proof that oestrogen is present in the body in normal amounts, and yet the uterus is unable to receive it and so exhibit the ordinary histology and development characteristic of the presence of the circulating oestrogen. My

inference is that, while the vagina is able to react the uterus lacks something by which it also can react.

If this inference is true, should we not review some of our endocrine therapeutic failures from a different angle? From the evidence of animal experiments we are entitled to expect certain results from the sex hormones, especially when we work with oestrogen and progesterone, which can be injected in reasonable doses. But often in clinical medicine we are disappointed. Is this failure possibly due to the fact that we are using the wrong substance, and if we could replace a missing receptor—as in my illustrative case—should we not immediately see the expected reaction? It is obvious that we need more research on the tissues or soil on which the sex hormones normally act. The earlier years of the science of bacteriology were conspicuous for the same omission. The organisms were explored in the minutest detail, but the tissue cell and fluid resistance was largely neglected. Now we know that in the phenomena of infection the organism is only part, perhaps a small part, of the whole process of infective disease. Indeed, in this branch of medicine it is now recognized that the reaction of the tissues to the microbic assault is at least equal in importance to the biology of the microbes themselves. When, therefore, we consider all the difficulties which beset endocrine therapy—the correct hormone, its dosage and timing in the menstrual cycle, the effect of the emotional life, and the ignorance and neglect of receptors—it is surprising not that we find many failures but that we have any success at all.

Treatment by endocrine hormones has, however, definite fields of usefulness, and there is a wide fringe of partial or occasional success which will vary according to the faith of the patient in her doctor and to his confidence in the value of his injection. Endocrinology offers perhaps the widest scope in the whole of medicine for treatment by confidence. Where symptoms rather than signs are the object of treatment—such as the menopausal syndrome as opposed to the undeveloped uterus—we find the chief success. On the other hand, in the certain suppression of lactation there is a specific organic result of the action of oestrogen.

Hormones and Their Functions

Let us consider, first, what hormones we have at our disposal. By far the most important is one or other of the oestrogens. The natural oestrogens commonly used are oestradiol benzoate, oestrone, and oestriol, sold under different trade names by different makers. The synthetic oestrogens are stilboestrol, bexioestrol, and dienioestrol, the two latter being one-sixth and one-tenth as potent, weight for weight, as stilboestrol. They have the advantage over the natural oestrogens in that they are soluble in water and can be given by mouth. Oestrogen therapy is convenient, precise, and sufficient in dosage. The second ovarian hormone is progesterone, the product of the corpus luteum. In the process of its metabolism it is "denatured" and finally excreted in the urine as the inert water-soluble pregnanediol. Unfortunately for therapeutics, progesterone must be extracted from the corpus luteum, which means that the available dosage will be small and expensive. The synthetic product, sold as ethisterone, can be given by mouth, but it is much less potent, and is also scarce and expensive. It is indeed unfortunate that we have no adequate treatment by the corpus luteum, for it is one of the most important of all the sex hormones from the point of view of therapeutics. Lack of progesterone in adequate dosage is responsible for most of the failures in treating common conditions like amenorrhoea and dysmenorrhoea. The two hormones oestrogen and progesterone work so closely together—as for example, in forming the progesta-

onal endometrium and the decidua—that, with two or three exceptions, it seems almost hopeless to produce any therapeutic results by giving oestrogen alone, as is so often done.

The anterior pituitary secretes two well-recognized sex hormones. One is the follicle-stimulating hormone formerly called prolan A, which stimulates the maturation of the Graafian follicle and production of the ovum, the other is a hormone which initiates the corpus luteum after rupture of the follicle. It was formerly known as prolan B, but is now commonly known as the luteinizing hormone. If we were dependent upon the pituitary alone as the source of these hormones there would be no practical use for them in clinical medicine, as the gland is so small and the yield insignificant. But it so happens that the serum of the pregnant mare during the middle of her pregnancy contains large quantities of the follicle-stimulating hormone, which can be extracted and put up in fair dosage. It is sold by various makers as "serogan," "antostab," "gestyl," and "gonadyl" in doses of from 200 to 3,000 units. The second gonadotrophin, the luteinizing hormone, can be obtained from the urine of pregnant women. It is not precisely the same substance as that secreted by the pituitary, but is very similar in its effect. It is produced by the chorionic cells of the placenta, whence its name—chorionic gonadotrophin.

Before we dwell upon the practical value of the sex hormones in therapeutics let us pause to consider their chief functions. The proximal group is the pituitary secretions. It is believed that during the first two weeks of the menstrual cycle the follicle-stimulating hormone is produced. Under its influence a single immature Graafian follicle ripens, secretes oestrogen, and dehisces the ovum on the 13th day though this date is by no means constant. At the moment of rupture of the follicle the secretion of this hormone ceases by reason of a reciprocal inhibitory action of the follicular oestrogen on the secretion of the pituitary follicle-stimulating hormone. During the second fortnight is secreted the luteinizing hormone, whose function is to convert the follicle and maintain the corpus luteum and its hormone, progesterone. In its turn the secretion of the luteinizing hormone ceases, the corpus luteum degenerates during the next thirty-six hours, and menstruation begins. So far as we know, the pituitary gonadotrophins have no other function than these actions upon the ovarian follicles and corpus luteum. It is improbable that the story is as simple as the alternating action of two separate hormones. It is more likely that other ovariotropic hormones exist which, for example, control the rupture of the follicle and together form a complex group of gonadotrophins. Of the "terminal" ovarian hormones, oestrogen is the best known. It is essentially the oestrus-producing hormone, but other changes it induces are the growth of the genital tract at puberty, the conversion of the endometrium into its proliferative phase after menstruation, and the cornification of the vaginal epithelium. Its action, preceding that of progesterone, is necessary for the appearance of menstruation.

Progesterone has been employed to a smaller extent than oestrogen because the difficulty of synthesis makes it impossible to provide large enough doses. Its chief function is to produce the secretory or progestational phase of the endometrium, in readiness to receive the fertilized ovum. Immediately the ovum is fertilized the endometrial change is carried a step further to form decidua. The integrity of the decidua is dependent upon the secretion of progesterone until about the fifth month, for if during this time the corpus luteum is removed or fails in its secretion—as shown by a low excretion of pregnanediol in the urine—the

decidua breaks down and haemorrhage follows as the uterus aborts. It was formerly thought that progesterone was a kind of uterine sedative, but it is now known that the uterus is irritated through the influence of posterior pituitary extract to a greater extent during the luteal phase of the cycle than during the oestrogen or post-menstrual phase. A practical example is that usually progesterone given for dysmenorrhoea before the period makes the pain worse. It is incorrect to think of the ovarian hormones as having wholly separate and independent functions. They certainly induce different changes in the endometrium, but no normal function, whether it be menstruation, conception, pregnancy, or, probably, labour, can take place unless they work in harmony. The earlier view that oestrogen and progesterone were "antagonistic," though correct in a limited sense, has impeded the progress of successful endocrine therapy by leading us to neglect the idea of their synergism, and to think only of their antagonism.

Therapeutic Value of Sex Hormones

Having sketched the great difficulties of practical clinical application of the sex hormones and touched on their functions, what now of their therapeutic value? The main clinical problems, such as amenorrhoea, menorrhagia, dysmenorrhoea, sterility, and the menopause, seem to be due to deficiency or excess and disordered rhythm of their production. But of this we are not sure, for the disturbance may be due to disproportion of secretion of one hormone relative to another. It always amazes me to hear some physicians talk of the hormonal defects of one or other of their patients. They say with confidence and precision which hormone is lacking or excessive and just how the trouble can be compensated by giving a grain of this or a milligram of that.

If we divide the sex-organ disabilities into those which are functional or subjective and those which are objective or organic, and examine the effects of treatment by hormones of each group, we shall be better able to appraise their true value. It is not easy to draw a sharp line between the so-called functional and organic conditions, for there are always likely to be some structural changes, even if at the beginning they are only microscopic. But in general we mean by functional conditions those which are not associated with organic conditions discoverable by ordinary clinical, x-ray, or other examination. Of the organic states often treated by hormones the chief are pelvic hypoplasia or underdevelopment as a cause of amenorrhoea or sterility, lactation when it is necessary to suppress it, atrophy of the vulvo-vagina (kraurosis), leucoplakia, and metropathia. If we are honest with ourselves we must admit that the only certain success in treatment is the suppression of lactation by the oestrogens. If we give 15 mg of stilboestrol daily for three or four days we can assume that engorgement will disappear and lactation will cease.

In cases of pain in older women due to atrophy of the vulva (kraurosis), or senile vaginitis due to a pyogenic infection, there is frequently either complete cure or much relief following oestrogen therapy, within three or four weeks. Similarly, some cases of chronic vulvo-vaginal infection in children will also clear up after the use of vaginal pessaries of 1,000 units of oestrogen.

But if the pain of kraurosis is relieved by oestrogen it is certain that leucoplakia, which is an epidermal hypertrophy and always a new growth in its late stages, not only is not improved but is probably increased. No form of anaerobic infection of the vagina, as by the common enterococcal streptococcus—sometimes associated with the symbiotic *Trichomonas*—is touched by oestrogen therapy, because these organisms can live comfortably in the acid

medium of the vagina, which is increased by oestrogen. One of the commonest and most serious states is pelvic hypoplasia. Here we have failure of complete development of the uterus and often of the vagina and vulva. There may be full development of the secondary sex characters, or the woman may show some degree of virilism. Usually she is apparently a normal woman except that puberty was late, menstruation is imperfect, perhaps absent, sometimes but by no means always painful, and if she is married she may complain of vaginal dyspareunia and sterility. It is difficult to diagnose uterine hypoplasia by clinical examination; it can be proved only by comparative x-ray shadow or the uterine sound. I am convinced that no amount of combined oestrogen and progesterone treatment can add half a centimetre to the uterine stature. In some of these cases amenorrhoea can be apparently cured, so long as the oestrogens are given, by producing the so-called withdrawal haemorrhage, but primary amenorrhoea can never be cured and that form of amenorrhoea which is secondary to early uterine atrophy—not necessarily a true menopause—also can never be cured by the sex hormones. Where, therefore, amenorrhoea is "organic" it can seldom if ever be replaced by a normal regular and permanent menstruation.

Sterility offers a different problem. It is certain that the underdeveloped uterus presents no difficulty to embedding of the fertilized ovum, even if the progestational phase of the endometrium is imperfect, because we know that the ovum can embed itself in the tube or even the ovary. The failure of conception is probably due to the associated failure of ovulation where the uterus is underdeveloped. The small uterus is the chief clinical evidence of smallness of function, including ovulation. The problem of sterility in these cases is therefore how to treat function by producing ovulation, the condition of underdevelopment is less important. In the follicle stimulating hormone of the pregnant mare's serum we hoped that we might have a means of inducing ovulation. I have used it many times in doses of 1,000 units in carefully selected cases during the post-menstrual ten days, but in only one woman has conception occurred after treatment during three months. Pregnancy progressed to term, and at last, after eight years of trying to conceive, she has got her baby. In no other case can I honestly say that the serum gonadotrophin has possibly worked. Many schemes of hormone therapy have been used for sterility of all kinds, and here and there successes have been claimed, but we must remember that the arm of coincidence is long, especially when dealing with such a condition as sterility.

Another organic condition is metropathia (it should be named oophoropathia), causing profuse and irregular haemorrhage. It is probably true that the irregularity of haemorrhage in cycle, duration, and amount is due to disordered rhythm of production of the follicle and corpus luteum. During the periods of bleeding no corpus luteum exists in either ovary, and the endometrium shows an intense oestrogenic stimulus. One ovary contains unruptured follicles the fluid of which is much more highly charged with oestrogen than the normal Graafian follicle. The obvious endocrine treatment is therefore to give an anti-oestrogen—progesterone or testosterone. Scowen (quoted by Bishop) has shown that very large doses of progesterone (20 mg. on alternate days) will effect improvement lasting for many months after ceasing the injections. A more certain remedy is testosterone propionate, but again the doses must be large (20 mg. twice weekly). This male hormone acts by overcoming the female oestrogen and ultimately inducing genital atrophy and virilism. It must therefore be used with great caution. Whatever

improvement short of atrophy may be induced is temporary in moderate or advanced cases, and most of these patients must submit to x-rays or hysterectomy according to their age. Mild cases of excessive loss with irregularity can often be controlled for a while with progesterone, but the treatment is expensive and unreliable. Among the truly functional conditions there are the menorrhagia of puberty and the subjective symptoms of the menopause. Certain cases of spasmodic dysmenorrhoea form a large group, and many attempts have been made to treat repeated threatened abortion and inertia in labour, of which many cases are functional. As a means of inducing premature labour oestrogen is quite unreliable even when given in such doses as half a million units. The disorders which can be grouped as sexual frigidity or "functional" dyspareunia are entirely unresponsive to oestrogen. The haemorrhage of puberty, like that of metropathia, is probably due to failure to establish ovulation, with the consequent deficient secretion of progesterone. The child is under the influence of an uncontrolled action of oestrogen which produces oestral haemorrhages and not true menstruation. When investigating these cases many years ago Dr. Charles Wilson (now Lord Moran) and I found evidence that these patients were in a state of hypothyroidism as measured by the basal metabolic rate. If this is generally true it may be that thyroid deficiency is no more than a side issue of general endocrine incoordination. Some enlargement of the thyroid is often seen at the age of puberty, and in such cases I always give small doses of thyroid extract or iodine. The logical treatment, as in the case of metropathia, is to give large doses of progesterone, but in my experience this is seldom the right course. Most of these children are being pushed for school examinations. They are overworked, tired, thin, pale, and sometimes anxious about the school certificate. The best treatment is to rest them by removing them from school for a term and keeping them in bed during the days of worst bleeding. Really serious cases are very rare, and nearly all of these patients soon become normal.

In dysmenorrhoea we have the biggest problem of all, as is manifest by the multiplicity of methods of endocrine treatment. Of the many theories advanced to explain severe first-day pain, my own view is that it is caused by intense uterine contraction with coincident spasm of the internal os—as we often see in painful first-stage labour—producing obstruction to the outflow and ischaemia of the muscle. It is indeed uterine colic. The uterus seems to lack polarity, or co-ordination between fundal contraction and cervical relaxation. The worst case of dysmenorrhoea I ever saw was in a woman, previously without any monthly pain, for whom I amputated the cervix. Severe pain immediately followed the operation, and on investigation, after the second painful period, under anaesthesia I had the greatest difficulty in passing a filiform bougie. When, however, I had finally dilated the stenosed os by a tent, the pain entirely disappeared. In the less severe cases almost any treatment, especially if given by injection, may be successful for a few months. The rational therapy would be some measure which relieved the irritability of the uterine muscle and at the same time relaxed the spasm of the internal os. In practice we find that progesterone before the period is not only useless but may actually increase the pain, just as it often expedites threatened abortion by stimulating the uterine response to posterior pituitary extract. It is also useless to treat dysmenorrhoea on the supposition that the uterus is underdeveloped, for Jeffcoate has shown that pain is caused by the normal uterus equally with the small uterus. Oestrogens, given during the post-menstrual week in rather large doses—5 mg. daily—may relieve pain by inducing an anovular cycle, but there is nothing

approaching certainty either by this or any other form of hormone treatment

The subjective symptoms—flushing, sweating, and many nervous symptoms—of the natural menopause are nearly always relieved or even abolished by oestrogen. It is necessary to impress on the patient that stilboestrol or dienoestrol must be taken only intermittently—say for two weeks, followed by one week without treatment—and that it should not be continued indefinitely. Many cases of post-menopausal bleeding which we see to-day are found in women who have been taking stilboestrol literally for years. They suffer from an intensely oestrogenic proliferative endometrium which oozes blood by reason of its congestion. But while oestrogens are invaluable at the natural menopause they are disappointing when given after radium, x rays, or double oophorectomy. Implantation of oestrogen pellets is similarly useless, though this method has striking success for a year or so when used for the natural menopause. Implantation of oestrone is, however, a risky procedure as it may cause repeated irregular haemorrhages and it may be necessary to remove the pellet.

Lastly we come to repeated abortion. During early pregnancy, excretion of pregnanediol—the final inert product of progesterone—increases greatly, up to 50 or 60 mg daily. Where the excretion is markedly low it is stated that abortion is certain. It is well known, too, that removal of the corpus luteum before the 20th week will be immediately followed by abortion. It would therefore appear that for those patients who abort by reason of defective secretion by the corpus luteum progesterone given from the earliest weeks until the 20th week would provide an effective substitution therapy. The estimation of pregnanediol in the urine is difficult and expensive, and thus cannot be used as a test in many cases of early pregnancy of women who have had repeated abortions. Injection of progesterone has been disappointing, perhaps because it produces peak influences followed by 'negative phases,' but by implantation of a 100-mg pellet of progesterone it is possible to preserve an even absorption of the hormone. Unfortunately progesterone is not well tolerated by the tissues, and it is always extruded from a fat embedding. It is possible, however, to increase the chance of its retention by embedding the crushed pellet beneath the rectus muscle sheath. The whole pellet may be extruded even from below the rectus sheath, but in only one case have the fragments of the crushed pellet been rejected. I have done too few cases to generalize, but I have evidence that implantation in suitable cases is at least associated with continuation of an undisturbed pregnancy.

Conclusion

I began the address by emphasizing the difficulties and disappointments of endocrine therapy, and continued to show that few conditions can with certainty be cured. The obvious lesson is that we have plunged too quickly and with too high hopes from the endocrinology of animals to its application in clinical medicine. There are many difficulties in the way of clinical research, but it is badly needed. One of the chief obstacles is the complexity of biochemical assay whereby blood and urine levels of the endocrine secretions and their by-products can be measured accurately. A further field is the quantitative effect of emotional states on pituitary secretions and, as I have said, the role of the receptors of the hormones. The synthesis of stilboestrol is an indication of what great progress would follow the synthesis of other hormones. Finally, except in the case of the 'trace element' iodine and the thyroid the relation of nutrition and other 'trace elements'—the ultimate source of all our secretions—to endocrine activity has yet been scarcely touched.

VOLVULUS OF THE CAECUM

BY

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While volvulus of the sigmoid colon is a well-known condition, volvulus of the caecum is still classed as one of unusual occurrence, unknown to many members of our profession. Isolated cases are considered worthy of report as rarities, and in standard textbooks of surgery the condition is dismissed in a few lines or else entirely ignored. It is not nearly so uncommon as has hitherto been supposed. I have been able to collect reports of 15 cases in the past five years and have had three personal cases in the past two and a half years and it is by no means a unique occurrence in the experience of other surgeons, many cases not having been reported. It should receive wider recognition as it is a condition associated with a high mortality rate if treatment is withheld for long and is apt to remain undiagnosed altogether until the abdomen is opened—frequently too late. Partial torsion often occurs in recurrent attacks over a period of years, sometimes culminating in an acute complete torsion, and may be the cause of obscure abdominal pain and discomfort, simulating in some cases subacute appendicitis. Furthermore, it can seriously complicate pregnancy and the puerperium, and is therefore of importance to obstetricians. A review of the condition dealing with its diagnosis and treatment will, I feel, be of value.

Mortality Rate and Incidence

Some idea of the incidence of the condition may be gained from a review by Wolfer *et al* (1942) who found that 194 cases had been reported since 1913, with 110 previously, in the world's literature making a total of 304. Mortality rates given are very high—50 to 60% in cases which had been operated on, rising to 100% in those which had not. A wider recognition of the condition, with prompt diagnosis and treatment, should certainly bring this high mortality rate down to a much lower figure.

Anatomical Factors in Causation

Normally, after the process of herniation of the midgut loop into the umbilical cord has taken place, with its subsequent rotation it returns to the abdominal cavity and the process of descent and fixation of the caecum occurs. This is called the third stage of rotation. The caecum lies beneath the liver on its return to the abdominal cavity and then descends to the right iliac fossa, finally becoming fixed to the posterior abdominal wall, its mesentery disappearing. If the fixation, with disappearance of the mesentery fails to take place the caecum and ascending colon are left with a variable degree of mobility depending on the length of this mesentery and it may even be continuous with that of the terminal ileum, making a common ileocaeco-colic mesentery. Variable amounts of ascending colon may be included up to the hepatic flexure and extending to the transverse mesocolon. This will render the caecum and a variable portion of the right half of the colon liable to torsion. The terminal ileum may also be involved. Points of fixation at the base of this mesentery frequently act as hubs round which torsion occurs. Such fixed points are often found at the level of the hepatic flexure or at the point where the transverse colon crosses the duodenum.

Wolfer *et al* investigated the frequency of this non-fixation of the caecum and right half of the colon, and concluded that it occurs in at least 15% of individuals. Other workers give even higher figures—20 to 25%. Any

of these may be liable to caecal volvulus. Rarer causes are errors of rotation (non-rotation, reversed rotation, non-descent of the caecum), several examples of which have been recorded (Dott, 1923, Donald, 1927, Holman, 1940, Godfrey, 1945). The amount of the bowel involved will depend on the extent of the mesentery. Sir Heneage Ogilvie (personal communication) and Haxton (1944) report cases of volvulus of the caecum which had herniated through the foramen of Winslow, indicating the extraordinary amount of mobility which can be present. The direction of the twist appears to be more common in a clockwise direction, although counter-clockwise is by no means unusual.

Aetiology

Fifty per cent of cases are said to occur between the ages of 20 and 40, but it is common in older people, many cases being found after the age of 60. Males seem to be more prone, in the proportion of three to one (Pratt and Fallis, 1927), which is a surprising preponderance, as women more commonly seem to possess the prerequisite of the persistent mesentery. That it occurs more often in the male sex points to exertion or heavy occupations as factors in causation. Men tend to lead more strenuous lives, and many are engaged in heavy work. Other exciting causes are obscure. Trauma certainly plays a part. Violent bodily exercises involving twisting of the trunk may initiate the condition. Sudden or gradual change in the position of the viscera as occurs in pregnancy or the puerperium is undoubtedly important. Other causes given are (1) mesocolic inflammation, (2) dietetic errors, (3) gaseous distension, (4) violent purgation.

Onset and Symptoms

The onset in some cases is sudden, ushered in by violent abdominal pain, vomiting, and constipation, followed rapidly by abdominal distension, showing all the signs of acute obstruction from the outset, death may be rapid, and has been known to occur within five hours of onset (Valentine and Kinnear, 1937). In others, however, it is more insidious and prolonged, and it is in these cases that delay in diagnosis may be extremely dangerous, as unless the condition is known it can be easily missed. This slow type of onset is well illustrated in my own cases and in others reported, especially those occurring during the puerperium. I would therefore divide cases, according to their rate of onset and manifestation of symptoms, into three types.

(a) *Acute* cases coming on within a few hours and showing all the signs of an acute abdominal catastrophe with the signs and symptoms of obstruction. These are either rapidly fatal or are operated on in good time.

(b) Cases *subacute* in onset—giving a history of several hours up to, more often, 3 to 4 days of variable abdominal discomfort and distension with pain and tenderness. The pain may be localized to the right iliac fossa, the condition simulating an appendicitis, or it may be more central, and is quite often epigastric. Temperature and pulse often remain normal throughout. The pain may begin acutely, only to pass off or to become dull and spasmodic. In these cases the past history is of importance, as the patient will nearly always recall similar attacks of a milder nature which have passed off without incident, indicative of a volvulus that has righted itself. Any or all of the following signs may be found on examination of the abdomen.

Tenderness—This is usually present and is localized over the distended gut, an area of peritonitis developing over and around it. This area is often well demarcated, and occurs according to the position in which the gut is lying, which may be in the right iliac fossa centrally around the umbilicus, below the right

lobe of the liver or epigastric. In pregnancy, as the gut is pushed up by the expanding uterus, the position is always high in the abdomen. The gut tends to move towards the midline ultimately, so the tenderness becomes more central.

Distension is generally gross, with a tympanitic note indicative of a large accumulation of gas, but may be slow in manifesting itself. Rectal or pelvic examination may not reveal much, the rectum may or may not be empty, depending on whether the bowels have moved or not. Signs of obstruction will ultimately be present. A plain skiagram of the abdomen is of inestimable value, and is diagnostic in most cases, as pointed out by Chesterman (1945) (see Figs 1 and 2). The greatly dilated caecum casts a clear shadow, but it may be mistaken for the grossly dilated stomach of chronic pyloric obstruction. The case history should exclude this error, which may arise in cases of slow onset, but a small quantity of barium by mouth will indicate the position of the stomach higher up. A barium enema is rarely necessary for diagnosis.

(c) The *chronic* type of case is that in which transient partial volvulus occurs which sooner or later untwists itself. These cases are associated with pain in the right iliac fossa, tenderness, and varying degrees of gaseous distension. One of my cases gave a history of frequent attacks of this nature over a very long period. His abdomen would blow out with wind, gradually subsiding with the passage of a large quantity of flatus. Histories of such attacks are of great importance in diagnosis, as they are often given by patients suffering from complete acute torsion. Special mention must be made of the occurrence of the condition as an acute complication of pregnancy or the puerperium. Norris (1941) reported a case at the fifth month of pregnancy diagnosed four to five days after the onset, and my first case occurred at the fifth month of pregnancy. In Norris's case there seemed to have been a previous chronic attack, and it was first diagnosed as a pyelitis, but a barium enema subsequently showed obstruction at the splenic flexure. Sheldon (1944) and Rose (1941) have reported cases with onset early in the puerperium. Sheldon's case occurred apparently 12 hours after delivery, but was not operated on until the fourth post-partum day. Rose reported a case in a primipara of 38, starting 17 hours after delivery, with a fatal ending, as no diagnosis was made until a laparotomy was done some days after. Rose pointed out the importance of bearing in mind the possible chance of a volvulus being the cause of distension early in the puerperium and he states that the question of exploration of the abdomen should be seriously considered if a post-partum abdominal distension refuses to respond to treatment in 24 hours. He is of the opinion that a volvulus of the caecum or of other parts of the intestine (Spence, 1937) should be listed as one of the causes of post-partum distension, the others being retroperitoneal haemorrhage due to rupture of the uterine artery, puerperal peritonitis, and paralytic ileus.

Treatment

This, of course, is early laparotomy, dealing with the gut according to the state in which it is found when the abdomen is opened. Adequate pre-operative treatment so far as time will allow is of great importance, and blood transfusion should be given, as the volvulus is a type of long loop obstruction with stagnation of a large volume of blood in the distended bowel wall and fluid is lost into the abdominal cavity. Gastric suction and lavage are of value before and after operation. The procedure to be adopted will depend on the condition of the gut. If *viable* (a) derotation with or without fixation of the gut, (b) derotation with caecostomy to decompress and drain the bowel. If *gangrenous* (a) exteriorization and removal with the cautery, with subsequent closure of the artificial anus, (b) resection (right hemicolectomy) and anastomosis of the ileum to the transverse colon.

If early, derotation with or without fixation of the caecum to prevent recurrence, provided it is certain that the bowel is viable, is the best treatment. Fixation can be achieved by Waugh's (1920) method or by less elaborate means, such as removal of the appendix and then fixing the stump to the anterior abdominal wall with a purse-string suture (Lyall, 1946). Caecostomy may also be performed, and is advised by some workers, to drain the distended loop of gut, if done, it should assure fixation by adhesion formation. Very careful handling of the gut is essential owing to its friable and distended state. Later on, if frank gangrene has set in or if the viability of the gut is at all in question, then two methods are available—exteriorization or resection. Exteriorization, with removal by the cautery and subsequent closure of the stomach at a later date, is held by many to be a fatal form of treatment to adopt, associated with a high mortality, but Miller and Clagett (1940) reported two successful cases using this method. Chesterman states that volvulus of the caecum is the only type of obstructive colonic gangrene for which treatment by resection is successful, he recorded one success treated by resection. MacCarthy (1945) reports two cases—one was successful, the other patient died of pneumonia three days after operation. Two of my cases, both of which were in an advanced state of gangrene, were treated by rapid resection and right hemicolectomy with end-to-side anastomosis of the ileum to the caecum, both recovered. The presence of the long mesentery and freely mobile gut makes this, to my mind, an easy procedure. No mobilization of the gut is necessary, and only two to three ligatures on the mesentery are required. If rapidly and skilfully performed, resection is not associated with so high a mortality as has been stated. There remains the chronic case if the diagnosis is certain and recurring partial volvulus is definitely proved to be the cause of chronic abdominal discomfort, should laparotomy and anchorage of the mobile caecum be performed? There are also the large number of cases of mobile caecum from other causes discovered at laparotomy—should fixation be performed as a prophylaxis in these? The choice will depend on the individual surgeon, one is hesitant to advocate a return to the old days of pexis. If the caecum is to be fixed, Waugh's method could be used, but less elaborate procedures would seem to be adequate.

Case I

A married woman aged 37 (R B H 43/795) was admitted to the Royal Buckinghamshire Hospital on April 26 1943 at 10 p.m. with a history of the onset of sudden severe pain in the epigastrium beginning three hours before admission. At 8 p.m. the pain became very severe, and she vomited once. The bowels had been opened normally the same morning. She was six months pregnant, having had three normal pregnancies. One month previously she had had a similar attack of pain in the right groin spreading across the lower abdomen. It was sudden in onset, lasting half an hour, with severe vomiting. The pain suddenly ceased, and the attack passed off completely.

On admission she was pale, thin, and tired-looking, temperature 97° F (36.1° C), pulse 70, tongue clean. The abdomen showed rigidity and tenderness all down the right side. The uterus was enlarged to the extent of a 5½-months pregnancy. Micturition was normal and the urine clear. Per vaginam nothing abnormal was seen except a gravid uterus. No definite diagnosis was made—it was decided to watch her overnight, and her pulse was taken half-hourly. Throughout the night it remained steady at 70 to 75 a minute, but in the early morning the pain, which had been dull during the night, suddenly became very severe. At 6 a.m. the temperature was 98° F (36.7° C) and pulse 75—it was decided to do a laparotomy. The abdomen was opened by a right paramedian incision and offensive free fluid poured out. The caecum, ascending colon, right half of the transverse colon and terminal ileum were found lying on the right side beneath the liver. They were in an advanced

state of gangrene, grey-green in colour, and very offensive. A rapid right hemicolectomy was performed and the ileum joined to the transverse colon by an end-to-side anastomosis. Sulphapyridine, 15 g in warm saline, was placed in the abdominal cavity and the abdomen drained through a right flank incision. The patient made an excellent recovery and was discharged on the 15th post-operative day.

She was readmitted to hospital at midnight on June 23 with a further attack of abdominal pain and vomiting, and a diagnosis was made of small-gut obstruction, possibly due to adhesions. Stomach suction was carried out, and she was operated on a few hours after admission by the late Mr C A Joll. No obstruction was found, and but for a few adhesions around the small gut the abdomen was clear. A classical Caesarean section was performed at the same time and a female child, birth weight 5 lb 11 oz (2.58 kg), was delivered. Mother and child were discharged fit and well on July 11.

Case II

A roadmender aged 59 (R B H 44/678) was admitted to the Royal Buckinghamshire Hospital on April 8, 1944, complaining of abdominal pain. This had begun a few hours previously and was very severe, causing the patient to sweat and feel faint. He had vomited several times, and the bowels, which were usually very regular, had not been opened. He was also suffering from acute retention of urine, and his doctor had found it necessary to pass a catheter for relief. He had been investigated for gastric ulcer some seven years previously.

On examination he was healthy-looking with a good colour, pulse 100, temperature 98° F (36.7° C) and he showed no evidence of shock or collapse. Heart and lungs were normal. His abdomen was slightly distended, and there was tenderness in the right iliac fossa with some rigidity—a diagnosis was made of acute appendicitis or, possibly, a perforated peptic ulcer. He was operated on within an hour or two of admission. The abdomen being opened through a right paramedian incision. The peritoneal cavity contained blood-stained fluid and the right iliac fossa appeared empty. On examining the pelvis, distended and tense bowel could be felt firmly wedged. It was thought to be a volvulus of the sigmoid colon, but on delivery was found to be an enormously distended caecum with a portion of ascending colon and terminal ileum. At one point the caecum was gangrenous and also perforated. A rapid resection was therefore done of the whole of the volvulus, including the terminal ileum, caecum and ascending colon. An end-to-end anastomosis was performed between the terminal ileum and the distal end of the ascending colon. Sulphapyridine 15 g in saline, was placed in the abdominal cavity and also in the wound, and the abdomen was drained. He made an excellent and uninterrupted recovery, and was discharged fully recovered on April 20, 12 days after admission. He returned to work shortly afterwards, and has since been carrying on without trouble.

Case III

A man aged 60, a secretary, was admitted to the Tindal House Emergency Hospital, Aylesbury, on Jan 12, 1946, as a medical emergency. The history was that three days before admission the patient had had a sudden attack of coughing and breathlessness while walking, and was just able to reach home, where he collapsed. A diagnosis of coronary thrombosis was made. Examination had revealed signs of myocardial failure but nothing else definite beyond diminished breath sounds at the base of the left lung. There was also marked swelling of the lower abdomen and tenderness in the left iliac fossa. His bowels had been constipated since admission, and there had been no result from four enemata. Examination showed an empty rectum. On account of marked distension I was asked to see him in consultation on Jan 14 to exclude any possible lesion in the abdomen although the diagnosis of coronary thrombosis was fairly certain. When I examined him he was sitting up in bed having his tea, and made no complaint at all of any abdominal discomfort. Examination of the abdomen revealed marked distension with gas and a tender mass situated in the midline of the lower abdomen which was tympanitic. He stated that he had often had similar attacks, extending back over a number of years, which passed off with the passage of a large amount of gas, and he was suffering no discomfort during

this attack. I diagnosed a possible volvulus of the caecum, and this was confirmed by straight skiagrams (see Figs 1 and 2). He was very loath to submit to a laparotomy, and as there was no doubt that he had a coronary thrombosis and left basal pneumonia, the question of operation was very carefully considered. As there was no sign of the swelling going down the next day and in view of the x-ray findings, I decided to operate in the



FIG 1—Case III. Straight skiagram of abdomen (upright). Note large fluid level across middle of abdomen just above the iliac crests.

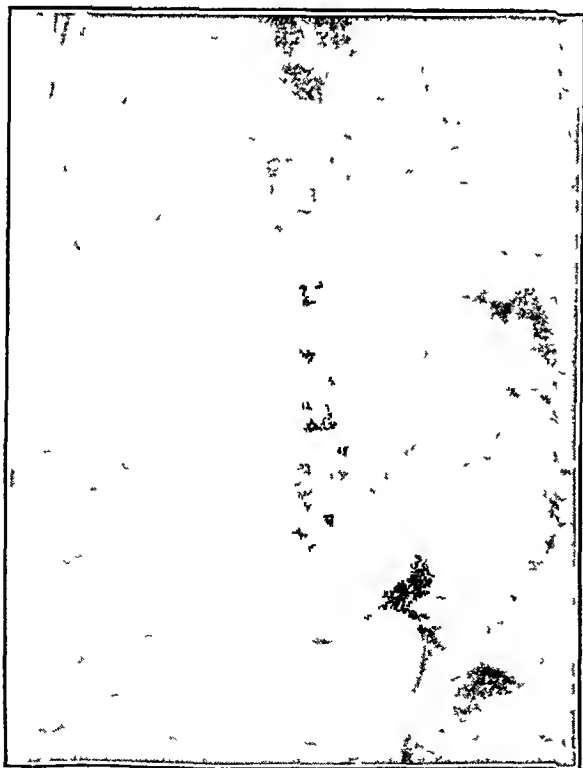


FIG 2—Case III. Straight skiagram of abdomen (supine). Note shadow of enormously dilated caecum stretching across abdomen from right iliac fossa to level of first lumbar vertebra on left side.

afternoon. Before the operation started he collapsed under the anaesthetic and the heart stopped beating. The abdomen was opened through a midline epigastric incision and the heart rapidly massaged. The beat returned in about three minutes, and a rapid examination of the caecum before sewing up revealed a complete volvulus involving the terminal ileum and ascending colon. It was blue black in colour, with suspicious areas of ulceration on the surface. It was twisted in a counter clockwise direction, this was quickly undone and the gut was replaced in the abdomen, which was rapidly closed. He was returned to the ward, but never regained consciousness, he died five days later, on Jan 19.

Necropsy showed a thrombosis of the descending branch of the left coronary artery with a large infarct of the anterior wall of the left ventricle. There was venous congestion in the liver and spleen and a patchy bronchial pneumonia at the left base. The caecum and ascending colon were abnormally mobile, with a mesentery which extended halfway up the ascending colon. There was slight kinking of the bowel, the caecum was distended and had fallen forward, and was half rotated to the left. The bowel however, was quite viable and there was no evidence of gangrene.

Summary and Conclusions

Volvulus of the caecum is a far more common condition than has hitherto been supposed.

One or several attacks of partial volvulus often precede an acute and final attack.

Pain and tenderness in the right iliac fossa shifting to the centre of the abdomen, with immediate or subsequent gaseous distension and obstruction, are the usual findings.

Straight skiagrams of the abdomen give appearances which are diagnostic of the condition.

It may seriously complicate pregnancy or the puerperium.

Cases should be recognized early, and the treatment is by laparotomy, dealing with the condition of the gut found at operation, if viable, by derotation and fixation, if gangrenous, by right hemicolectomy.

Three illustrative cases are recorded.

I wish to thank Sir Heneage Ogilvie, KBE, for his kindly advice and comments, and Dr T V Critchlow for the excellent x-ray photographs.

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Milk production continues to rise in Britain. According to figures recently given by Mr I L Davies, of the Milk Marketing Board, the estimated output in December was 98,000,000 gallons which is only just short of the target set for December, 1947—100,000,000 gallons. Consumption during 1946 was 53% higher than before the war, and the abolition of milk rationing in England and Wales would necessitate an annual monthly production of 110,000,000 gallons. The ration may be larger next winter—three pints a week is hoped for—but there is no prospect of its being abolished then.

THE HEART IN RHEUMATOID ARTHRITIS

BY

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Rheumatic fever and rheumatoid arthritis are generally regarded as distinct diseases which have much in common, but the possibility of their having a common aetiology has often been discussed. As cardiac lesions are characteristic of rheumatic fever, many workers have sought similar lesions in rheumatoid arthritis. Recently tissues obtained at necropsy from patients who had suffered from rheumatoid arthritis have been studied and a high incidence of heart lesions has been reported showing histological characteristics similar to those of rheumatic fever.

Only the more recent published work will be reviewed here. Master and Jaffe (1932) reported on the electrocardiographic findings in 17 patients with rheumatoid arthritis. The absence of abnormalities—as contrasted with a 100% incidence of electrocardiographic changes in rheumatic fever—prompted them to suggest that when in doubt as to the differential diagnosis between these two conditions a normal electrocardiogram was in favour of a diagnosis of rheumatoid arthritis, but the number of patients was so small that this suggestion must remain a tentative one. Dawson and Tyson (1936) presented evidence to show that the two diseases are intimately related. Their similarity was stressed under the headings of familial relationship, geographical distribution, initiating factors, seasonal incidence, age incidence and clinical manifestations of the two diseases in different age periods, pathological similarities, and immunological findings. In a series of 100 patients they found 7 with unequivocal signs of rheumatic heart disease: the onset of disease in all these patients occurred most commonly in the second and third decades of life. Collins (1937) and Bennett, Zeller and Bauer (1940) reported that the nodules of rheumatoid arthritis and rheumatic fever were not similar on microscopical examination. On the other hand Baggenstoss and Rosenberg (1941) quote various workers who reported the histological similarity of the subcutaneous nodules of the two diseases. Baggenstoss and Rosenberg (1944) described two cases of rheumatoid arthritis with cardiac lesions very similar histologically to the subcutaneous nodules present in that disease. They state further that as a rule, the cardiac lesions of rheumatoid arthritis are indistinguishable from those produced by rheumatic fever. They had previously (1941) found the rheumatic type of heart disease in 14 of 25 cases of rheumatoid arthritis which came to necropsy: in only 7 of these 14 had there been any clinical evidence of heart disease. In 6 the mitral valve was involved, and in 2 of these there was advanced stenosis. Bayles (1943) in 23 necropsies on subjects with rheumatoid arthritis found 6 cardiac lesions suggestive of rheumatic fever: 1 possibly active and 5 inactive. Young and Schwedel (1944) in a post-mortem study of 38 cases of chronic rheumatoid arthritis found cardiac lesions in 33, in 25 of which

given. It was further pointed out that microscopical examination of the myocardium showed Aschoff bodies in one case only, but that this was not surprising as the majority of the patients were old at death. Again, scarring in the myocardium occurring in only two instances was considered to be an unduly low incidence for acute rheumatism. The annotator also made the important observation that “in rather a large proportion of cases clinical examination had given negative results.” This apparent discrepancy between the clinical assessment and the post-mortem findings calls for careful consideration. It suggests that valvular disease may occur in rheumatic fever without producing clinical signs, in which case one could never be sure that there was no valve damage. In other words, the lesions might be demonstrable histologically and yet fall short of interfering with the valve mechanisms. Alternatively, there might be some other fundamental difference between the valvular lesions of the two diseases, so that those of rheumatic fever resulted in the production of murmurs while those of rheumatoid arthritis did not—a state of affairs which is highly improbable. Fraser (1945) noted a 14% incidence of valvular disease of the heart on clinical examination in 110 patients suffering from rheumatoid arthritis. This was merely an incidental finding, however, and the valvular lesions are not classified. Paul D White (1944) states that, in rheumatoid arthritis, pericarditis and endocarditis and myocarditis may infrequently appear as complications not to be ascribed, at least in all cases to a coincident rheumatic fever.

The Present Investigation

The object of this paper is to record the results of a detailed examination of the cardiovascular system in 33 consecutive cases of rheumatoid arthritis admitted to municipal hospitals in Glasgow. The severity of the illness in these patients is given in accordance with the classification suggested by Slater (1943). Of the 33 patients 4 fell into Group I, 10 into Group II, 11 into Group III, and 8 into Group IV. Besides the usual clinical examination every patient was submitted to electrocardiographic investigation. In addition, radiological examinations of the heart were made in the earlier patients of the series, but this was soon found to be impracticable because of technical difficulties associated with the gross deformities of the joints resulting in inability to get many of the patients into the suitable position. None gave a previous history of rheumatic fever.

Eleven of the patients were males and 22 were females. The age distribution is shown in Tables I and II which also give the duration of the illness in each case.

TABLE I—Age Incidence Males

	Age Groups						
	40-45	46-50	51-55	56-60	61-65	66-70	71-75
No. in each group	3	2	2	0	2	1	1
Duration of illness (in years) of each patient	1 4 2	2 3	5 1		6.5 2 14	1 2	1

TABLE II—Age Incidence Females

	Age Groups										
	25-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71-75	76-80
No. in each group	1	3	1	0	1	4	2	1	4	3	2
Duration of illness (in years) of each patient	1/52	8 7 7	5		20	18 35 6 2	8 2	10	3 5 4 9	31 3/12 4	4 10

(65.7%) the lesions were considered to be indistinguishable from those of acute rheumatism and of a non-specific infective nature in the remaining 8. An active rheumatic process was present in 6. There was a history of rheumatic fever in 3 only and of probable rheumatic fever in 2. From this extremely high incidence of the rheumatic type of heart disease in rheumatoid arthritis they concluded that there is an extremely close aetiological relationship between the two diseases.

An editorial comment (*British Medical Journal* 1945, 1, 636) on Young and Schwedel's paper notes that the incidence of disease on the several valves was similar to that of acute rheumatism but that the incidence of mitral stenosis was not

The duration of disease is that given by the patient. No doubt there is considerable inaccuracy here. For example in two patients who gave histories of only a few weeks duration bony changes were apparent on x-ray examination. Accepting the figures as given by the patients however, the average duration of the illness for the males was 3.2 years and the females 9.0 years—long enough for the development of any lesions.

That males were, on the average, admitted to hospital for treatment so much earlier than females is probably accounted for by the fact that in the breadwinner impairment of manual dexterity or locomotion is likely to be of more serious consequence than similar disabilities in the housewife.

The cardiac rhythm was regular in all cases. The first mitral sound was split in 2 cases, and the intensity of this sound was diminished in 10 others, compatible with their age and varying degrees of emphysema, otherwise no abnormality was noted. However, it would be only in the incidence and character of murmurs indicative of valvular disease that a parallel between this disease and rheumatic fever could be drawn. A particularly careful search was made for evidence of early mitral stenosis, but none was found. In 8 cases a faint systolic murmur was heard at the mitral area, in all of these it was sharply localized. None of them was associated with a loud sharp first sound or with an accentuated second pulmonary sound. They were considered to be functional in origin. In one case only was there a loud mitral systolic murmur, it did not replace the first sound but was conducted well into the axilla. This occurred in a woman of 68 who had had rheumatoid arthritis for nine years, and the signs were thought to indicate organic mitral valve disease.

Electrocardiographic Findings

There are, of course, no electrocardiographic abnormalities pathognomonic of rheumatic fever, the study of electrocardiograms in rheumatoid arthritis is therefore of limited value in studying the aetiological relationship between the two diseases. According to Katz (1941) chronic rheumatic heart disease may result in tracings showing preponderance of one or other ventricle resulting from valve deformities, or the appearance of large, broad, or notched P waves associated with auricular hypertrophy. Specific contour changes and arrhythmias may develop, such as frequent auricular premature beats, which are said to be particularly significant when they arise from multiple foci. Electrocardiograms were taken from 29 patients. Left axis shift was present in 17, there was a considerable incidence of slurring of the QRS complexes, and the T wave was inverted in one case in Lead I, in another in Lead II, and in a third in Lead CF. These abnormalities were consistent with the senile degeneration of the coronary arteries of old people, who formed the majority of the patients in this series. None of the records showed abnormal ventricular preponderance, the P waves were well formed, and the cardiac rhythm was unaffected. A woman of 71, who gave a history of only three months' illness but who had obvious joint changes on x-ray examination, showed very low complexes in all leads when the first electrocardiogram was taken. Serial tracings showed an increasing amplitude of the complexes until five weeks later the voltage was well within normal limits. This suggests that there was transient myocardial damage during the acute phase of the illness, but it does not necessarily denote any common aetiological factor between rheumatoid arthritis and rheumatic fever, such findings might be encountered in many acute illnesses and toxic states.

Only one patient in the present series came to necropsy. She was an elderly woman who died of cerebral thrombosis. The naked eye appearances and histological findings in the heart revealed no evidence of rheumatic infection.

Discussion

The results of this investigation serve to emphasize once again the extraordinary discrepancies which exist in the opinions of different workers. No doubt this is largely the result of failure to lay down generally acceptable criteria for the clinical diagnosis of cardiac lesions in the early stages of disease. Another difficulty is that of excluding cardiac abnormalities which are purely incidental and usually the accompaniments of senile degenerative changes in the myocardium and coronary arteries. After making liberal allowances for these complicating factors, it would appear that clinical evidence of mitral valve disease was elicited in only one patient in a series of 33 cases of rheumatoid arthritis. The literature cited raises the possibility that the incidence of subclinical valvular disease associated with rheumatoid arthritis in the present group was much higher than this, but in the solitary case examined at necropsy no cardiac abnormalities were detected. A final opinion on the concept of latent or subclinical endocarditis must await further pathological studies, which will need to be sufficiently comprehensive, the difficulties in the way of obtaining these data in a disease which *per se* is rarely fatal need no emphasis.

Summary

Recent literature on the subject of the aetiological relationships between rheumatic fever and rheumatoid arthritis is reviewed.

Among 33 patients suffering from rheumatoid arthritis only one was found to have a cardiac lesion which might have been attributable to the disease. Another patient came to necropsy, and was found to have neither histological nor naked eye abnormalities of the heart.

A brief reference is made to the limited value of comparisons between the clinical manifestations of these two conditions in the present state of our knowledge of the rheumatic diseases.

I have pleasure in expressing my indebtedness to Prof. Noah Morris and Dr. Stanley Alstead, who assisted me in the preparation of this paper. My thanks are also due to Drs. Briggs and Cunningham, medical superintendents of Stobhill Hospital and the Eastern District Hospital, respectively, for permission to publish.

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INCIDENCE OF YAWS AND OF VENEREAL DISEASES IN LANGO (UGANDA)

By

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During a study of the bone lesions of yaws in Lango the high incidence of that disease became apparent. Since a medical survey was not practical, nor was it necessitated by trypanosomiasis, other measures were sought to ascertain more precisely the frequency of yaws. At the same time the incidence of venereal diseases in Lango and, for comparison, in Ganda was assessed. Medical reports were examined, out-patient attendance records analysed, and a labour force and a sample of a gaol population were studied. These data form the basis of this paper.

The results of a survey for leprosy are contained in the annual report of the District Medical Officer of Lango for 1931. Of 24,249 children under 15 years of age, 963 (3.9%) were suffering from secondary yaws. Of 152 cases of secondary yaws with bone lesions studied by me in 1937-9, 131 (86%) were under 10 years of age. Active secondary yaws in children was observed in practically every Lango community, and chiefly in the younger age groups. The absence of yaws in infants before the age of walking was also noted.

Survey of Out-patient Attendances, Lira and Masaka

Lira (Lango district), about 3,600 ft (1,100 m) above sea level and north of Kampala, is in a part of Uganda described as a "yaws area"—i.e., one in which yaws is common. Syphilis rarely occurs. Masaka (Ganda Province), about 4,300 ft (1,300 m) above sea level and south-west of Kampala, is in a part regarded as a "syphilis area" and in which yaws is infrequent. This characteristic local distinction of the two diseases applies only to the indigenes. Masaka has been chosen rather than Kampala for comparison with Lira, since it is not so large a centre as Kampala, and from it are thus more likely to give an accurate picture of the conditions present in a rural community. The figures in Tables I, II and IV were obtained from the monthly sickness returns for Lira and Masaka, which were based mainly upon the diagnoses of trained African medical orderlies. The diagnoses of the conditions concerned may be regarded as fairly accurate. Orderlies with experience in both yaws and syphilis were working in both clinics.

BLE I—Average Annual Out-patient Attendances by New Cases at Lira and Masaka for the More Frequent Complaints (excluding Coughs Colds and Traumatic Lesions) and for Syphilis and Gonorrhoea

	Lira (1928-36)		Masaka (1930-8)	
	Totals	/	Totals	%
yaws	3 077	20.9	266	1.6
syphilis	164	1.1	2 818	17.5
gonorrhoea	85	0.6	410	2.5
Myalgia	662	4.5	340	2.1
Ulcers	803	5.5	443	2.8
Malaria	775	5.3	1 966	12.1
Ratio of gonorrhoea to syphilis	0.5 to 1		0.15 to 1	
Total attendances (all causes)	14 707		16 207	

The incidence of yaws at Lira was 13 times that at Masaka, while the incidence of syphilis in Masaka was 16 times that at Lira. At Lira the incidence of yaws was 19 times that of syphilis, and at Masaka syphilis was 11 times more prevalent than yaws. Congenital syphilitic infants were frequent at Masaka. Gonorrhoea, however, was only 4 times more frequent at Masaka than at Lira. The proportion of new cases of gonorrhoea to those of syphilis at Lira was 0.5 to 1, and at Masaka 0.15 to 1. This ratio in England and Wales in 1936 was 2.6 to 1 (18th Annual Report of the Ministry of Health). The figures for gonorrhoea at Masaka may be incomplete, since in Ganda Province this disease is prevalent. It is unfortunate that the incidence of gonorrhoea cannot be used as a check on that of syphilis. At Lira "myalgia" and "ulcers" were diagnosed twice as frequently as at Masaka. Malaria was only about half as frequently diagnosed at the former as at the latter, but at both the real incidence probably approximated to 80-100%.

The Medical Officer, at Masaka (Dr A G Mackay) said that most of the yaws cases seen there were in immigrant labourers from the Belgian mandated territory of Ruandi-Urundi, and that the disease was rarely seen in the indigenous Ganda population. At Lira the Medical Officer's annual reports repeatedly state that most cases of syphilis and gonorrhoea occurred in Bantu immigrants (Ganda and Nyoro) and in Kumam people, and very infrequently in the indigenous Lango. Personal observations confirmed this. At Lira, though the total attend-

TABLE II—Sex Distributions of Average Annual Out-patient Attendances for All Causes and for Yaws and for Syphilis at Lira and Masaka

	Lira (1928-36)			Masaka (1930-8)		
	Totals	% of Totals	% of Totals for Sex	Totals	% of Totals	% of Totals for Sex
All cases	14 707			16 207		
Total	9 755	66.0		10 008	61.0	
Males	4 952	34.0		6 199	39.0	
Females						
Yaws	3 077			266		
Total	1 599	52.0	16.5	187	70.0	1.87
Males	1 478	48.0	29.8	79	30.0	1.27
Females						
Syphilis	164			2 818		
Total	95	58.0	0.98	1 567	55.0	15.7
Males	69	42.0	1.39	1 251	45.0	20.2
Females						

ance by females was only half of that by males, the attendance for yaws by females was nearly equal to that by males. At Masaka the total attendance by females was 60% of that by males, and the attendance for syphilis by females was 80% of that by males. The attendances for both diseases included cases at all ages and all stages. The higher attendance by females for yaws at Lira may in part result from mothers accompanying their yaws infected children to the clinic and presenting themselves for treatment for late yaws lesions. The higher female attendance for syphilis at Masaka may partly arise from women being more alert regarding early secondary skin lesions. The figures in Table III were obtained by the then Director of Medical Services of Uganda (Dr W H Kauntze). It will be seen that at Lira the yaws cases were a random sample of all other attendances. At Masaka fewer children attended the out-patient department than at Lira, the smaller number of

TABLE III—Sex and Age Distribution of Out-patient Attendances by New Cases for Yaws at Lira and Syphilis at Masaka (April 1940)

	Lira			Masaka		
	Under 10 yrs	Over 10 yrs	Total	Under 10 yrs	Over 10 yrs	Total
All Cases less Yaws						
Males	141	624	765	121	829	950
Females	123	284	407	103	340	443
Total	264	908	1 172	224	1 169	1,393
	(22.5%)			(16.1%)		
Yaws						
Males	34	103	137	6	79	85
Females	33	112	145	8	55	63
Total	67	215	282	14	134	148
	(23.8%)			(9.5%)		
Syphilis						

TABLE IV—Average Monthly Out patient Attendances by New Cases less Yaws and of Yaws at Lira (1928-36)

Month	Yaws	Total Attendances less Yaws	Month	Yaws	Total Attendances less Yaws
January	189	936	July	247	1 017
February	243	874	August	210	944
March	317	955	September	232	1 000
April	327	951	October	293	1 071
May	279	894	November	259	1 081
June	296	960	December	185	949

TABLE V—Average Monthly Climatic Data for Lira (Ngetta) 1928-36 (British East African Meteorological Service)

Month	Air Temperature (° F)			Relative Humidity (%)		Rainfall (inches)
	Maximum	Minimum	Max - Min 2	08.30	14.30	
January	91.8	60.4	76.1	61	32	1.25
February	92.4	63.6	78.0	76	40	1.40
March	90.4	64.6	77.5	77	41	3.29
April	86.7	64.1	75.4	83	50	6.72
May	83.5	63.8	73.6	84	59	8.55
June	82.8	62.4	72.6	84	57	5.32
July	81.7	61.7	71.7	86	57	4.18
August	83.2	61.5	72.3	84	58	8.49
September	85.2	61.8	73.5	82	53	6.30
October	86.5	61.8	74.1	79	49	5.82
November	86.5	61.3	74.9	76	46	2.69
December	87.7	60.3	74.0	72	42	2.55
Annual values	86.7	62.3	74.5	79	49	56.56
Annual values for Masaka 1928-36	79.6	61.1	70.3	84	62	49.41

children among the syphilis cases compared with those among all other cases is statistically significant (6.6 ± 3.12). This stresses the higher ages of the syphilis patients.

In Table IV the variations in the average monthly attendances for yaws are statistically significant. The figures for males and females closely resembled those for the sexes combined. The variations in the average monthly attendances for syphilis at Masaka were not statistically significant. It will be seen that the peaks of maximal incidence of yaws were in April and October, and that there were ascending peaks for the total attendances less yaws in March-April, July, and October-November.

From Table V it will be seen that there is some slight relationship of yaws incidence with an average monthly rainfall over 6 in (15 cm) and an average relative humidity at 14.30 hours over 50%. An analysis of the community activities of the Lango, however, suggests that the attendance peaks under consideration coincide with the slackest periods of local husbandry—between the planting and harvesting of early and late crops.

Out-patient Attendances, Kampala

From the out-patient record cards at Mulago Hospital, Kampala, for attendances during 1933 and 1934, notes were made in 190 cases diagnosed as secondary syphilis. This is

only a small proportion of the total attendance for that disease, but these records, mostly of Ganda patients, were chosen for their relative completeness. In 173 of these 190 cases (all young adult males) the serum Kahn was positive or spirochaetes were found. In 7 the serum Kahn was negative. Penile sores were present in 60 cases, 41 admitted and 6 denied having had any penile lesions. Among these 190 cases the following frequency of lesions was recorded: condylomata, 91, secondary rashes, 21, macules, 20, papules, 14, maculo-papules, 9, circinate lesions on scrotum, 8, buccal mucous membrane lesions, 8, papulo-squamous, 3, squamous, 2, circinate, 2. The condylomata were described as scrotal, perineal, and anal. No mention was made of any framboesiform lesions. At Lira the atypical secondary yaws lesions, and genital lesions, in the absence of typical lesions were infrequent. Loewenthal (1939) reported syphilitic aortitis and aneurysm, meningo-vascular lesions, choroiditis, and gummatous iritis in patients at Mulago, but stated that visceral gummata were rare. Such lesions were not seen among the Lango.

Serological Surveys

Sera collected in January, 1939, from 100 consecutive male Lango prisoners, aged 18 to 35 years, in the Erute (Lira) Gaol gave the following Kahn reactions: + + + +, 46, + + +, 21, + +, 14, +, 2, \pm , 7, and -, 10. If reactions of +, \pm , and - are regarded as negative, then 81 were positive. The ages of these subjects were: 18-20 years, 32, 21-25, 36, 26-30, 23, 31-35, 9. Other findings in this group and in 130 station labourers are given in Table VI.

TABLE VI—Clinical Findings in Two Groups of Adult Lango Males at Lira

	100 Prisoners	130 Station Labourers
History of having had yaws	94	90
Scars of previous secondary yaws	78	79
Enlarged epitrochlear glands	72	69
Bone changes	68	62
Palmar changes	51	60
Plantar changes	61	73
Bone pain	49	41

One case each of dorsal ganglion of the wrist, Dupuytren-like contractures of the fingers, and aortic systolic murmur was seen among prisoners under 30 years of age, the sera from these were Kahn + + + +. Among the labourers were 4 cases with ganglion and 12 with Dupuytren-like contractures. Bone changes consisted mainly of bowing, thickening, or irregularity of tibiae. Palmar and plantar changes comprised thickening, localized or generalized erosion, fissuring, pitting, and laminar desquamation.

Among the prisoners no statistical association was found between any of the items in Table VI and the reaction of the serum Kahn. The six prisoners who denied having had yaws were under 25 years of age, the serum from two was Kahn + + + +, from another two it was Kahn + + +, and from the remaining two Kahn -. The last two subjects were 20 years of age, both complained of bone pain, one had enlarged epitrochlear glands, and the other had indefinite minor plantar changes. Of 120 male Lango prisoners in the Erute (Lira) Gaol, in October, 1938, 8 denied having had yaws. Their ages ranged from 17 to 33. Sera from four were Wassermann + + + + and Kahn + + + +, those from the remaining four were Wassermann -, from one of these it was Kahn +, from another Kahn \pm , and from the remaining two Kahn -.

Summary and Conclusions

In 1931 a survey showed that 3.9% of 24,249 children under 15 years of age were suffering from secondary yaws.

At Lira, in a 'yaws area,' yaws was a frequently diagnosed disease (20% of 14,707) and was 19 times as frequent as syphilis. At Masaka, in a 'syphilis area,' syphilis was a frequently diagnosed disease (17% of 16,207) and was 11 times as frequent as yaws. At each locality coughs, colds, and traumatic lesions were the most frequent diagnoses. Malaria was probably of nearly universal incidence in both localities. At Lira females were proportionately more numerous among the yaws cases than among the total attendances. A quarter of the yaws cases were under 10 years of age. There

was a smaller proportionate excess of females among the syphilis cases at Masaka as compared with the total attendances. Syphilis cases at Masaka were older compared with the age distribution of the other attendances.

In 1939, 81 of 100 consecutive male Lango prisoners, aged 18-35, had positive Kahn reactions. Of the six of this series who denied having had yaws, only two had completely negative Kahn and Wassermann reactions in their sera.

It may be concluded that the incidence of yaws in Lango was high, and that probably very few adults died without having contracted the disease. On the other hand, in Lango the incidence of venereal disease was very low.

The material for this paper was obtained during 1937-40 while holding a Senior Fellowship in Tropical Medicine of the Medical Research Council. I am indebted for much help received to Dr W. H. Kauntze, then D.M.S., Uganda, and his medical officers. All serological tests were carried out by the staff of the pathological laboratory at Mulago Hospital. Dr W. J. Martin, of the Statistical Department of the Medical Research Council, has kindly carried out the statistical analyses.

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EFFECT OF ORGANIC MERCURIAL PREPARATIONS ON DISEASES OF THE SKIN

BY

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A preliminary report on organo-mercurial treatment of the dermatomycoses and of infected skin lesions including 'jungle sores,' was published in the *Indian Medical Gazette* in August 1944 (Byrne and Croxon). This present report is an amplification, and is based on the treatment of 500 cases of skin lesion in the Tropics with organo-mercurial compounds. Three preparations were used—phenyl mercuric chloride, acetate and benzoate, they will be referred to subsequently as PMC, PMA, and PMB.

The toxic action of mercury on bacteria depends on the free concentration of Hg ions in solution (Paul and Prall, 1907), and it has been shown that the Hg cation is the most effective of the heavy metal cations (Woodruff and Bunzel 1909; Winslow and Hotchkiss, 1922), but though the inorganic salt of mercury have a powerful action *in vitro* their bactericidal effect is greatly diminished *in vivo* especially in the presence of organic matter. Chick and Martin (1908) consider that this is due to the fact that the Hg cation combines with protein to form an insoluble albuminate, hence the concentration of free ions is greatly diminished. The same workers reported that the addition of 3% of faeces to a solution reduced the activity of mercuric chloride by 90%. The activity of certain organo-mercurials under these conditions is reduced only by 20-25%, for it appears that the formation of an insoluble albuminate does not obtain to any marked degree with drugs of this group. It therefore follows that in the presence of organic protein matter the organo-mercurials possess a far greater bactericidal effect than do the inorganic salts of mercury.

An exceptional toxicity towards all forms of life is exhibited by those compounds of mercury which structurally are the most simple, and this lethal action is markedly selective in highly organized animals. The effect is determined largely by the character of the hydrocarbon radicle—aromatic or aliphatic—associated with the mercury atom. Aliphatic compounds being particularly virulent. On the other hand, aromatic derivatives have a relatively low local and systemic toxicity, and, provided the hydrocarbon is an unsubstituted phenyl radicle (C_6H_5), very high bactericidal potency.

It is important to record in connexion with specific action that the aliphatic organo-mercurials exemplified by mercuric dimethyl and diethyl— $(CH_3)_2Hg$ and $(C_2H_5)_2Hg$ —and derivatives thereof, such as the chloride (CH_3HgCl) and nitrate (CH_3HgNO_3), have a specific effect on the CNS causing rapid degenerative lesions in cerebral and cerebellar areas. These compounds are most interesting in human toxicology.

view of the long latent period between their application or ingestion and the development of signs and symptoms in the CNS. This characteristic has received much attention in industrial medicine, as the pathological symptoms differ from those associated with ordinary mercurialism (Hunter *et al* 1940, Hill 1943).

Preference for P M C

The aromatic aryl compounds (phenyl mercuric chloride, mercurate borate acetate benzoate and picrate) have been investigated chiefly in the United States, but Biskind (1935) has given a detailed account concerning them in the English literature. Certain of the above-mentioned compounds find extensive application in horticulture and agriculture for the control of fungous disease of plants and the fungicidal action of P M C was investigated by Shaw and Montgomery (1941, Shaw and Moore 1944). They showed that this substance is one of the most powerful fungicides known, and acts rapidly and effectively in high dilution, destroying both spores and vegetative forms.

For medical purposes the bactericidal and bacteriostatic action of P M C was first investigated by Weed and Ecker in 1933. These workers found that the concentration necessary to inhibit the growth of *Str. haemolyticus* and *Staph. aureus* was of the nature of one part in several millions. This effect is due to the C_6H_5Hg ion, and though the solubility of P M C is very low this does not detract from its effectiveness. The ethal effect is due to the action of mercury in combining with and blocking essential thiol groups in the cytoplasm of the infecting fungi or bacteria. The gross disturbance of metabolic function so caused leads to the rapid death of the infecting agents.

P M A and P M B have a marked affinity for chlorine, as NaCl is an invariable constituent of tissue fluid it was felt that the change to P M C would be a rapid one and that the direct application of this ultimate chemical product should be made whenever possible (FitzGibbon personal communication). This report therefore deals mainly with the action of phenyl mercuric chloride.

As in all bactericides the reaction velocity of P M C depends on its concentration in the area in which it is to exert its action but owing to its tendency to produce a vesicant effect on tissue or skin (although strikingly less than other compounds in the series) the concentration used must be carefully limited. In practice it has been found that 0.25% P M C or P M A represents the maximum concentration which can be used without producing these effects. Applications of a much lower strength were used in the majority of cases treated. A strength of 0.5% P M C precipitated on a calamine filler was used in the preparation of an adhesive lotion for moist skin lesions. But the physicochemical mechanisms obtaining when the drug is presented in this way are entirely different from those which occur when emulsifying or aqueous vehicles are used. The use of a colloidal solution was considered, but the grave disadvantage of this method is that in using colloidal solutions of a drug the activity of which is an ionic property the protective colloid removes the charge from the active cation and hence nullifies its effect.

Preparation for Use

In order to deal with the varying types of skin lesions requiring treatment it was decided to present P M C and P M A in three types of base: (1) in eucern and distilled water; (2) in an adhesive lotion of the lotio calaminae type; (3) in simple solution in distilled water. As P M A is soluble in hot distilled water up to a concentration of 2.5% the ointment is made by dissolving the drug in distilled water at a temperature of 85° C. This solution while still warm is slowly added to the eucern previously melted and kept at a temperature not exceeding 55° C. The mixture is continuously stirred until cooled to a white homogeneous cream is produced which is absorbed by the skin with the minimum of friction. In the earlier cases treated a strength of 0.2% was used, but it was later found that 0.125% ointment gave equally good results, and this was employed in the majority of cases. As the solubility of P M C in water is only 1/20,000 the most efficient method is to incorporate the drug in the melted

eucern at 55° C, using careful trituration, and keeping the contents of the mortar heated to 55° C by means of a water bath. It is essential that the P M C be as evenly dispersed as possible in the melted eucern before adding the distilled water (heated to 85° C) in small quantities with rapid stirring. The whole is now allowed to cool rapidly, stirring until a white homogeneous cream is obtained. In the preparation of large quantities the use of a homogenizer would be a great advantage.

For moist surface lesions an adhesive lotion was prepared designed to fulfil the following requirements: (a) Sufficient concentration of P M C to exert the maximum fungicidal and bactericidal effect; (b) contact with the affected area for a prolonged period in spite of excessive perspiration or moistness of the skin; (c) ease of application. It was found that the P M C-calamine preparation was much more 'dense' than calamine B P and required a large amount of zinc oxide and glycerin to maintain an even suspension when shaken and sufficient adhesiveness when applied to the infected area. The following lotion was found to be the most satisfactory:

P M C 0.5% precipitated on calamine	gr 15 (1 g)
Zinc oxide	gr 30 (2 g)
Glycerin	℥ 30 (18 ml)
Distilled water	to 1 oz (28.4 ml)

For large infected areas of deep-seated origin and for 'jungle sores' application of a solution of P M A had the desired effect. A concentration of 1/8,000 was found to be the most efficient. Solution is effected by heating up 2 g of P M A in 250 ml of hot distilled water, and pouring the almost boiling solution into 750 ml of cold distilled water. This stock solution can be regarded as 0.2% w/w or w/v for all practical purposes. The desired strength of solution may then be obtained by further dilution with distilled water. The concentrated solution is self-sterilizing.

Method of Application

At the beginning of the investigation cases were treated as out-patients attending twice daily forunction. Though results were very satisfactory, it was found that this method was wasteful in the use of the limited amount of ointment available at the time. As the reaction velocity of P M C depends on the concentration applied and the duration of application it was obvious that a great saving in the amount of ointment used would be effected by applying it on lint and bandaging it on to the affected part for a fixed period. Investigation showed that three to four hours application of 0.125% strength was sufficient to overcome the infection in all cases of tinea cruris, corporis, and capitis. The affected areas were slightly red and itching for about 24 hours after the treatment. At the end of this time the lesion began to fade out, and in five to six days the skin became normal in appearance, though some slight desquamation usually occurred. In a few resistant cases a second application (of 0.2% strength) was used for three hours.

The types of mycotic infection seen varied enormously, presumably due to the nature of the infecting fungi and the skin reaction of the patient. Dry superficial circinate lesions of large extent and rapid spread alternated with those producing agminate folliculitis and maculo-papular lesions of both guttate and punctate varieties were found. Epidermophyton infections affecting the groins, palms and soles were extremely common as the warm humid climate of SE Bengal and the Arakan areas kept the skin continually moist providing optimum conditions for the growth of fungi.

For all lesions which were reasonably dry a three- to four-hours application of P M C ointment on lint was used. At the end of this time the excess of ointment was wiped off. Where the lesions were moist, application of the ointment was followed by the P M C-calamine lotion. In two to three days the infection was controlled and rapid healing ensued.

Treatment of Various Infections

The following is a classification of the diseases treated by organic mercurial compounds:

Ringworm of trunk and limbs	200
Epidermophyton inguinale	110
Epidermophytosis of feet	90
"Jungle sores"	50
Infected wounds of various types	50

Epidermophytosis of Feet—The interdigital spaces were thoroughly cleaned, and all dead skin removed, 0.5% P M C-calamine powder was applied if the affected area was very moist, and when drying had occurred 0.125% ointment was applied twice daily.

Epidermophyton Inguinale (Dhobi Itch)—A single application of ointment was used for four hours' contact. After thorough inunction into the affected area, paying special attention to the infected spreading edge, strips of lint coated with the ointment were applied to the lesion, and fixed in position with pads of cotton-wool and a double T-bandage. The skin became normal in five to six days.

Regarding epidermophyton infection of the toes, recurrences are mainly due to (1) fresh infection from an outside source, (2) reinfection from the patient's own socks or footwear. To overcome the latter, socks should be steeped for an hour in 1/20,000 P M A solution before washing, the boots or shoes can be treated by spraying the interior with a 1/2,000 alcoholic solution of P M A.

Jungle Sores—In forward areas and where the sores were small or of recent origin, compresses of 1/8,000 P M A were applied for 24 hours. This brought about complete disinfection of the sore. Elastoplast was then applied, after painting the surrounding skin with the solution, and very good results were obtained. In base areas, where large chronic sores were seen, the following technique was adopted: (1) Disinfection with 1/8,000 compress of P M A for 24 hours, (2) normal saline compress for a further 24 hours, (3) skin-grafting on the third day. In some of the early cases the grafts did not take well, and it was considered that excess of the C_6H_5Hg ion was the inhibiting factor. The saline lavage and compress for 24 hours did away with this side-effect. It is suggested (Fitz-Gibbon) that a rapid lavage with a 1% thiourea solution would produce the same effect, as the —SH group in thiourea would neutralize any excess of the compound ion.

Toxic Effects

No cases of sensitivity to organo mercurials were encountered. In some patients especially those of fair or auburn colouring, slight and temporary vesication occurred, mainly around the spreading edges of the skin lesions. This disappeared in 24 to 48 hours, leaving a clean healthy skin beneath. There appears to be no possible danger of toxic effects due to absorption through the skin. The work of the U.S. External Products Research Institute has shown that the body can deal with daily several thousand gamma of Hg in the form of a soluble mercurial, and that the human skin absorbs only 1/3,800 of that applied to it (*American Perfumer and Essential Oil Review* 1943, Stock, 1938). No dangerous mercury reservoirs are formed, as in the case of lead. Ten grammes of 0.125% P M C contains about 6,000 gamma of Hg, and the amount absorbed is minute. In this connexion it is interesting to note that all U.S. reconstituted plasma contains 12.5 mg of phenyl mercuric borate to each 250 ml unit, this is equivalent to about 8,000 gamma of Hg. No toxic effects have been reported in cases which have had large plasma transfusions, in spite of the considerable intake of organic mercury.

Summary and Conclusions

A report is presented of the successful treatment of 500 cases of skin disease by organic mercurials.

It is pointed out that phenyl mercuric compounds in plant mycology are recognized as possessing specific and rapid fungicidal effects in high dilution, and that similar effects can be obtained in fungus infections in man.

The bactericidal potency of these compounds is extraordinarily high, and as surface antiseptics they were found to be extremely satisfactory.

The method of preparation is described, with the results of treatment in certain infections.

It must be emphasized that the method of application and duration thereof must be strictly adhered to in order to effect rapid cure.

The original report was published by kind permission of Medical Directorate, G.H.Q., India Command, and acknowledgments were made to Col P. D. Johnson, R.A.M.C., at whose unit most of the preliminary work was done. My thanks are also due to Mr M. FitzGibbon, F.R.I.C., Lunevale Products, Lancaster, for generous supplies of the organo mercurials mentioned, and for helpful

suggestions regarding certain technical details. I am also indebted to Mr H. Fine, M.P.S., and to Mr J. H. Croxon for their work in the preparation of the applications used, and their help in the carrying out of treatment.

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Medical Memoranda

Lethane 384 on Clothing as a Mosquito Repellent

In 1942 during field tests with various antimosquito repellents a few tests were carried out with 'lethane 384'. They were only preliminary tests and were never followed up, but they showed that lethane 384 applied locally to clothing—for example stockings—may have its uses as a mosquito repellent in civil life when dimethyl phthalate either is not procurable or its use is undesirable because of its solvent properties on plastics, paint, etc. Lethane 384 is of course unsuitable as a skin application on account of its irritant and toxic properties.

METHOD

All tests were made in a wood at Brookwood, Surrey, during August, 1942. The mosquitoes biting were mainly *Aedes cantans*, *Ae. punctor*, *Ae. annulipes* with an occasional *Ae. cinereus*, *Ae. geniculatus* and *Anopheles claviger*. Treated volunteers and untreated controls sat together in the wood, usually for 15 minutes, and counted the number of bites experienced. Controls and treated men sat a few feet apart. There were two sets of experiments.

Test 1—Men wore thin cotton stockings (A.T.S. issue), which were sprayed with 50% lethane 384 (25% actual, solvent, a light oil, spray base 775) from a hand spray held at a distance of 1 ft (30 cm). Six pumps were given to the front and six to the back of the legs of each man—23 ml was used to spray four men. The men then rolled up their socks over the stockings at the ankle, pulled down the trouser legs of the bottle dress and waited strolling about, till the testing times. At the test, the trouser legs were rolled up above the knees and the socks turned over below the ankles, and the men sat on the bank of a dry ditch, together with control (stockings untreated), and counted the mosquitoes which bit the legs from knee to ankle. The hands and face were covered with gloves and veils.

Test 2—Men wore denim overalls which were sprayed thoroughly all over so that the overalls could be seen to be wetted. The spray was held at a distance of about 18 in (45 cm). The mean dosage was not less than that delivered on the legs in the first test. In the test the sleeves were rolled up to above the elbow and the number of bites on hands and forearms were recorded. The exposed parts were in no way treated.

RESULTS

Table I summarizes the results for sprayed stockings. The figures in brackets show the number of men in each group.

TABLE I

Time after Spraying (hours)	Period of Test (mins)	No. of Bites		Biting Rate (No. of bites in control = 100)		Protective
		Treated	Control	Treated	Control	
1-1½	15	3 (4)	6 (4)	50	100	88.5
1½-2	15	1 (4)	28 (4)	3.6	100	
2-4	15	1 (4)	35 (4)	2.9	100	97.1
4-5½	15	6 (4)	22 (4)	27.3	100	
5½-5½	15	3 (4)	19 (4)	15.8	100	78
Total		14 (20)	110 (20)	12.7	100	

Stockings removed rolled up and put on again next morning

24	15	24 (3)	23 (3)	104.3	100	Nil
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No. of bites per man

Mean 0.70

S.E. of mean 0.2012

Difference of means is statistically significant

It is evident that lethane on thin fabrics such as stocking material is a very effective repellent, and it has a useful effect for a number of hours. If a bigger dosage was given, probably a even higher degree of protection might ensue for a longer time.

The second test was made in order to see if a complete spraying of the clothing would protect exposed parts which were otherwise unprotected—for example, hands and face

TABLE II

Hours after Spraying	Test Period (mins)	No. of Bites		Biting Rate	
		Treated	Control	Treated	Control
-1	15 15 15	1 (4) 1 (4) 0 (4)	14 (4) 6 (4) 9 (4)	<i>A. claviger</i> mainly	
Total		2 (12)	29 (12)	7	100
-2	15	2 (4)	0 (4)		
-3	15 15 30	1 (4) 5 (4) 8 (5)	4 (3) 0 (3) 11 (4)		
Total		14 (18)	15 (14)	73	100
1-4	30 15 15	1 (4) 0 (3) 0 (3)	4 (4) 0 (3) 7 (3)		
Total		1 (14)	11 (14)	9	100
4-5	30 15	15 (4) 5 (3)	9 (4) 2 (3)		
Total		20 (11)	11 (11)	182	100
5-6	15 15 15 30	0 (4) 3 (4) 1 (3) 6 (3)	1 (3) 0 (4) 2 (3) 4 (3)		
Total		10 (17)	7 (16)	134	100
6-7	15 15 15	0 (4) 0 (4) 0 (3)	14 (3) 10 (3) 7 (3)		
Total		0 (11)	31 (9)	0	100
Grand total		49 (71)	104 (65)		

No. of bites per man 0.69 1.60
S.E. = 0.1650 0.2290
Difference of means is statistically significant

From the results shown in Table II it is evident that no great protection is afforded, and that spraying the clothing is not a reliable method of protecting exposed and otherwise unprotected parts of the body. Sometimes the controls were bitten more often and sometimes the treated, but on the whole as shown by the grand total, a degree of protection is given. This does not bear an obvious relation to time over a seven-hour period.

From these preliminary tests it seems that lethane shows considerable promise in affording protection to those parts of the body immediately underneath the treated cloth, but that it is unreliable if a general protection by spraying all the clothing is required.

I acknowledge with thanks the grant received from the E. L. Hamilton Memorial Fund at the Ross Institute to enable me to prepare wartime work for publication. Thanks are also due to the Director of Hygiene, the War Office, for his permission to publish these results.

C. G. JOHNSON, D.Sc.
Ross Institute of Tropical Hygiene

New Westergren Technique

The following technique for the Westergren sedimentation rate has been found useful. It is simple once it has been mastered; it avoids the necessity of putting lip to tube and is of value when only a few tests are made—for example, in the ward or consulting-room.

A 2 ml. or Westergren syringe is used and the sodium citrate is drawn up to the approximate mark—i.e. 0.4 ml.—the blood is then drawn up to the 2 ml. level and the needle withdrawn from the vein in the usual way. The plunger is pulled out to the full range giving an air space in the syringe. By rocking the syringe, with the needle attached the blood and the citrate are mixed. The syringe, with the needle still attached, is then

held vertically with a small piece of cotton-wool over the orifice, and all air bubbles are expelled.

The syringe is held in the right hand between the tips of the index and middle fingers, with the thumb on the plunger (a stiff syringe is better controlled by holding it between the tips of these fingers and the thumb, with the plunger held against the base of the index finger, and using a squeezing motion). The sedimentation tube is held between the thumb and the last three fingers of the left hand, leaving the index finger free to cover the end. Both the tube and the syringe are held horizontally, the tube may need a slight downward tilt, and the needle is introduced 2–3 mm. into the tube, using a little rotary action of the needle at the orifice to smear the blood round the lumen, the plunger is now pressed home slowly. The blood will run up the tube, on reaching the 200 mm. mark the index finger of the left hand immediately seals the orifice. The needle is then withdrawn and the tube placed in the rack.

It is essential to have a clean tube, otherwise the blood will leave bubbles along the sides and will not run up the tube. I use a small pledget of wool pushed through the tube by two common wooden aural applicators.

E. H. HUDSON, M.B., F.R.C.P.

The "Innocent" Systolic Murmur

The following example may be of interest as testifying to the 'innocence' of a certain type of systolic murmur, remaining unchanged and symptomless over a period of 26 years.

CASE HISTORY

A solicitor aged 30 consulted me on July 13, 1920. He stated he had made several attempts to enter the Forces during the war of 1914–18 and had been rejected by no fewer than five medical boards in turn on diagnosis of V.D.H. and congenital heart disease. Alarmed at this he sought to know his true position and how to order his future life.

His previous history was uneventful. He gave a vague statement of having rheumatic pains during school-days, but had no serious illness of any kind. He had led a normal active life from childhood, through adolescence, to manhood, and was completely unconscious of any symptoms referable to the heart.

On examination there was no clinical enlargement of the heart, the apex was well within the nipple line. No thrill could be felt. There was a loud rasping systolic murmur heard over the whole praecordium, maximal over the pulmonary area. The murmur varied slightly on respiration but not on change of posture, and ended in a curious 'click' suggestive of an exocardial origin. The pulse rate was 84 (nervous under examination), blood pressure 140/80, and the response to an exercise test was good. I gave the opinion that his murmur had no pathological significance, and advised him to ignore it and carry on his normal life—an opinion which was corroborated subsequently by Prof. Wardrop Griffith of Leeds.

I saw him again over a year later, on Nov. 16, 1921, when he was contemplating insuring his life. I found his condition unchanged, and advised him to propose for insurance. He did so, and was accepted with a premium loading of 10%.

Recently, 26 years later, I have had the opportunity of examining him again, on July 22, 1946. Now at the age of 56, he leads a life of normal activity for a man of his years and has no discomfort or distress with moderate exercise nor any symptoms attributable to the heart. The physical signs remain unchanged, no enlargement of the heart, no thrill, systolic murmur loud and rasping, as before, with the same curious terminal click. Pulse rate 96, B.P. 170/80 (heart under nervous excitation due to examination).

COMMENT

During the first world war many similar cases having an innocent systolic murmur were turned down as unfit for service, labelled V.D.H., and suffered a lifelong disability in consequence. In the recent war the insignificance of this murmur has been widely recognized by medical boards. Nevertheless from experience gained in service as medical specialist on pensions boards it would seem that not a few cases have slipped through the meshes of the net.

Hartogate WILFRID EDGEcombe, M.D., F.R.C.P., F.R.C.

Reviews

INHALATION THERAPY

Principles and Practices of Inhalational Therapy By Alvan L. Barach, M.D. (Pp 315, 59 illustrations 25s) Oxford Blackwell Scientific Publications

The author of this book has devoted his professional life to the study of oxygen therapy and allied topics, and he now gives a clear and practical account of these forms of treatment. The book begins with an interesting description of the historical background of inhalation therapy, which has developed in parallel with advances in chemical knowledge. Although the prophet Elisha may be regarded as the pioneer of inhalation therapy, efficient methods of administering oxygen were not developed and popularized until it became necessary to treat large numbers of men with pulmonary oedema caused by gas poisoning in the first world war. The demands of high flying in the second world war have meant a similar advance in oxygen therapy and it is a pity that so little of this is reflected in Dr Barach's book, presumably owing to secrecy regulations. Never was there an age in which men were more reluctant to turn swords into ploughshares.

It is common knowledge that the efficiency and comfort of oxygen masks have been greatly improved, and it has been suggested that the decompression chambers which were used for the training of Air Force pilots would be of great value in the treatment of asthma by pure oxygen at low pressure. Dr Barach proceeds to discuss the use of inhalation therapy in different morbid conditions, devoting most space of course to diseases of the heart and lungs. Like most of those who have actually worked with oxygen he is sceptical of some of the theoretical arguments which have been used against oxygen therapy, and in particular he believes that the frequency of arterial anoxaemia and tissue anoxia in heart disease has been underestimated. It is more troublesome to give oxygen than digitals, and it may well be that some of us have rationalized our desire to avoid trouble.

Barach's personal contributions have been particularly related to the use of helium and positive pressure. Helium is not likely to be a practical proposition in this country, but positive pressure devices can be very simply arranged and are of the greatest value in the treatment of asthma and pulmonary oedema. Positive pressure cuts down the venous return to the heart and has much the same effect as a venesection in heart failure. It seems likely that the expiratory grunt of pneumonia is Nature's way of trying to obtain a positive pressure. The last quarter of the book consists of descriptions of various types of apparatus and simple methods of analysis. Oxygen tents have been rendered much less fearsome by the introduction of transparent canopies for adults and open-top tents for children. Inhalation therapy in the narrow sense of inhalation of vapours of adrenaline and sulphonamides is also considered, but this section unfortunately appears to have been written before the introduction of penicillin and streptomycin.

This book has been written for the practising clinician, and there is nothing in it to repel those who have forgotten all their physics and have left physiology a closed book. Oxygen is the most urgent and least advertised element for the maintenance of life and our patients might get on better if we thought less about vitamins and more about oxygen. The book is well printed and illustrated and can be strongly recommended to all who are engaged in the treatment of acute illness or the provision of facilities for that purpose.

SIR JONATHAN HUTCHINSON

Jonathan Hutchinson: Life and Letters By Herbert Hutchinson (Pp 257, illustrated 12s 6d) London William Heinemann Medical Books Ltd 1946

This is the life history of a remarkable man, the like of whom it is improbable we shall see again. It is written from a sense of family piety by a nephew who is not a medical man but who among much that throws a charming light on his private life, gives full prominence to Hutchinson's unique position in the profession of his time. As Mr Johnston Abraham, who

knew him, says in a foreword, 'he was world-famous as a dermatologist and a syphilographer, an ophthalmologist and a pathologist, besides being a good general surgeon and an authority on neurology.' This seems enough for fame, but he was also an F.R.S., President of the Royal College of Surgeons, the recipient of many honorary degrees, author of countless papers in medical and other journals, author of several important books, was for a year Editor of the *British Medical Journal*, was the originator of the Pathological Museum which is a regular and popular feature of the Association's Annual Meeting, was for 23 years on the surgical staff of the London Hospital, and during part of that time on the staffs of the City of London Hospital for Diseases of the Chest, the Metropolitan, Blackfriars Skin and Moorfields. At one time or another he was president of every one of the leading medical societies of London, and seems to have lectured in almost all parts of the country on medical and other subjects. This formidable list by no means exhausts all his activities. He founded the New Sydenham Society, which over a period of years published translations of important Continental medical books. As a teacher he had a great reputation, as was testified by many, including Sir Frederick Treves. His work as a pioneer in postgraduate medical education deserves special mention. He was well in advance of his time, and the Polyclinic, well known for some years as a centre of advanced instruction, failed probably because it was attached to no hospital. As a clinician he was supreme. Osler said that no individual in this country has made so many useful observations upon so many diseases. Hutchinson is a standing proof that hard work is no obstacle to the attainment of a ripe old age. When he died within a month of his 85th birthday, though he had retired from practice for some years, he was still active with one of the main interests of the latter half of his life, namely, a new kind of museum, an educational museum into which he had put an immense amount of work and from which he obviously got great pleasure. He built and founded two of them, one at Haslemere, his country residence, and one at Selby, his birth place. A great authority on the subject wrote that Haslemere was 'the one effective educational museum in this country.' It is good to know that this incredibly hard worker had a very happy family life. He was one of a large Quaker family and had ten children of his own. This book deserves a warm welcome from our profession and from all who like to read of life well spent.

DIFFICULT LABOUR

The Management of Obstetric Difficulties By Paul Titus, M.D. Third edition (Pp 1,000, 426 illustrations, 8 coloured plates 50s) London Henry Kimpton

There is more in this excellent book than meets the eye. Its title is perhaps a little misleading, for as the reader soon discovers, the author is so enthusiastic about his subject that he includes much more than one would expect to find under the heading of obstetric difficulties. There are, for example, sections dealing with sterility, its investigation and treatment, the diagnosis of pregnancy, ante- and post-partum care, general systemic diseases complicating pregnancy and the puerperium, and a section dealing with the newborn infant which discusses among other things such subjects as the indications for craniotomy and the relationship of erythroblastosis to icterus neonatorum. Those sections dealing with dystocia, haemorrhage, puerperal complications, and obstetric operations are familiar to readers acquainted with the two previous editions of the book. They have been revised in the light of new discoveries such as penicillin and the Rh factor, and modified in accordance with an added experience of x-ray pelvimetry, caesarean anaesthesia, and various operative techniques such as extraperitoneal Caesarean section.

It is refreshing to find that in a work such as this the emphasis is still placed on clinical judgment even while the accessories to diagnosis are carefully recorded and assessed. Readers on this side of the Atlantic will be surprised at the pessimism which leads to the adoption of such radical surgical measures as Porro hysterectomy and extraperitoneal Caesarean technique for the potentially and actively infected cases. The segment technique has given such excellent results in these cases that few operators in this country would resort to more radical surgery. The same readers will be surprised to learn that chi-

nephritis is a common complication of pregnancy and will be critical of the statement that 26% of the cases of toxæmia at Johns Hopkins Hospital are found to be suffering from this disease. In discussing the oblique and transverse lie of the foetus the author emphasizes that this is usually a sign of disproportion between the foetus and pelvis yet rather surprisingly fails to warn of the possibility of placenta prævia.

This edition, in spite of paper restrictions is beautifully produced and lavishly illustrated.

PSYCHOTHERAPY IN GENERAL PRACTICE

Psychotherapy in General Medicine Reports of an Experimental Postgraduate Course. By Geddes Smith (Pp 38. Single copies 25 cents.) New York: The Commonwealth Fund, 41 East 57th Street. 1946. (London: Geoffrey Cumberlege, 2s.)

This booklet describes a fortnight's postgraduate course for general practitioners given in the University of Minnesota. The objects of the course were (1) To give the doctor a feeling of the dynamic qualities and the value of the doctor-patient relationship (2) to introduce him to the broad patterns of human motivation and to the common causes and backgrounds of emotional disturbance (3) to lead him to think in terms of the relation between emotional disturbance and illness (4) to teach him easily understandable methods of therapy so that he can treat a number of such patients (5) to give him some knowledge of more malignant conditions so that he may refer them to specialists. The first three of these objectives were attained adequately. The fourth could not of course be reached in a fortnight but it was thought that growing experience would gradually increase the doctor's ability to carry treatment further. The fifth was at least sufficiently achieved to ensure that the doctors would not commit serious errors.

Great keenness for and appreciation of the course was expressed and the instructors were encouraged by discovering that men in general practice could learn so much and so readily about ways of helping psychoneurotic patients. Inspired by this precedent it is hoped that much more will be done along these lines in this country.

OUTLINE OF SKIN DISEASES

Aids to Dermatology By R M B MacKenna M.D., F.R.C.P. Third edition (Pp 310 6s.) London: Baillière Tindall and Cox. 1946.

This useful little volume has changed a good deal since the last edition. It has lost the section on venereal disease which has now been segregated into a separate volume in the Students Aids Series written by T E Osmond. The dermatological part has undergone some revision and expansion and one or two points to which we took exception in the last edition have now been amended. But the book remains a handy size easily slipped into the pocket and not taking much room in the baggage of any practitioner who may be ordered off to one of the far-flung outposts of Empire. He will continue to find it informative and practical.

As a brigadier in the R.A.M.C. the author gained wide knowledge of the practical problems of dermatological therapeutics on a large scale during the recent war and it is no doubt greatly due to him that for the first time in military history the importance of skin disease was adequately recognized as a cause of disability in an army in the field apart from the rôle of cutaneous parasites in conveying serious and often fatal disease. In this little book he has been able to make some of the results of his experiences available to a wider public, and it is therefore additionally valuable. The chapter on diseases due to animal parasites which includes scabies and pediculosis, is particularly good. Unlike most books on dermatology there are very few illustrations—only about six figures—diagrams of the more important parasites. But this deficiency is easily understood for it would be quite impossible to illustrate it fully without destroying its handiness and (another factor of some importance) materially increasing the moderate price at which it is sold.

Jones A Finds the Body by HUGH McEVON (John Gifford 8s. 6d.) is a brisk story of murder in a military hospital during the war. The author is a doctor and as one might expect the book is happy free from both the scientific blunders and the sadistic grunting that have of recent years so often disfigured such works.

BOOKS RECEIVED

[Review is not precluded by notice here of books recently received]

Essai de Mesure des Phénomènes Electriques Accompagnant la Pensée Emotive et l'Influence By N T Loressios and M Marchal (Pp 94 100 francs.) Paris: Librairie Maloine. 1946.

A study in electroencephalography from the point of view of relating particular wave patterns to the individuals from whom they were obtained.

Trabajos del Hospital del Rey Volume V. By Prof A M V de Simon et al (Pp 648 No price.) Madrid. 1946.

A collection of papers by various authors on a variety of medical and surgical conditions. In Spanish.

La Penicilina en Cirugía Maxilo-Facial By C M Squirru, M B Galea and H D Bianchi (Pp 158 No price.) Buenos Aires: Alfa. 1946.

Contains a general account of penicillin as well as a detailed description of its use in maxillo-facial surgery. Illustrated. In Spanish.

A Tiroide By H de Lacerda (Pp 151 No price.) São Paulo. 1946.

A monograph on the thyroid gland and its physio-pathology and disorders. Many illustrations. In Portuguese.

Cardiopatologia By A M Michelazzi (Pp 469 No price.) Turin: Rosenberg and Sellier. 1946.

A comprehensive account of the cardiovascular system in health and disease designed for medical practitioners and students. Includes diagrams, skiagrams, and electrocardiograms. In Italian.

Le Onde Ultra Corte Attraverso l'Encefalo By G C Giorgi (Pp 40 No price.) Turin: Minerva Medica S.A. 1946.

A monograph on the effects of ultra short waves on the brain with experimental evidence and a description of the apparatus used.

Minor Surgery By Cecil Fleming O.B.E., M.Ch. F.R.C.S. Twenty third edition (Pp 406 14s.) London: J and A Churchill. 1946.

The new edition of this well-known textbook has been considerably revised, particularly the sections on the treatment of wounds and fractures. Intended for house-surgeons, dressers, and junior practitioners.

Music in Medicine By Sidney Licht M.D. (Pp 132 \$3.) Boston: New England Conservatory of Music. 1946.

Treats of music as occupational therapy, background music, meal time music, psychiatry and music with detailed instructions for providing music as therapy and entertainment.

Klinische Elektrokardiographie By Max Holzmänn (Pp 624 50 Swiss francs.) Zurich: Fretz and Wasmuth. 1946.

A profusely illustrated work on electrocardiography.

Vitamine, Hormone, Fermente By R Abderhalden (Pp 250 14.50 Swiss francs.) Basle: Benno Schwabe. 1946.

A summarized account of the chemistry, physiology, therapeutic uses and available preparations of the vitamins, hormones and body ferments.

Ernährungsprobleme in Mangelzeiten By Prof A Fleisch (Pp 518 32 Swiss francs.) Basle: Benno Schwabe. 1947.

Problems of diet in time of famine with particular reference to the war years.

Dynamische Reaktionspathologie By Prof K von Neergaard (Pp 317 24 Swiss francs.) Basle: Benno Schwabe. 1946.

Develops a new biological approach to medicine.

Entstehung und Früherfassung des Portiokarzinoms By H Wespi (Pp 183 18 Swiss francs.) Basle: Benno Schwabe. 1946.

The origin and early diagnosis of carcinoma of the cervix uteri. Many photomicrographs.

Die Scheuermansche Krankheit By J E W Brocher (Pp 91 11 Swiss francs.) Basle: Benno Schwabe. 1946.

A monograph on Scheuerman's disease or adolescent kyphosis due to vertebral osteochondritis.

Psychoses et Nerroses By Prof H Baruk (Pp 136 No price.) Paris: Presses Universitaires de France. 1946.

An introduction to the fundamentals of psychiatry as the basis of therapeutic principles.

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ENDOCRINES IN GYNAECOLOGY

Gynaecological endocrinology will be thirty years old this year. The beginning of this relatively young branch of medical science dates from Stockard and Papanicolaou's discovery in 1917 of the effect of the follicular liquor in producing oestrous changes in the vaginal mucosa. Thirty years is a short span in the life of any branch of medicine, and particularly that concerned with one of the most complex systems in the body, a system which is constantly changing and is susceptible to so many external and internal influences. It is long enough, however, for a sober appraisal of what has been accomplished and of what remains to be discovered.

No one is more competent to give such an appraisal than Mr Aleck Bourne. Elsewhere in this issue (p 79) readers will find his summing-up of the present position. It is not likely to encourage over-enthusiasm for endocrine treatment in gynaecology. The difficulties of such treatment are wisely emphasized. They depend on a variety of factors. Individual species' differences in the reaction to hormones even in species that are closely allied, have led to many errors and misconceptions when experiments carried out on animals have been interpreted in terms of human endocrinology. Not only are the conditions of the laboratory entirely different from those of clinical medicine, but each individual animal species, including man, appears to be unique in its endocrine make-up and thus in its reaction to hormones artificially administered. Adequate dosage is another problem and one which for the present has been solved only with regard to oestrogens. Other difficulties arise because the endocrine system is subject to continual rhythmic changes. Finally, the effect of the emotions further complicates changes in a system already subject to nervous and chemical influences, so that the effect of any known stimulus, emotional, nervous, or chemical, in the present state of knowledge is usually incalculable.

Bourne has introduced a new idea of great importance—that of endocrine receptors. So far the emphasis has been mainly on the stimulating agent—that is, on the hormone rather than on the organ receiving the stimulus. It seems strange that an idea so obvious should not have received closer attention in the great mass of work that has poured out in books and journals of all kinds in the last two decades. It appears that no one has ever inquired seriously into the reason why one organ or part of an organ, as for example the uterine endometrium, will react strongly to a hormonal stimulus that has little effect on other organs. But the matter is even more difficult because, continuing with the same example, the endometrium will react to progesterone only after it has been primed with oestrogen. Bourne's remarkable example of a case in which the vaginal mucosa

reacted normally to oestrogen whereas not the slightest evidence of reaction could be demonstrated in the uterus leads immediately to the conclusion that the uterus lacked something which was essential to its response. This conception of receptors within organs susceptible to hormonal influences though inevitable is a little disquieting. It reveals only too plainly the depths of our ignorance in a field where progress has often seemed so promising.

It is a relatively simple matter to summarize what is at present known about the hormones of the ovary and the anterior pituitary and their relations to the menstrual cycle and to pregnancy. Excellent descriptions with diagrammatic illustrations appear in textbooks of anatomy, physiology, endocrinology, and gynaecology. What is usually insufficiently emphasized is the delicate balance of the endocrine system as a whole and the dependence of one organ of internal secretion on another, or on all the others. Perhaps it is the anatomical remoteness of one gland from another, as of the pituitary from the ovary, that has led to this lack of appreciation of an all-important fact—that the endocrine system must be considered as being as closely integrated as, for example, the central nervous system.

The difficulties of the application of our as yet scanty knowledge are not overlooked by Bourne. Indeed he makes the comment that in face of all the difficulties success with hormone treatment should be deemed more remarkable than failure. In setting out the practical therapeutic value of sex hormones he comes to the conclusion that certain success can be forecast only in the suppression of lactation by oestrogens. Cure or relief is also to be expected in kraurosis vulvae and senile vaginitis, both probably a part of the same process of genital atrophy that occurs at or after the menopause. The value of endocrines in many other conditions for which they have so often been used in the past is rightly doubted. Uterine hypoplasia, often with primary or secondary amenorrhoea, can never be permanently cured by sex hormones. Artificial menstruation can be established by suitable dosage with oestrogens and progesterone, or sometimes with oestrogens alone, but if the trouble is of an organic nature permanent cure is impossible. Fortunately, in many cases amenorrhoea is a temporary affair due perhaps to an environmental change or to emotional disturbance, and regular menstruation returns often without or in spite of treatment.

In metropathia haemorrhagica the logical treatment is to give progesterone or testosterone, but often very large doses are needed and relapse occurs when treatment is stopped. In functional conditions such as spasmodic dysmenorrhoea, puberty menorrhagia, and menopausal disturbances the effect of treatment is variable and uncertain, probably partly on account of the large emotional element in many cases and partly because of our imperfect understanding of the nature of the disturbance. In many of these conditions, however, the judicious use of the correct hormone in the right dose may lead to improvement. Much has been written in recent years about habitual abortion, and doubt has been cast on the value of progesterone in these cases. Bourne favours treatment with progesterone, though he questions the value of injections on account of the inevitable fluctuation of the hormone level

when it is given by this means. He favours implantation of a crushed pellet of progesterone beneath the rectus muscle sheath, though he admits that his evidence in favour of this method of treatment is as yet inadequate.

This admirable summary of the present status of clinical endocrinology in gynaecology ends with suggestions for the future. The first essential is sound clinical research, and this raises the problem of how such research is to be accomplished. It must clearly go hand-in-hand with developments from animal experiments and from work on the biochemistry of sex hormones, including both the further study of known hormones and the exploration of possibilities of new synthetic substitutes for those naturally occurring. The discovery of the synthetic oestrogens, stilboestrol, hexoestrol, and dienoestrol, has been of great value in making it possible to reproduce the effect of naturally occurring hormones cheaply and easily, though in some ways it constitutes a real risk when these substances are prescribed by those not sufficiently conversant with their dangers and limitations, particularly, as is often the case, after inadequate investigation.

What, then, is needed for the future? Surely clinical research of the type envisaged is quite beyond the scope of the average gynaecological clinic, where cases needing endocrinological investigation and treatment are seen together with sterility cases and such purely surgical problems as prolapse and tumours of the pelvic organs. Investigation and treatment of disorders of the endocrines can be satisfactorily carried out only in large units equipped for all the elaborate investigations needed: biological and chemical hormone assays, histological examination of biopsy specimens, estimations of the basal metabolic rate, to mention only a few. A further advantage of the large unit is that it offers the opportunity, so often lacking in the past, of studying and treating a reasonably large series of cases of any one condition, with adequate controls. The work of the practical gynaecologist is often limited by the lack of facilities and by the pressure of more urgent surgical cases.

It may be argued that this will tend to lead to further specialization in gynaecology, a subject already highly specialized, but it is difficult to see how progress can be made from our present state of knowledge except along such lines. This is not to say that the work of the last thirty years has been wasted but rather that much of it has been misdirected, often through a misunderstanding of the magnitude of the problem. All the work so admirably summarized by Bourne must be regarded as a preliminary survey which has opened up great possibilities.

CANCER RESEARCH INTENSIFIED

The British Empire Cancer Campaign, at its annual meeting recently, rejoiced in a record income and in its ability to allocate £90,000 to various centres for cancer research in the year 1947. This is half as much again as the last allocation and a figure never before approached in the history of the Campaign, which now goes back for nearly a quarter of a century. To minds still bemused by wartime millions it may seem a modest sum for an attack on one

of the chief scourges of mankind, especially when it is apportioned among some twenty research centres. The chief value of the British Empire Cancer Campaign, however, is not that of a money-raising flag-day organization, appealing to the sympathies and apprehensiveness of the public; it is that of a central office for the distribution of resources according to a scientific assessment of claims and promises of performance. It works neither in a haphazard nor in a stereotyped way, and exercises the qualities of good generalship in sending reinforcements to the various theatres where the engagement seems closest and additional help most likely to make a breach in the enemy's line. The work done in the various laboratories, physics departments, clinics, operation theatres, and hospital wards is correlated and the workers are organized into a team. Through its Scientific Advisory Committee, of which Lord Horder is chairman, and to which the Royal Society and the Medical Research Council contribute half the membership, the whole field of cancer research—biochemical, biological, physical—is surveyed.

The rise of nuclear physics, the possibilities of which are foreseen only vaguely, dominates the picture presented in the Twenty-third Annual Report. Just before the war there was much discussion about the provision in this country of a cyclotron for the production of neutron beams for biological research. Later developments suggested something more ambitious, a national radiological institute for the investigation of the biological effects and therapeutic value of radiation. Towards the end of 1945 the Campaign called a conference at which the Royal Society, the Ministry of Health, and other bodies were represented. It had no sooner assembled than the announcement was made that the Government had set up a research committee on nuclear physics, and that three of its subcommittees were to deal with protection, tracer elements, and clinical aspects. The programme was therefore left in the hands of the Government, and, it is understood, is being actively pursued. Meanwhile some interesting work on tracers is being carried out at the cancer research department of St Bartholomew's Hospital and the department of pathology of St Thomas's Hospital. They have been experimenting respectively with radioactive sulphur and radioactive phosphorus for the study, in the one case, of the mode of action of anti-carcinogenic substances and in the other, of the mechanism of mitosis in transplantable rat sarcoma. Tracers allow a particular element to be traced through a long series of metabolic changes in the animal, and reveal the dynamic conditions prevailing within any type of cell or tissue. For instance, it is hoped to trace the dissemination of metastases from the Sheffield transplantable rat sarcoma (RD/3) by administering radioactive phosphorus (P^{32}) to the tumour-bearing animal so that it may become incorporated in the phosphorus-containing compounds of the tumour cells. Suspensions of these cells are then injected intracardially into rats, whose organs are later tested for radioactivity. Light may thus be thrown on why these tumours usually develop in certain organs such as the adrenals, liver, lungs and lymph glands, and leave others—e.g., brain, kidneys and spleen—unaffected. It is possible that radioactive stable isotopes may presently be suitable for the actual

treatment of cancer Work is also proceeding at many centres—the Mount Vernon, the Royal Cancer, and the Middlesex hospitals, and especially the Strangeways Research Laboratory at Cambridge—with the object of clarifying the factors which determine the response of cells to radiation and of making a more precise correlation between the response of normal or malignant tissue and the changes sustained by the cell components

The virus hypothesis of the aetiology of cancer has been vigorously pursued during the last few years by many workers, not in this country alone Following upon a report by Prof W E Gye on his visit to centres of virus research in the United States and Canada, a co-ordinated scheme for an intensification of research along these lines has been worked out by the Scientific Advisory Committee, and the Grand Council has been asked to allocate £25 000 to cover the cost of these investigations during the next two years Reports of work on viruses come from many centres, notably the Middlesex Hospital laboratories, where a new strain of Shope papilloma virus with promising properties has been obtained Another continuing piece of research is on chemical carcinogenesis, far too big a subject to be comprehended in one annual report The defect of annual reports is that some completed story, or at least some effective 'curtain,' is not attainable, for a subject like cancer research goes on from year to year One discovery which bids fair to throw more light on the history and behaviour of malignant growth is reported from the Chester Beatty Institute of the Royal Cancer Hospital under Prof E L Kennaway, who at the recent annual meeting of the campaign received the Garton prize and medal for his work in this field It has been ascertained that various aminostilbenes are an important class of carcinogenic agents, tumours being produced by them not only locally but at a distance as well From the same institute and also from the Middlesex Hospital laboratories and the Christie Hospital, Manchester, come accounts of work on urethanes (carbamic esters), again on experimental animal tumours Clinical trials of urethane were carried out in advanced and inoperable cancer in man, but they were mainly negative Nevertheless it follows from this work that while urethane, a mitotic poison, has little or no useful effect on malignant disease as a whole, it does bring about alterations in leukaemia similar to those obtained with x rays

Each year the report of the Campaign includes an analysis of cancer cases collected from London hospitals In 1946 nearly 1,500 cases of cancer of the rectum and anus were analysed Follow-up statistics in cancer are of great value, but they are open to many fallacies However, the committee in charge of the clinical investigation has had the criticism and help of Dr Percy Stocks, medical statistician to the General Register Office One feature brought out in this work is the influence of the hereditary factor in rectal cancer It is not conspicuous, though the figures are suggestive and seem to support the view that there is a hereditary factor relating cancer to a particular organ The most useful feature of these analyses concerns the effect of delay in treatment In 16 or 17% of these patients the symptoms were of more than six months standing when they first consulted a doctor

in 20% a rectal examination was not made until more than a month after the first consultation In more than half of those treated radically the disease was of more than six months' standing Radical operation was possible in only 32% of all cases, and of those only one-third were still in the early stages The five-year survival rate for all radical operations was 30%, and when estimated by actuarial methods the five-year expectation of life varied from 74 to 84% of the normal for early cases, down to 33% for the more advanced Some statistics are given from the Marie Curie Hospital concerning cancer of the body of the uterus a variety which has been considered rather resistant to radiation treatment, but, leaving out the cases in an advanced stage of the disease, the five-year survival rate at Marie Curie for the cases subjected to radiation is said to compare very favourably with that of surgery Another statistical report is from Leeds, concerning 300 cases of small skin cancers treated under carefully controlled dosage by single applications of superficial x-ray therapy The analysis showed disappearance of the lesions within two months of treatment, and only one case developed a small radionecrosis, which healed later This efficacy of the single application technique is difficult to reconcile with the present conceptions of radiobiology The Christie Hospital using a single exposure technique, states that it seems to produce an unusual incidence of late x-ray effects

The report of the Campaign, which again owes much to Mr J P Lockhart-Mummery's editorship, shows how slow, laborious, and intricate, how often contradictory, and how seldom attended by any spectacular or even conclusive results the work on cancer must be It is to be hoped that nobody will suppose that cancer research will now become solely a State responsibility Government encouragement is very welcome, but the initiative of the guerrilla soldier, the untrammelled pioneer, the free researcher, has been of no small advantage in this complicated strategy

INFLUENZA VACCINE

Since the discovery of influenza virus A by Andrewes, Smith, and Laidlaw in 1933 numerous attempts have been made to immunize human subjects by subcutaneous or intramuscular injection, or by intranasal insufflation of vaccines prepared from suspensions of infected murine lungs, chick embryos, or chick embryo tissue cultures These various preparations, in the active or inactive state, gave variable results in the hands of different investigators probably because of difference in antigenic potency, methods of inactivation, and other technical factors In 1941^{1 2 3} it was found that the allantoic fluid of infected chick embryos often had a high virus content Further improvements in technique resulted in the regular production of high-titre fluid, and this source of virus has been used almost exclusively of late for the production of vaccines The virus in the allantoic fluid has been concentrated by adsorption on to precipitates found in the fluid on the addition of protamine, alum, or calcium phosphate, by freezing and thawing, by adsorption on to and elution from fowl red blood corpuscles and by sedimentation of the virus by high-speed centrifugation

¹ Burnet F M *Austral J exp Biol med Sci* 1941 19 291

² Henle W and Chambers L A *Proc Soc exp Biol NY* 1941 46 713

³ Nigg C Wilson D E and Crowley J H *Amer J Hyg* 1941 34 Sect B 138

Commission on Influenza *J Amer med Ass* 1944 124 982

A large-scale trial in the U.S.A. in 1943, of vaccine containing formalized influenza viruses A and B concentrated by adsorption on to and elution from fowl red blood cells indicated that suitable vaccines injected several weeks previous to or during the first few days of an epidemic might reduce the attack rate to one-fourth of that in control groups. In one centre, where the inoculations were carried out six to eight weeks before the onset of the epidemic, the vaccine was of little value. The effect of vaccine will depend on the antibody level of the serum of the individual and the amount of antigen injected. There is an optimum titre or threshold level of antibody in the serum (as measured by the chicken red-cell agglutination test), above which one may say the individual is probably immune, and below potentially susceptible. Henle and his colleagues found this titre to be 1:128. Henle noted that those with the lowest pre-vaccination level (1:16) showed also the lowest titre after vaccination. With increasingly higher pre-vaccination titres, the post-vaccination levels became markedly higher and the number of units of antibody formed likewise increased up to a certain maximum. Above this maximum there is usually no increase after vaccination.

Multiple injections of vaccine at weekly intervals do not improve the results obtained by a single administration, although several times as much vaccine may be used. Inhalation of vaccine in addition to a single intramuscular injection was without measurable effect, so far as serum antibody was concerned, in Henle's group.¹ The antibody response definitely improved, however, with increase in the dose of antigen although there was no difference between the antibody levels after six months in those who had received 1 ml. of protamine-concentrated virus vaccine and those who had received 3 ml. of allantoic fluid. The protection in either case would be sufficient for only one winter so far as influenza A is concerned. Henle has recently tested the possibility of improving immunization by addition to the vaccine of substances which would allow prolongation of the antigenic stimulus—a method which has been used by Freund with various bacterial antigens and by Friedewald² in the vaccination of experimental animals against influenza. The vaccine consisted of an emulsion of centrifugally concentrated virus in 'Falba' (a proprietary adsorption base said to be a mixture of beeswax, paraffin oils and oxysterols extracted from lanolin) and mineral oil in a ratio of 1:1:4. The dose was 0.3 ml. which contained 0.4 mg. of protein and was injected subcutaneously. There were no obvious reactions among the 80 recipients. Palpable nodules appeared in the subcutaneous tissues at the site of inoculation and persisted for 6 to 18 months. In two instances abscesses formed at the end of the second month. The immunization effect of the vaccine seemed to have been considerably enhanced especially against influenza B. Practically all subjects passed the threshold antibody level within two weeks and the titres remained high for at least 12 to 18 months. Such a vaccine may afford protection for at least two winters. An interesting point was that the antibody titres rose in spite of high antibody levels in the blood stream. It is suggested either that the antigen from the oil emulsion is protected against the antibodies or that cells involved in some phase of antibody production form part of the cellular response around the inoculum and therefore the antigen may not get into contact with the circulating antibody. Though this type of vaccine is not yet ready for general use in man it holds promise of providing in the future a more useful weapon than the vaccine now available for combating influenza epidemics.

¹ *J. Immunol.* 1946, 53, 75.² *ibid.* 1944, 48, 325.³ *J. exp. Med.* 1946, 80, 77.

MUSCLE LESIONS IN RHEUMATOID ARTHRITIS

It has long been recognized that the clinical characters of rheumatoid arthritis point to its being a general disease not confined to the joints, and Kent Spender described these features in considerable detail. Among other points he called attention to the fact that muscular atrophy is often an early symptom and may be in advance of, and out of all proportion to, any mischief in the nearest joints. Many authorities regarded this as evidence that the disease had its origin in the central nervous system, but no substantial evidence has been forthcoming to support this view.

Recently, pathological investigation has revealed local lesions in the peripheral nerves (Curtis and Pollard¹, Freund *et al.*²) and this has been followed by the demonstration of similar changes in the muscles themselves. Steiner, Freund, Liechentritt, and Maun³ examined portions of muscle tissue obtained by biopsy in 9 cases of rheumatoid arthritis and compared them with specimens from 196 controls; they found a condition in the cases of arthritis alone to which they have given the name 'nodular polymyositis'. The nodules were widely scattered throughout the muscular system without any relation to the joints, and consisted of inflammatory granulomatous tissue differing from the nodules found in other diseases of muscle. While the nodules were sometimes present without degeneration of the muscle fibres, early muscle-fibre degeneration was always combined with inflammatory lesions in the endomysium of the same fibres, and even in cases clinically 'burnt out' so far as the joints were concerned there was evidence of this inflammatory process being active in the muscles. The nodules were of the same type as those associated with the nerves and similar to the lesions in synovia and the subcutaneous nodules and entirely different from the nodules of fibrositis. The neuromuscular spindles were never involved, and the muscle lesions did not appear to be associated with the perineuritic lesions of the same character; the walls of adjacent arteries were invaded in a few instances.

Gibson, Kersley, and Desmarais⁴ have confirmed these findings and divide the lesions into two types differing in histological make-up and relation to the blood vessels; both descriptions are well illustrated. In one of their cases eosinophils were found in profusion, and it is suggested that this supports the theory of the aetiology of rheumatism involving anaphylactic hypersensitivity. Their controls, which included some cases of ankylosing spondylitis, were also negative, and a piece of muscle from a case of acute fibrositis showed no inflammatory cell reaction, though, as in the arthritis cases, the muscle fibres exhibited staining deficiency, loss of striation, and an increase in muscle nuclei. These authors suggest that the possibility that the arthritis may be secondary to the involvement of the soft tissues calls for further study. Both investigations furnish an important contribution to our knowledge of the pathology of rheumatoid arthritis.

COMMON COLD RESEARCH UNIT

The Common Cold Research Unit, set up by the Ministry of Health and the Medical Research Council, began work in May 1946 at the Harvard Hospital near Salisbury, on the most comprehensive investigation into the common cold yet undertaken in Britain. Volunteers have so far

¹ *Ann. intern. Med.*, 1940, 13, 2265.² *Amer. J. Path.* 1942, 18, 865.³ *ibid.*, 1946, 22, 103.⁴ *Ann. rheum. Dis.* 1946, 5, 131.

been largely drawn from among university students, but they have also included a number of industrial workers and V A D nurses. Volunteers spend ten days with the unit, and by the end of the year 129 had taken part. Many more volunteers are now required, particularly for the periods of mid-January to mid-March, mid-April to mid-June, and mid-October to mid-December. The aim, therefore, is to try to establish a national panel of volunteers. It is stressed that normal individuals of either sex between the ages of 18 and 40 are required. Cases of tuberculosis, chronic catarrh, asthma, hay fever, or sinusitis are obviously not suitable.

Those who are willing to enrol on this national panel and put their services at the disposal of the unit are asked to apply to the Medical Officer, Harvard Hospital, Coombe Road, Salisbury. They will then receive a special application form, full details of the investigation, and dates of forthcoming trials. Trials during the first half of this year for which volunteers are urgently wanted are Jan 29-Feb 8, Feb 12-Feb 22, Feb 26-Mar 8, Mar 12-22, Apr 23-May 3, and May 28-June 7. As volunteers live in pairs during the ten days they spend with the unit, applicants are advised to arrange, so far as possible, to enrol with a friend of the same sex so that both can remain together. Married couples can be accepted. Individual applicants can be accepted if there happens to be spare accommodation, or if they are prepared to share a hut with a partner of the same sex.

The present series of tests, under the general supervision of Dr C H Andrewes, of the National Institute of Medical Research, involves only the intranasal instillation of filtered nasal washings and other material believed to contain the cold virus on which work is proceeding at Hampstead.

PITFALLS OF ADOPTION LAW

Doctors, matrons of nursing homes, and midwives are often asked to help to get a child adopted, either because it is illegitimate or because the family are too poor to be able to keep it. They naturally desire to be as discreet as possible in order to preserve the patient's confidence, and are sometimes able to make private arrangements. It is not generally known that to do so is an offence against the law. In fact, this *Journal* once unwittingly overstepped the boundary by publishing an offer, sent us by a general practitioner, to adopt a child conforming to a given description. The President of the Medical Defence Union, Dr James Fenton, explained the position in a letter to the *Journal*, published on Aug 5, 1944 (p 194). He narrated that a member of the Union had attended a patient on the birth of her illegitimate child and had also attended a married woman who had been disappointed by the birth of a still-born child. The doctor brought the two women together with a view to the adoption of the child by the married woman. The welfare authority of his district pointed out that he was in breach of the Adoption of Children (Regulation) Act, 1939, which provides that, if arrangements are being made for a child under 9 years of age to be placed in the care and possession of a person who is not the child's parent or guardian or near relation, any third party participating in such arrangement must give seven days' notice to the welfare authority before the child is transferred. The Union was able to avert a prosecution of which the consequences might have been serious, for section 7, providing that any individual making arrangements for the adoption of a child under 16 must give notice in writing to the welfare authority, imposes a penalty of six months' imprisonment, a fine of £50, or both. The Act also forbids any body of persons which is not a registered adoption society or a local authority to make or cause to be made any

arrangements for the adoption of a child, on pain of a fine up to £200. This was the offence which the B M A would have been held to have committed if the offer of adoption published in the *Journal* had led to an agreement. It is also illegal to make arrangements for children who are British subjects to go abroad with a view to adoption. The General Secretary of the Church of England Moral Welfare Council, to whom we are indebted for the substance of these notes, points out that these prohibitions are imposed in the interests of children and suggests that doctors would be well advised to refer patients who wish to have children adopted to one of the registered adoption societies. These bodies make careful and confidential inquiries on behalf of all concerned and must supervise the welfare of the child until the adoption is legalized.

WESTMORELAND LODGE

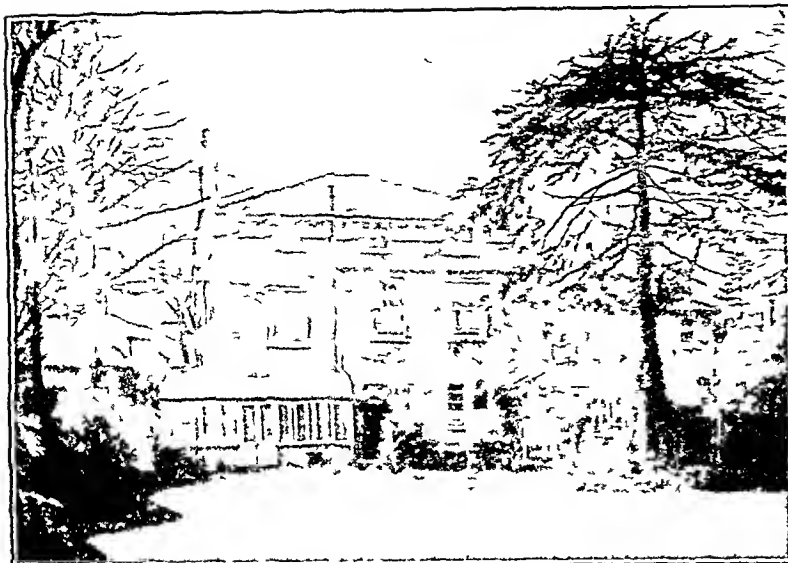
Elsewhere in this issue (p 101) there appears an account of the new venture to which the Royal Medical Benevolent Fund stands committed. Westmoreland Lodge is to be a residence for some of the Fund's beneficiaries, and it will probably be ready for occupation by the early summer. Though until recently the project was known to but a few besides the Committee of Management of the Fund, it has been in contemplation for some time and has been approved by, for instance, the Charities Committee of the British Medical Association. The enterprise itself is evidence of an up-to-date outlook on the part of the Fund's executive, and this gives reasonable grounds for belief that any problems of administration which may arise will be solved. The profession at large may be safely assumed to be in cordial sympathy with this new development. A London surgeon said quite recently, on hearing of the scheme, that previously he had always had to take on trust the efficiency of the management of the Benevolent Fund, and now he was glad to find that his confidence was not misplaced. Dr Arthur Holdsworth Davis has created for himself an enduring monument. There may be other medical testators able to follow his example.

DELAYED PUBLICATION OF QUARTERLY JOURNALS

We much regret that there has been a delay in the publication of recent issues of the following quarterly journals published by the British Medical Association: *Archives of Disease in Childhood*, *Journal of Neurology, Neurosurgery and Psychiatry*, *British Journal of Industrial Medicine*, *Annals of the Rheumatic Diseases*, *British Heart Journal*.

This delay has been due to no fault of the editors of these journals, but to exceptional difficulties experienced by the printer. At no time since September, 1939, have there been so many obstacles in the path of a publisher. One of the chief causes in the delay of the publication of the above journals has been the inability of the paper mills to supply to the printer the paper on which they are printed. Every possible step is being taken to remedy the unfortunate situation that has arisen, and we can do no more than apologize to editors, authors, and subscribers for the most regrettable delay that has occurred from circumstances over which we have no control.

A special meeting of the Council of the British Medical Association was held on Wednesday, Jan 15. This meeting was called to receive the final plebiscite results, which appeared in the *Journal* of Jan 11 at p 64, to discuss correspondence between the Presidents of the three Royal Colleges and the Minister of Health on the National Health Service Act (p 66), and to consider the present position.



WESTMORELAND LODGE

BY

HENRY ROBINSON, M.D., D.L.

Chairman of the House Subcommittee

A few years ago the Committee of Management of the Royal Medical Benevolent Fund discussed a new project—a proposal to start a home for some of their beneficiaries especially for widows left alone and in distressed circumstances. For reasons valid at that time the idea could not be taken further until the late Dr. Arthur Holdsworth Davis bequeathed his own house with a substantial endowment fund to be utilized for precisely such a project. The Fund accepted the trust only to discover that Dr. Davis's wish was quite frustrated by the conditions set forth in the title deeds of his house whereby any such use of it was entirely prohibited. The house was thereupon sold for the Fund felt that the nearest attainment of his wishes open to them was to use the income of the whole legacy in grants for residential treatment in nursing homes, privates or convalescent homes for such of their beneficiaries as needed relief of that sort.

The progress of the war brought about so much greater a need for accommodation of the kind envisaged by Dr. Davis that three or four years ago the Fund set up a small subcommittee to explore the possibilities afresh. This resulted in a report accepted and endorsed by the Committee of Management of the Fund, that the establishment of a home was both practicable and highly desirable but that it would be wise to await the conclusion of the war before any active steps were taken to implement the policy. Eighteen months ago therefore the subcommittee set to work to find suitable premises conforming to several specifications suggested in their original report. Many houses both in London and elsewhere were inspected—work in which several members of the Ladies Guild gave most valuable help. After rejecting a great many properties the subcommittee decided to advise the purchase of Westmoreland Lodge, 27 Inner Park Road, Wimbledon Common, London S.W., as coming much closer to the ideals proposed in their report than any other which had been viewed. The Fund acted on this advice and purchased the freehold possession was obtained on Nov. 1, 1946. Architects had already been consulted as to the alterations that would be necessary; their report was presented by mid-November and approved with one or two minor amendments. It should be added that before the purchase was concluded permission had already been obtained from both the L.C.C. and the Borough Council for the intended new use of the premises. Assuming that the consent of the Borough Council to the alterations is given it is hoped that the opening of the house may take place in the early summer of 1947 at latest.

Westmoreland Lodge is a well built detached non-basement, mid-Victorian house in a very quiet almost semi-rural part of

Wimbledon but only about 300 yards from a bus stop on the Wimbledon-Putney route and therefore within easy reach of both centres for shopping and recreational facilities. It has a long but not very wide garden in fact the strip of land on which it stands is 140 yards in depth. The rooms are large—some of them so large that they can be subdivided into two—and the plans provide for the accommodation of twelve or more residents as well as for the Warden (Mrs. Ravner). Every resident will have her own bed sitting-room with either gas or electric cooking and warming facilities. It is hoped to install central heating. It is intended that the Warden and her staff will supply one substantial meal at midday, and that the residents will make their own arrangements for their other meals. There is a large room on the ground floor, big enough for a combined dining-room and common-room with a large glass-enclosed verandah outside for summer use. Extra bathrooms are among the contemplated modernizations, and each resident will have the use of a convenient washing-up

place. Two large refrigerators have already been obtained and will be available for the storage of their foodstuffs.

The furniture problem which promised to present great difficulties has been much eased by two pieces of good fortune. One is the highly valued gift of a houseful of furniture. The late Miss Wiltshire directed in her will that her trustee should give this to an approved charity—and the trustee was Mr. Underwood, honorary solicitor to the Fund. The other was the discovery by Mr. Pennefather, secretary to the Fund of a pre-war stock (therefore coupon-free) of small oak cupboards of a kind peculiarly suited for our purpose, they have metal tops on which gas-rings or electric cookers can safely be sited. Carpets may be more difficult to obtain a few have been purchased second hand (at high prices) and it is thought that some of the residents may have carpets of their own which they may wish to bring with them. Beds, of which none have yet been bought, bed linen, blankets, household linen, and table utensils residents are expected to provide for themselves, and difficulty is not apprehended on that score. Glassware, crockery and furniture for both the dining-room and some of the other rooms are included in the bequest already mentioned. About half the stair-carpet needed is in hand but more will have to be procured somehow. Curtains will certainly present a difficulty—those for the dining-room were obtained from the previous owner at pretty considerable expense. It will be realized, therefore, that there are several gaps in the equipment of the house—clocks are one such item not so far mentioned.

This brings me to the crux of the matter—finance. The purchase money £7,000 and the alterations which will cost a little under £3,000 are being provided out of the bequest of Dr. Holdsworth Davis but this of course reduces the income of the Fund because the money has hitherto been invested in interest-bearing stocks. The cost of upkeep will be considerable though no exact estimate of it is possible yet but the Committee of Management believe that whatever it may turn out to be the money will be well spent, and they hope that the profession as a whole will approve the action they have taken in the matter. Should the experiment turn out to be a success in course of time it may well be that further enterprises of a similar sort will be undertaken for example the provision of a hostel for infirm or even bedridden beneficiaries—for at present it is planned to accept at Westmoreland Lodge only candidates who can and will look after themselves keep their own rooms clean and cook their own teas and breakfasts.

The accounts of the house will be separately kept by the Royal Medical Benevolent Fund so that if any reader is disposed to support the project financially his or her donation or subscription can be credited to that account rather than to the General Fund if it be so desired. Mrs. M. W. Parry, during 1945 gave a donation of £300 in memory of her late husband Mr. R. H. Parry, F.R.C.S.E. to be set aside towards the establishment of the residential house. The Charities Committee of the British Medical Association has already signified

its approval by recommending to the Council of the Association a special allocation of £200 for Westmoreland Lodge. It is felt that there will be many other well-wishers within the ranks of the profession. Apart from money, the subcommittee will be most grateful for stair carpets and other amenities indicated in the foregoing description.

It has been decided—I think rightly—to associate the name of Arthur Holdsworth Davis with the plan, and a plaque will in due time be put up in the front hall to commemorate his munificence. Lastly, let me add that anyone who is interested and would like to visit the premises will be cordially welcomed, a telephone message to Mr Pennefather's office (1, Balliol House, Manor Fields, Putney, London SW 15 Putney 6128) is advisable so that a time can be fixed when either he or the Warden may be available. Inner Park Road is about a quarter of a mile from the *Green Man* at the top of Putney Hill along the road to Wimbledon. I myself will be glad to give any further explanation or information that is asked for, but application for admission should be made direct to Mr Pennefather.

THE NATIONAL HEALTH SERVICE ACT* SOME CONSTITUTIONAL AND MEDICAL ISSUES

BY

REGINALD T PAYNE, MS, MD, FRCS

"This is true Liberty when free born men
Having to advise the public may speak free,
Which he who can, and will deserve's high praise,
Who neither can nor will may hold his peace,
What can be juster in a State than this?"
Milton *Motto of Areopagitica*

There are two things that are uppermost in our minds at the present time. The first is that we are members of an ancient and a liberal profession, the second, that the National Health Service Act is now law. The immediate decision to be confirmed is whether or not we are to negotiate with the Minister of Health on regulations to be made under the Act. Such regulations would not alter the fundamental principles of the Act though they would affect its details. What is not generally recognized outside the profession is that although there has been a Negotiating Committee in being the Minister has hitherto refused negotiations.

Since the implications of the Act are far wider than their mere application to the medical profession, it is important to return to first principles if we are to define our individual attitude to the Act. I shall therefore approach the matter on two lines: first, from the constitutional aspect and, secondly, from the medical aspect. In other words, I shall try to answer two questions: How far is a Government Department to be trusted with the powers that the Act confers on the Minister? How far is a monopoly of medicine justified in a democracy? If we answer these questions as citizens who are members of a liberal profession, our duty and responsibility to the community will take us far away from personal or professional considerations, and certainly far away from mere expediency.

The catchwords of the age are organization and efficiency but we can achieve these at too great cost to freedom.

Some Constitutional Issues

The essential component parts of the Constitution are the Legislature, the Executive and the Judiciary. The Legislature makes the laws, the Executive carries them out and the Judiciary sees that justice is done. Owing to the increase in Parliamentary business, legislation is hurried and much less thoroughly debated than formerly, and it is also increasingly passed in skeleton form. This means a greatly lessened Parliamentary control over legislation itself, and little or no control over delegated legislation arising out of the Statutes. It also means that more and more of the work of filling in the framework of Acts is handed over to departmental officials. Few of the resulting regulations and orders are seen by members of the House of Commons and almost none are debated. Under

the National Health Service Act the majority of regulations will not require affirmative resolutions of the House. Delegated legislation is not only beyond effective Parliamentary control but it is also beyond the power of the Courts. The Executive department thus becomes Legislature, Executive and Judiciary. This short circuiting of the Judiciary has been put forward in some quarters as a means of forcing through schemes based on a particular social theory.

1 DELEGATED LEGISLATION

Acts of Parliament of a skeleton or enabling type have handed over to the Executive vast powers of making regulations. Such delegated legislation may be by Order in Council or by Departmental Regulations. This type of legislation has a long history, but as a method it has been increasingly used in recent years. During the 1914-18 war there was a flood of delegated legislation. It continued to a lesser extent between the two wars and was further greatly increased as emergency legislation during the recent war. Delegated legislation is constitutionally dangerous since it imposes a strain on the balance between legislative, executive and judicial activities. By concentrating function in the executive it diminishes the checks of the other two spheres. One of the most criticized features has been the power given to Ministers to override the provisions of a parent Act. Delegated legislation has been subjected to the most scathing criticism of judges, constitutional lawyers, and historians. In 1929 Lord Hewart in his book, *The New Despotism*, condemned the increase in the arbitrary executive powers and regarded the tendencies as sinister and despotic. Sir John Marriott in 1930, in *The Crisis of English Liberty*, a history of the Stuart Monarchy and the Puritan Revolution, considered the contemporary concentration of executive power a parallel danger to the despotic power of the Stuarts. Dr C. K. Allen, formerly Professor of Jurisprudence in the University of Oxford, recently expressed similar alarm in his book entitled *Law and Orders*. Further more whenever opportunities have arisen the Judges of the High Court have always shown themselves the strongest supporters of the citizens' rights against the arbitrary and despotic use of Ministerial powers. In 1929 the Donoughmore Committee was appointed to inquire into Ministerial powers, but most of the recommendations of its report passed into oblivion.

All parties are agreed in theory as to the dangers of delegated legislation, though all use the method during office. Many regulations have to be laid before the House as soon as may be, but in practice they may be locked away in cupboards in the library and, unless a Member is unusually curious, he will have no knowledge of them. Most of the regulations automatically become law after a short period of time. Others can be annulled by prayer. Regulations made as "Provisional Orders" on grounds of urgency escape all Parliamentary control. Recently a Select Committee was set up to examine statutory rules and orders. The unsatisfactory position can be appreciated by examining their third Special Report (Oct 29 1946). The Committee complain of the delay in publication and presentation to Parliament, of the tendency to make draft rules appear as if they were the final and valid instruments, of the printing of orders back to back, and of orders consisting of provisions purporting to give retrospective effect to the instrument where the parent statute confers no express authority. They also criticize five-tier legislation, which by cumulative delegations hands on powers to the great-grandchildren of the parent statute.

2 AURICULAR CONSULTATION OF JUDGES

In order to secure the independence of the Judiciary the Act of Settlement of 1701 provided that judges could not be removed except on the address of both Houses of Parliament. Previously, from time to time attempts had been made to tamper with the judges and undermine their independence. James I certainly did this and attempted to secure the judges' determination for the Crown. Sir Edward Coke, the Chief Justice, objected that "such particular auricular taking of opinions was not according to the custom of this realm." Charles I at the time of Ship Money similarly intervened to secure the judges for the Crown.

Lord Hewart, in his book, discusses in detail the most recent case where an attempt was made to establish a system whereby His Majesty's judges would be ordered and required to give

* Being the substance of some remarks made at a special Meeting of Fellows of the Royal College of Surgeons of England on Nov 29, 1946.

their opinions beforehand. This proposal was contained in the Rating and Valuation Bill 1928 and the department concerned was the Ministry of Health. The dangers of such a system are obvious and the detailed comments during the committee stage in the House of Lords gradually revealed the nature of the attack that was being made on the Constitution. Eventually the Minister of Health dropped the sinister clause.

3 QUASI JUDICIAL BODIES

Delegated legislation not only renders the Courts increasingly powerless but statutory tribunals of a quasi judicial nature are set up either semi-autonomously or within Government Departments to administer what I may call rough justice. Such tribunals exist in connexion with medicine, agriculture, rent, etc. and others have been appointed under the National Health Service Act. The essential characteristics of such tribunals are that their composition is not necessarily based wholly or partly on those trained in the law, witnesses are not necessarily on oath, the taking of evidence does not follow the usual court rules, the proceedings may be in camera, the Press are at times excluded and the right of appeal may be absent. Such tribunals are outside the main legal processes of the country. They thus fit in with delegated legislation and make executive rule much more complete. The dangers of these tribunals have been repeatedly stressed, and in an article in the *Spectator* of Oct. 6, 1944 Sir Henry Slesser pointed out that since the decisions of the tribunals are to be 'final and conclusive for all purposes' there has been a serious invasion of the rights of the individual.

4 GENERAL MEDICAL COUNCIL

The General Medical Council is a quasi judicial tribunal. Its penal activities have lately come under serious criticism for the reasons set out above. Attempts are now being made to secure that there shall be an appeal to the Courts from its decisions. It is therefore ironical that the Minister of Health should now secure to himself powers to prevent appeal to the Courts from the decisions of his tribunal. It is not generally realized that the General Medical Council is under the authority of the Privy Council. What will be the position of the Council's penal activities when all or most of the Council are State servants?

5 THE NATIONAL HEALTH SERVICE ACT TRIBUNAL

This Tribunal is a Government tribunal. The relevant words of the Act are as follows:

The Tribunal on receiving representations from an Executive Council shall and in every other case may inquire into the case and if they are of the opinion that the continued inclusion of the said person in any list to which the representations relate would be prejudicial to the efficiency of the said services shall direct that his name be removed from that list and may also if they think fit direct that his name be removed from or not be included in any corresponding list kept by any other Executive Council under this Part of this Act.

The decision of the Minister's disciplinary tribunal is final. There is no appeal from this quasi-judicial body. The offending doctor may have been justifiably dismissed or he may have infringed some minor Ministerial regulation or he may not have carried out treatment in accordance with some Ministry of Health circular or his political or private views may not coincide with those in authority and the Minister decides to terminate his employment. From this there is no redress and no appeal. The evils of the penal system of the General Medical Council will be perpetuated and aggravated by this Government tribunal.

6 RENDERING THE COURTS POWERLESS

With the mounting volume of delegated legislation and the increase in judicial powers granted to Executive Departments the citizen finds it increasingly difficult to secure redress in the Courts. The various quasi judicial bodies also limit appeal to the Courts. The Executive thus becomes prosecutor, judge and jury in its own case and the citizen is rendered helpless. Finally, time after time Executive Departments not content with their existing powers have acted in the most arbitrary fashion and taken the law into their own hands. Fortunately the Courts have proved the citizens' stoutest defenders in these cases of *illegality*. The seriousness of the situation has been and still is being stressed by the judges and by constitutional writers.

7 THE CROWN PROCEEDINGS BILL

The individual is at a grave disadvantage in claims against the Crown. An action which would be successful against another citizen may fail when the Crown is litigant. Owing to the unfairness of the position a committee was appointed in 1921 to inquire into the matter and reported in 1927. Subsequently a draft of the Crown Proceedings Bill was put forward with the object of giving equality to the individual in claims against the Crown. This Bill has had the support of all political parties of the judges and of the Bar. Nevertheless there have been all sorts of delays and the Bill has never been proceeded with. The rapid extension of nationalization and the mounting numbers of Crown servants in the community make it a matter of elementary justice to secure that the Crown has no special privileges as an employer in the eyes of the law.

Recent legal decisions stress the even greater urgency of the matter. Lord Justice Scott in summing up an action in which the Crown was involved—*Royston v. Cavey* (*The Times Law Report* Nov. 12 1946)—is reported as follows:

With the complexity of modern business carried on by Government Departments and the great increase in commercial concerns owned by the Government, it was a crying evil that legislation to remedy the position should not be passed by Parliament. He wished to express his opinion as strongly as possible that it would be a crying wrong if the necessary legislation was not introduced at an early date.

But in so important a matter affecting the citizen's legal rights the Government can hold out no hope of early legislation. Thus nationalization robs the citizen of legal remedies.

8 CERTIFICATION

A consideration of certification is included here, as the subject has been made a political one. Any doctor who has had experience of practice knows the problems presented by certification. We are faced with human material and not abstract propositions and in issuing certificates the doctor does his utmost to serve his calling justly. In the latter part of the debate on the National Health Service Bill in the House of Lords the Lord Chancellor spoke as follows: 'No one could have been as I have been, Minister of National Insurance without realizing that the success or failure of all our schemes depends in a very large measure on our getting satisfactory certification. If we are going to have lax—still more, dishonest—certification then all our schemes are going to break down on that rock. Certification is thus the crux of the problem. The Government is going to control the doctor because if the doctor were not controlled he might be 'lax or dishonest' or worse still he might treat his patients with kindness and humanity. The doctor is to be coerced because as a humanist he is not to be trusted. And who defines satisfactory certification?' The Minister of Health and his officials. Perhaps when a production drive is in progress the Minister of Labour may arrange a further tightening up of certification. The Lord Chancellor's statement is a damning admission of the Government's intention.

In a letter to the *Journal* of Dec. 4 1943, I commented on the use of *agents provocateurs* in attempts to trap a medical practitioner into giving certificates. In the case in question three police spies admitted they had acted on instructions from the Criminal Investigation Department, that they had been instructed to give false information and to feign sickness to the doctor and that they had also been told what to say. All these facts were admitted by the legal representative of the Director of Public Prosecutions. The charges against the doctor were dismissed and costs awarded against the prosecution. The magistrates' comments on this case left no doubt as to the importance he attached to honesty in the relation between patient and doctor. If suspicion in connexion with certification is to be the underlying principle governing the attitude of the authorities then it will be a sad day for Medicine. The fact that a few men are lax or dishonest is an insufficient reason for putting the profession in chains or for justifying the employment of spies from Government Departments to see how we are doing our work.

9 THE CLOSED SHOP

The significance of the recent Willesden episode has not been lost upon the profession. If a local authority can

instructions ordering all its employees, including its nurses and doctors, to join their appropriate trade unions or professional organizations, it leaves little to the imagination to realize the coercive powers in the hands of the Minister of Health. Since the recent repeal of the Trades Disputes Act, 1927, more and more local authorities have made union membership a condition of employment.

The first condition of employment is the production of a union ticket. The individual trade union is affiliated to the Trades Union Congress, and a contribution to the political funds of the Labour Party is automatically secured unless the individual member contracts out, and contracting out may be a matter of grave difficulty in certain communities.

Doctors therefore have not been slow to realize the implications of the Willesden episode. We will not be a party to any proceedings which make our activities part of any 'closed shop' organization. An organization where union membership is a primary condition of employment and that union is linked to one political party rapidly approaches the one-party State. This is not merely a question of which political party is involved. So long as we remain a free and liberal profession we will have no dealings of this type.

10 THE MINISTRY OF HEALTH

The record of the Ministry of Health in constitutional matters is such that if aware of the facts, no citizen would willingly concede any increase in powers to the Ministry, and no doctor would willingly hand over either the sick public or the medical profession to the sole charge of such a Department. What is the evidence that has led constitutional writers to criticize the activities of the Ministry of Health beyond all other Ministries?

A It has constantly used the method of skeleton legislation leaving the substance of Acts to be determined by departmental regulations.

B It was one of the Departments most responsible for the huge increase in delegated legislation between the two wars.

C It has constantly used the procedure of 'Provisional Rules' to enforce its decision on grounds of urgency. Such regulations become valid immediately they are made, and may remain in force for years though unconfirmed by Parliament. More than half the regulations made by the Ministry of Health under the Local Government Act of 1929 were of this type.

D It has used in its legislation the so-called Henry VIII clause, which gives an executive authority 'power to amend the present Act, or (usually) any other Act in order to bring the present Act into 'full operation'. By extension it enables the Minister if any difficulty arises, in bringing an Act into operation, to 'remove the difficulty' by Order. This obnoxious and arbitrary type of legislation was used under the National Health Insurance Act 1911, the Rating and Valuation Bill 1925 and the Local Government Act 1929.

E The Ministry of Health was the Government Department which most recently attempted to tamper with the independence of the Judiciary. This occurred in connexion with the notorious Clause 4 of the Rating and Valuation Bill, 1928. This clause would have allowed the Minister to submit doubtful points of law to the Courts and, by being armed with anticipatory opinions, would have denied justice to litigants. The clause was attacked in the House of Lords as a most sinister attempt at Executive encroachment on the independence of the Judiciary.

F The Ministry of Health is already choked with quasi-judicial functions. These include the hearing of disputes in connexion with National Health Insurance, Old Age Pensions, Blind Persons, etc. The even less than quasi-judicial ministerial local inquiries have come to be regarded as mere farces.

G The Tribunal of the Ministry of Health under the National Health Service Act will be an additional quasi-judicial function. It will not be a legal tribunal, it will merely be a tribunal for the exercise of the Minister's administrative discretion.

H For the foregoing reasons the Ministry of Health has been the Executive Department where there has been the greatest concentration and confusion of legislative, executive and judicial functions. As its powers have increased, so has it been able more and more to prevent appeal to the Courts.

One of the most recent examples of the activities of this Ministry is described in *The Times Law Report* of Jan. 26, 1944, in an action—Minister of Health v. Bellotti and Another. The following is from *The Times* summary of the Master of the Rolls' judgment.

He could not leave the case without saying this. Where persons were to be ejected from premises which they had lawfully occupied, the general expectation would be that recourse would be had to the Courts rather than to the high-handed method of ejection by force. That was particularly applicable to a Government Department, which one would expect to act with some sense of dignity.

'But the Ministry concerned here having failed to secure obedience to its rules, instead of coming to the Courts proceeded with the help of four porters, to try to drag the respondents from the flats. That having failed the next step appeared to have been to withdraw the respondents' meal tickets, and in fact to endeavour to starve these people out.'

He did not think that that particular incident was one which those responsible for it would look back on with any sense of self-congratulation, and it was to be hoped that that type of action would not be regarded as a precedent. He would say no more except that he did not like departing from the strict path when delivering judgment, to administer rebukes, but he did it because it was very relevant on the question of costs.

This is the Ministry which is to be entrusted with entire charge of the sick public and full control of the medical profession.

Some Medical Issues

The National Health Service creates a monopoly of Medicine in regard to hospital and consulting work and makes general practitioners subject to a measure of State control hitherto unknown. It is an Act for the better control of doctors and their patients.

1 *The Patient*—Under the Act the patient can only be seen at hospital by a consultant who is a State employee. Even if the patient goes to the part-time consultant privately the latter will still be a State servant. There can be no really independent opinion for the patient, and independent opinions in connexion with his patient's welfare. Hitherto the conscientious Medicine are needed and will always be needed. All consultants see cases where it is essential to the patient's best interest to have an opinion absolutely independent of any local authority, trade union, or Government Department. The general practitioner is also placed under a grave disability in that a doctor has been able to advise his patient to go to this or that hospital or to this or that consultant, and he has chosen the hospital or consultant in relation to the special problems presented by his patient. That freedom of the general practitioner to do his best for the patient will now be hedged by Ministerial regulations or directives. In future the doctor will have to send his patient to the appropriate officer, at the appropriate hospital in the appropriate region. The State controls the relationship between the patient and the consultant, and the general practitioner must give up his position as counsellor and adviser.

2 *The Consultant*—The hospitals are in the hands of the Minister and are controlled by the Minister. The hospital staffs are restricted to those in the Service. The Minister controls all the beds and has refused to negotiate on this. The consultant therefore has the choice of joining the Service or being liquidated. Mr. Bevan does not conscript or direct the consultant but he produces a 'Coercion Act' which says 'Join or be destroyed'. The voluntary hospitals have not contested the Act in the way that might have been expected, and they seem to have forgotten the living principles which founded them.

3 *Patient and Consultant*—Under the Act all hospitals become State hospitals, and the definition of a 'hospital' is so wide as to include any institution for the reception of the sick. If the consultant is to have hospital beds he must therefore have them within the State service. Mr. Bevan's recent sop to consultants should deceive no one. The independence of the honorary consultant within the State service must be short-lived, and the logic of the situation must force all consultants into the salaried service. The patient will then have no choice of seeing a consultant outside the service since independent consulting work can be carried on only from independent institutions. The elimination of free association of doctors and patients is a doctrinaire restriction of the freedom of the public and the independence of the doctors.

4 *The Medical Student*—How will the Act affect the type of students? Hitherto Medicine has attracted a variety of types. That variety has been determined by the variety of careers that Medicine offered. In the future that variety must

be sacrificed and will be limited to men and women who are content to work within the framework of a rigid Service. There will be less scope for individual initiative, and less for purely personal considerations. Variety must be sacrificed to uniformity. The ambitious doctor of the future will be the administrative climber and not the scientist, humanist or artist. The only serious criticism of the medical student type has been that owing to the cost of the training it has been impossible for youths from the poorest homes to take up Medicine. This is certainly true. But it is also true that although men from humble homes have made excellent doctors, the poorest home is not a real background for the future doctor. But in the future the student is to be State-aided, State-conditioned and rendered servile, docile and mobile.

5 *The Royal College of Surgeons of England and Other Medical Corporations*—What will be the position of the Council of the Royal College of Surgeons in ten years' time? By that time half the Council will be civil servants in all but name, and the other half will be Government pensioners. What will have happened to the much-prized independence and prestige of the College then? It will no longer be the Royal College of Surgeons; it will be the Royal College of Surgical Serfs.

What will be true of the Royal College of Surgeons will be true of every medical corporation. The Fellows forming the respective Councils are invariably consultants and as such will be Government employees who must carry out the instructions and wishes of their master, the Minister of Health. The Minister will not be their immediate master, but he is in a position to exercise his authority. He can declare that the corporations' examinations are no longer recognized by the State, or that the higher examinations are no longer necessary in a world of 'graded-specialists'. And by so doing he can at a stroke of the pen destroy both prestige and income. And why should not the Minister do these things by Departmental regulation? There is certainly nothing to prevent him if we acquiesce in working his Act. The destruction of the independence of the medical corporations means their destruction as expert medical bodies.

6 *The Central Health Services Council*—This Council which is to advise the Minister of Health looks formidable enough on paper. Six members are *ex officio* and the other thirty-five are appointed by the Minister. But will it be either formidable or disinterested when most of its members are State servants or State pensioners and the Minister of Health is their employer? The Presidents of the Royal College of Surgeons of England, of the Royal College of Physicians, London, and of the Royal College of Obstetricians and Gynaecologists may now be impressive figures, but in ten years' time their respective Colleges may have lost all their prestige and most of their power, so that their respective Presidents' real capacity to offer independent and expert advice to the Minister will not be worth a fig. It will be more important to keep on the right side of the Minister and his officials than to offer independent advice or criticism. It will be more important to know your Minister than to know your medicine. It is not without significance that the Minister is enabled to suppress either in whole or in part the publishing of the Councils' Annual Report to Parliament if the public interest should demand it. Who is to decide the matter of public interest? The public or Parliament? Neither, the Minister. Such a proviso at the centre of the Health Service hands it over at once to the possibilities of obscurantism, dishonesty and jobbery.

7 *The Scientist*—What will be the position of the doctor as a scientist under the Act? Will every publication of every medical man employed in the Service have to pass the official scrutiny of the Minister of Health's officials? Will the right to publish be taken from the doctor and be dependent on the whim of some medical official? Will the real test no longer be scientific or clinical interest or advance, but the furtherance of official policy or a desire to hoodwink the public? Will the publications department of the Ministry have an eye on possible repercussions on the Treasury? Will the doctors' reports be doctored before being published, and will the obedient official doctor get preference over the less acquiescent one?

These are not merely theoretical matters. In the early part of the recent war I was engaged in carrying out some research

in connexion with peptic ulceration. At only one hospital was I asked to suppress a piece of evidence. That occurred at a hospital directly under a Government Department. In that hospital I asked one of the senior medical officers if there was any statistical evidence that disease X had any connexion with peptic ulceration. I was told that there was definite statistical evidence, but that under no circumstances must I mention the fact or claims might arise and the Treasury would object. Scientific medical facts are suppressed because their publication might be inconvenient. Think of the endless possibilities under the Health Service Act for the suppression of scientific facts in the interests of official policy or Treasury economy. But doctors in this country are humanists first and scientists second, and the humanist may prove a harder nut to crack than the scientist.

Conclusion

The National Health Service Act is symptomatic. It takes away the personal responsibility of patients and doctors and substitutes the coercive activities of the Minister of Health and his officials. In view of the constitutional and medical implications of the Act, what evidence is there that the doctor should lift a finger to assist in implementing its provisions? What evidence is there that would justify our handing our patients and the medical profession into the keeping of such a despotic Executive Department as the Ministry of Health with its unhealthy constitutional record? History does not support the view that the State can be regarded as a "kind nanny" where the interests of citizens are concerned and Medicine has duties and obligations to the community which are not compatible with mere Departmental status. What evidence is there that the health services will even be improved? The fundamental feature of this Bill is to transfer all real power to the Minister. If the Bill is operated no patient or doctor will ever feel safe from interference by some Ministerial edict or regulation and no independent institution connected with Medicine will feel safe from interference, expropriation or dissolution. The Minister's spies will be everywhere and suspicion and intrigue will rule. Power corrupts and absolute power corrupts absolutely. Lord Acton's words are as true to-day as when they were written. The medical profession is still a free and independent one and it is our duty to assert our democratic rights and those of the community at large against the encroachments of the Executive.

I owe allegiance to no political party. As a liberal I am alarmed at the destruction of individual and personal freedom and the substitution of the coercive power of the State. The present constitutional crisis of liberty is comparable to that of the seventeenth century. Then it was the attempt of the King to become a tyrannical power and overrule Parliament complicated by attempts at religious uniformity. Now it is the weakening of Parliamentary control and the concentration of power in the hands of the Executive.

The community is not coextensive with the State. The democratic community is built up of all the various individuals with differing needs, hopes and capacities. The modern State is a central organization which attempts to establish a central philosophy for its citizens. So that when Mr Morrison talks of the design for corporate living informed by a conscious philosophy (*The Times* Dec 17 1945) we know that he and his friends are prescribing their philosophy for the community. Such philosophy uses men as means and not ends. It is the philosophy of infallibility in Church, State or party. It obliterates the individual, the spontaneous and the native forces of democracy and substitutes central direction and uniformity.

No Government or political party in this country dare attempt State uniformity in either religion or education. Religious toleration of minorities was established two hundred years ago. Education has repeatedly proved a thorny problem for statesmen and administrators and the recent Education Act did not impose a State monopoly. But the doctors alas are easy prey. They are good-natured and overworked and their work in a social service has been exploited by all political parties. Meanwhile voices are being raised that other callings must be nationalized and made free for all. State-sponsored free-law-for-all may have some advantages, but it has grave dangers.

In the face of the spiritual and political tyranny of to day we shall serve the community best by standing by our essential freedoms Do not sell that birthright for a mess of pottage Do not exchange that freedom for pay and a pension Do not give up the right of association either as members of the public or as doctors Do not become gagged Government functionaries with minds in cold storage Health organization and even health itself can be bought at too great a cost to freedom And what evidence is there that health will be gained? Freedom and liberty are conditions of health and conditions which allow of constant change and constant adaptation Coercion and the centralization of power mean sudden change and then stagnation The analogy of 1912 is utterly false At that time Parliament was alive, the Executive had not become a tyranny, and the State was not regimenting its citizens in every sphere of life

We are members of a free and liberal profession I want that freedom to continue as one of the freedoms of a democratic community As healers of the sick, we shall continue to give our best if free from State coercion

I am particularly indebted to the following sources

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INCREASE IN CAPITATION FEE

The following statement on the current capitation fee has been issued from the Ministry of Health A report of the special meeting held on Jan 8 by the Insurance Acts Committee to consider the Minister of Health's proposal to raise the capitation fee appears on p 5 of the Supplement this week

An agreement has now been reached between the Minister of Health and the Insurance Acts Committee of the BMA on the application of the Spens Report to the current capitation fee under the existing National Health Insurance scheme Mr Bevan has proposed that the present capitation fee of 12s 6d should be increased to 15s 6d, with effect from Jan 1 1946, and that there should in addition be an increase in the special payments made to rural practitioners

In making this offer the Minister has made it clear that remuneration under the new National Health Service will be a matter for negotiation with the medical profession Some of the factors on which the 15s 6d is based will, in his view, have a bearing on the negotiations for the remuneration in the new Service, which, it is agreed, will be on a higher level than the remuneration now settled for health insurance The Insurance Acts Committee of the BMA, in accepting the offer have stated that they have done so without prejudice to the assessment of remuneration in any future service

RELEASE FROM THE FORCES

The Central Medical War Committee is informed that medical officers in the following age-service groups are being released during the first three months of 1947

	January	February	March
Royal Navy	57	58	59
Army			
(a) General duty officers	54	55	56
(b) Specialists	42	43	44
Royal Air Force	54-56	—	57

Reports of Societies

BRITISH ORTHOPAEDIC ASSOCIATION

The Annual Meeting of the British Orthopaedic Association held in London on Oct 18 and 19, under the presidency of Mr GEORGE PERKINS opened with a discussion on Fractures of the Os Calcis

Mr N W ROBERTS and Mr W SAYLE CREER had each followed up some scores of cases over several years and had independently reached similar conclusions concerning compression fractures involving the subastragaloid (subtalar) joint, namely, that an incapacity period of about a year in cases treated by reduction and immobilization was approximately halved in cases treated by early movement More than three quarters of the patients returned ultimately to full work in their old occupations, and the proportion was not materially influenced by the method of treatment adopted Mr W GISSANE, nevertheless, considered reduction important, and showed a film illustrating its performance and maintenance with a sagittal os calcis pin Mr K H PRIDIE demonstrated some patients, including a policeman who showed extremely good function following excision of the os calcis—an operation to be reserved for the most severely affected

In his presidential address, Rest versus Activity in the Treatment of a Fracture, Mr GEORGE PERKINS confined his remarks to fractures not directly involving joints Activity was of importance in preserving the extensibility of muscle thereby preventing stiffness If both fragments in a fracture bore muscles, these would look after immobilization and the sole function of the limited splinting necessary was the preservation of alignment Failing this condition (as in fractures of the femoral neck, medial malleolus, and scaphoid), splinting was necessary not merely for alignment but also for immobilization Such splinting must be prolonged, uninterrupted rigid and extensive, consequently it impaired function, and internal fixation was often preferable

Prof E SORREL presented a paper on the treatment of tuberculous arthritis, in which the results of some usual and unusual extra-articular arthrodeses were illustrated He strongly advocated arthrodesis as a final stage of treatment, deferred however, until active disease was at an end

Prof H J SEDDON showed a film of preliminary work carried out with Dr A E BARCLAY on the cineradiography of joint movements Mr K I NISSEN gave a comprehensive account of Morton's metatarsalgia with a clinical and pathological description of 13 cases in which he had excised the fibromatous thickening first described by L O Betts of Adelaide He had carried out a follow-up of three years and more Mr I LAWSON DICK discussed the late results of iliac bone transplantation and Mr L GILLIS showed a film on amputations near the elbow joint

At the General Meeting Mr S A S MALKIN was elected president for 1948-9 and Mr F G Allan and Mr E A Nicoll were elected to the Executive Committee

SOCIAL SERVICE AND THE HEALTH ACT

The British Federation of Social Workers in collaboration with the British Council for Rehabilitation arranged an all day conference of social workers on Dec 7 at the Royal College of Nursing to discuss the new situation created by the National Health Service Act Mr ALEXANDER FARQUHARSON presided

Alderman C W KEY Parliamentary Secretary to the Ministry of Health, in a brief exposition of the Act, said that it was comparatively easy to put into the words of a statute the steps it was desired to take in the curative field, but prevention and rehabilitation were more indefinite and therefore more difficult to express in black and white Yet this indefiniteness might be an advantage, for if the functions of social workers closely set out in the Act and then in a few years' time new development came forward it would be unfortunate because they were bound by the Act, they were free from using their experience and skill He went on to say that the fact that the Minister would own the hospitals would

not mean a stereotyped service, from one point of view the Minister's ownership was unimportant for he had no intention of administering them and there would be a chain of administrative agencies down to the committee of the individual hospital. One function at present exercised by many hospital almoners—that of assessing a patient's ability to pay—would cease altogether, but many more tasks would open out including liaison between the almoner's own hospital and the other hospitals and health services of the region.

One of the principal functions of local authorities under the Act would be the provision of health centres. There would be plenty of room for variation and experiment in this direction. Emphasis would be laid on the social and educational functions of these centres. In the family doctor service there was a place though a less definite and extensive one, for the social workers.

We want the doctor to do a lot more than just cure the immediate ailments of his patients. I hope it is true to say that the good general practitioner recognizes more and more the need for the appraisal of the whole social background of his patient and the need for help beyond his own scope in getting things straightened out. He added that the National Health Service Act was only one part of the Government's programme for the reconstruction of social services. With it would go fresh legislation to break up the old Poor Law and to establish welfare services for children and the aged.

Lady CYNTHIA COLVILLE took up a point made by Mr Key that it would be the duty of the health visitor to go into the home. Hitherto she thought, the success of the health visitor had resided in the permissive character of her visits. If now she was to have a right to go into the homes it might undermine the value of her work. Mr KEY replied that the duty was one laid on the local authority to provide a health visitor service, it would still be at the option of any person to accept the service or not. Miss MACDONALD said that the almoner would now for the first time be free to exercise her true function as a social worker. Patients had hitherto looked on the almoner only as the lady who collects the HSA vouchers.

The Social Worker and Industrial Health

Dr H F CHARD opened the second session with a description of the various branches of industrial medicine. A personal letter conveying the doctor's recommendations was the best medium for reports on patients who were returned from the hospital to the factory.

Mr C E A BEDWELL said that if in theory the family practitioner was the backbone of the Medical Service it was as well to make him so in fact. The factory medical officer must be subordinate to the family doctor. Documents from the hospital should be sent not to the factory medical officer directly but via the family doctor, whose responsibility it was to provide such information as was necessary for the factory.

DEVON AND EXETER MEDICO CHIRURGICAL SOCIETY

Obliteration of Cavities in Pulmonary Tuberculosis

On Nov 14 the medical and surgical aspects of collapse therapy were discussed by Dr C J FULLER and Mr ALAN GAIRDNER.

Dr Fuller said that lesions in the lung were so commonly apical because inhaled bacteria gravitated into sub apical branches of the upper bronchi. The thorax might be regarded as a semi rigid cylinder with the diaphragm acting as a piston. The object of collapse therapy in pulmonary tuberculosis was to rest the lung without putting the patient to bed. A subject with a totally or partially collapsed lung was often able to go on doing sedentary work, and except in advanced cases temporary artificial pneumothorax was a method of choice for each.

Mr Gairdner pointed out that though some tuberculous cavities closed spontaneously others did not especially if filled with pus. Surgical intervention brought about concentric collapse of the cavity but a free pleura was necessary so that relaxation could be complete in all directions. If there were adhesions to be cut thoracoscopy was called for, if there were cavities low down in the lung phrenic avulsion might be necessary. Thoracoplasty might be more widely employed in

afebrile 'good chronics' with a unilateral lesion and cavitation, in which some attempt at healing had occurred, and in unilateral cases which were afebrile and going downhill, especially if pus-filled cavities were present.

Chemotherapy

On Dec 5 Sir LIONEL WHITBY discussed the present position of the sulphonamides in relation to antibiotics. It was not always easy to choose the most appropriate sulphonamide in any given case. The original prontosil, discovered in 1935 was merely sulphanilamide in combination with an inactive red dye and was found to be effective against most of the Gram positive pyogenic organisms except the pneumococci and staphylococci. At least 5000 compounds had been synthesized subsequently in an attempt to improve upon the original substance. Unless it was to be used against the pneumococcus or staphylococcus sulphanilamide was as effective and cheap as any other compound. Sulphathiazole had to be given four-hourly, sulphadiazine six-hourly and sulphamerazine eight-hourly if an effective blood concentration was to be maintained. Sulphathiazole in macrocrystalline form was useful for local application.

All these drugs acted by inhibiting the multiplication of bacteria, probably because they were mistaken for *p*-amino benzoic acid the natural 'food' of pyogenic organisms. They should be given as early as possible in an infection and used prophylactically whenever possible. It must be remembered that pus contained *p* aminobenzoic acid so that once pus formed sulphonamides were useless. Sulphonamides acted quickly and if given in proper concentration and without result within from seven to ten days their use should be abandoned. It was of no use changing to another sulphonamide. Oral administration was the method of choice. When applied locally these drugs were absorbed into the blood stream.

Complications of chemotherapy were vomiting, cyanosis, leucopenia, haemolytic anaemia, haematuria, anuria and skin sensitization. As an increasing proportion of the population received treatment with sulphonamides sensitization was becoming commoner. Drug fever and skin rashes might occur together. Rashes followed local application, which should never be continued for longer than five days at a time. Intractable dermatitis and photosensitivity were serious complications.

Penicillin had replaced the sulphonamides in the treatment of many, but not all diseases. It was useless for example against such Gram-negative organisms as *E coli*. Sulphonamides therefore still had a place in the treatment of urinary tract infections where they were concentrated in the kidney about 50 times and so need not be given in large doses but could be used for long periods. Sulphasuxidine was probably the most effective drug at present against Sonne dysentery. Penicillin powder was taking the place of sulphonamides for local application, but mixed powders were of doubtful efficacy. Penicillin by mouth was useless. It was easily destroyed by acids, alkalis, synthetic rubber or by contamination with airborne organisms and it was very hygroscopic and thus easily contaminated and rendered impotent. Penicillin was suitable for intramuscular and intrathecal administration, but if used intravenously was apt to cause local venous thrombosis.

Streptomycin, the latest of the antibiotics, was highly active against Gram-negative organisms and it also appeared to act against the tubercle bacillus, especially in acute forms of the infection. In contrast to penicillin it produced toxic symptoms with overdosage and was probably not the last word in the treatment of tuberculosis. Streptomycin acted against *Procyaneus* and *Protens* but was less effective against the typhoid and *Salmonella* groups.

At a meeting of the Chelsea Clinical Society, held on Dec 10 with the president Dr Ronald Jarman, in the chair, there was a discussion on 'Plastics in Surgery and Medicine' opened by Dr Stanley Leader, followed by Mr Robert Cutler, who dealt with the dental applications of this material. Many specimens and quite original uses of plastics were shown with emphasis on the need for correct selection of the type for any given purpose. Other speakers included Mr N Eckhoff, Dr Desmond MacManus, Dr Niall MacManus and Dr Langdon Lloyd, to whom Dr Leader replied.

Correspondence

The Presidents and Mr Bevan

SIR—It is doubtful whether much notice should be taken of Press opinion on the result of the plebiscite, for much of it has been unsound and contrary opinions have clearly cancelled themselves out. It is much more important for our profession to know that we can expect little help from any of the political parties. Our voting strength is negligible, and politicians will neglect our interests to obtain credit either for starting or for not opposing the National Health Service.

The present position is one of great interest for the Government have adopted the method of imposing a 'Diktat' upon key members of the community, which has quite naturally provoked a strong protest. It reflects great credit upon our profession that political considerations have found no expression in our reaction to the new Act. Our purpose has surely been to obtain the best possible medical service for the individual members of the State. Refusal to negotiate was the only course open to us, and I hope that the medical profession will stand firm and wait until the next move is made by the Government.

The Act contains so many bad features that I doubt whether it would operate successfully even if it had the full co-operation of the medical profession. We must avoid, above all things, being placed in the difficult strategic position when we as a profession would be blamed for defects in an Act for which we are not responsible.

The correspondence between the Presidents of the three Royal Colleges and the Ministry of Health has caused dismay. However good their intentions their action can only split the profession, for some of us will feel that we owe loyalty to the Royal Colleges, while others who believe in democracy will stand by the machinery of the British Medical Association—I am etc.

London W 1

WILFRED SHAW

National Health Service Act

SIR—In conversation with doctors and laymen certain points in relation to the National Health Service Act have become obvious. A frequently expressed question is 'Why do the doctors not produce an alternative?' To that the only reply is that the Medical Planning Commission's alternative, although inadequate, was produced and has (despite *The Times* of Jan 6, 1947) been largely ignored. Had we taken the stand that to produce a good national medical service the present Act is unnecessary, since financial support is all that is required to develop the medical services of this country to an adequate degree, we should have had a very much greater public and parliamentary support for the control of the purse-strings is sufficient.

Another question is 'Why do you not concentrate on your strongest point, that the medical profession is to be the only body in the community to be deprived of the right of legal appeal?' This requires no amplification.

The last point—and here we have failed lamentably in presenting our case—is that we did not in the 'Principles' emphasize sufficiently the fact that our aim is the provision of an adequate medical service available to all who need it irrespective of financial capacity. This last it is not too late to remedy—I am etc.

Southsea Hants

NIGEL CRIDLAND

SIR—At a meeting at B M A House early in 1946 the subject of discussion being the National Health Service Bill, we were advised by Dr Hill to put our case before the public. I ventured to ask how it was proposed this should be done and received a reply which at the time did not seem altogether satisfactory but having myself no satisfactory suggestion to offer I did not pursue the subject.

In the end pamphlets were printed by the thousand and lay, I fear for the most part unread on the waiting-room tables. Some letters were written to a far from friendly Press, and in the end the Bill became an Act without any effective opposition. A proportion of the Press is definitely hostile to the views of the majority of the profession, ascertained by the

recent plebiscite the rest is lukewarm in its sympathy. A fortnight ago I heard denounced as failing in Christianity those doctors who decided not to co-operate in working the National Health Service Act.

Obviously our methods of approaching the public are at fault, and the difficulties facing us now the Bill has become an Act are infinitely greater. How is the curtain between the medical profession and the public to be raised? It is of little use meeting together and urging one another to do this or that. Unless we get the support of the public we can do little. Surely what are required are meetings open to the public, to whom we can explain our case, prepared to receive some hard knocks, and even to hear some unpleasant home truths. This is not an original idea, for at the beginning of the campaign some far seeing Divisions put the plan into practice, but it was not widely adopted.

The public, having the Act explained to it with all its implications, may yet be in favour of the Act but the small amount of space devoted to the Bill by some of our leading daily papers run by, first of all, business men and only secondly idealists shows that these men felt their public were not interested and were content to remain ignorant. It is this apathy and ignorance we must strive to dispel if we hope to bring our campaign to a successful conclusion—I am etc.,

London W 8

HAROLD H SANGUINETTI

SIR—Owing to the great courtesy shown by you in sending me the *BMJ* during the year (in spite of my not having paid my subscriptions since 1941, owing to having been interned as a prisoner in Siam, and still having no assets to pay them with) I have been able to visualize the present conditions and anxiety regarding the future of every member of your Association in the United Kingdom (is it really united?). Though I have lived for the past forty two years in Siam I feel that perhaps for that very reason I possibly may be able to see the whole wood and not confine my vision to an odd tree or two, as appears to be the case with the majority of correspondents who write letters to the *BMJ* regarding the immediate future of medical practitioners in the United Kingdom. I note with some concern that the majority chiefly exhibit concern regarding the practitioners, and much less so regarding the practice of medicine, or those that they practise upon and I cannot help but feel that these last two are mentioned in their letters as secondaries rather than as primaries, as they should be.

Certainly every opinion expressed in those letters is right—so are the different opinions expressed by the Government or the Opposition—but right only to the extent that they are all given in good faith. Otherwise those opinions are simply the result of the personal emotional bias or sentiment of those who give those opinions, and, as I can find no common denominator anywhere among them, to me it seems to be analogous to trying to multiply a donkey by five apples in order to visualize an elephant. If you do not somehow find that common denominator there will be another war—and this time between doctor and doctor, with politicians and the public taking sides, hence at war also—with the result that everybody guilty and innocent, will again suffer the pains of war and none of the pleasures of victory. Yet President Truman says 'The world is sick of war'.

I therefore beg to suggest a common denominator. As demand creates supply, practitioners of the science and art of healing simply exist to supply a demand from the public and could not exist but for that demand. The Government—every Government and every Opposition—exists for identically the same reason, and when the public does not like a Government it turns it out and would do the same with every medical man if it wanted to. For the past three hundred years the United Kingdom has had Governments increasingly selected and elected by the people, and I believe the average age of each successive Government is somewhere about five years. I have never yet read that during that three hundred years apart from individual changes, the public have ever yet threatened to dispense with doctors as a whole or even a large section of them or ever objected to the treatment they received from the medical fraternity as a whole, while the same certainly cannot be said of either politicians or the Governments they control. Therefore one must conclude that the public—the man in the street—is a fool, or that he strongly approves of the medical fraternity of the United Kingdom for the simple

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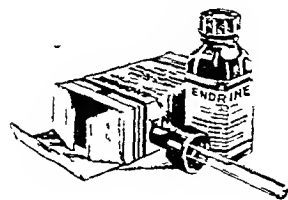
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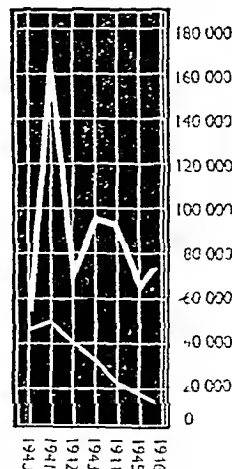
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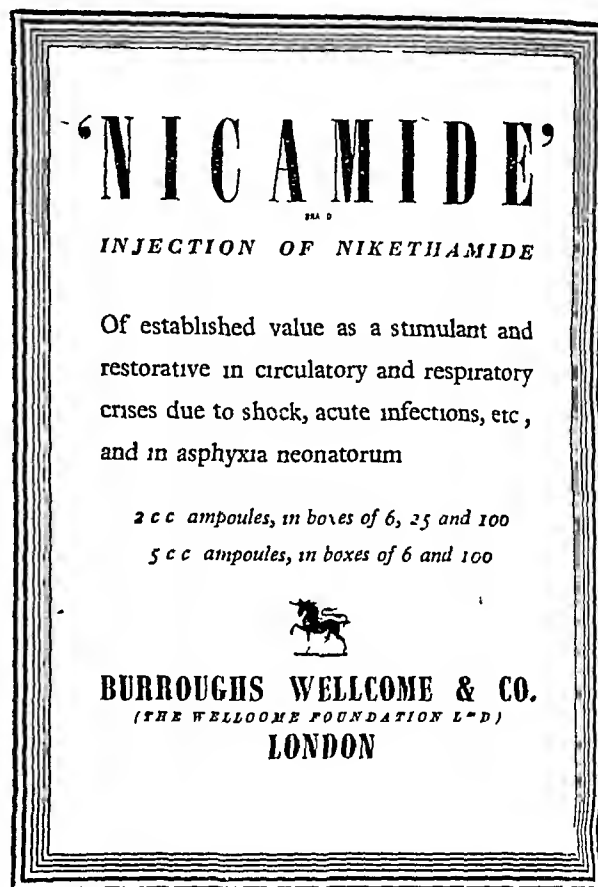
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reason that as a fraternity—a brotherhood—it has ever bowed to public opinion and supplied what was demanded from it while Governments and politicians have not done so

As the public—the people of the United Kingdom as a whole—is master both of the Government and the brotherhood of practitioners of the science and art of healing, surely here is your common denominator. Taking polling results, one sees a very large proportion of the public do not take the trouble to vote for a new Government, because they are much more interested in to-morrow's dinner than in to-morrow's Government unless one affects the other. I have never yet heard of any single individual who was not keenly interested in who should attend him if he were sick, quite irrespective of to-morrow's dinner so why not leave it to the public—the public as a whole—to judge which side is right?

In this last war it was not the Governments that fought for the freedom of the British Empire but every man, woman and child, who were determined to retain the freedom they had held for a thousand years against Normans Spaniards French Germans, Italians, and Japanese. They won because they were free and their opponents were not.

Cannot my brethren trust such a people to decide fairly regarding this issue, this war the result of which affects most intimately the freedom of every man, woman and child in the United Kingdom? Yes! I think they can and will. A country, a people which starting quite unprepared and which for two long years alone held the fort of national freedom surely is capable of organizing a scheme to follow out the above suggestions, treating the matter not as a war between my brothers and a temporary Government but as a struggle of my brothers to preserve their collective freedom. If such a scheme cannot be found, then it is a sure sign that England is no longer free except in name but the feudal serf of an authoritarian Government which it cannot control, which arrogates to itself the right to remain free to do as it likes, and at the same time to deprive the public of its inherited freedom—I am etc,

S am

M CARTHEW

SIR—Admittedly we as a profession advocated a National Health Service to include dependants of insured persons and provide laboratory facilities for all. The Act which has been passed is a travesty of these principles and while it may not benefit the practitioners it certainly will be to the detriment of the patient, who will incidentally be paying through the nose for it.

Its main aim, in my opinion, is to control certification, and the general practitioner will only be responsible to his immediate superior and have little interest in the patient at all. It is my earnest desire that the profession as a whole will reject this totalitarian method of turning a once noble profession into a Civil Service—I am etc,

East Kilbride

J McLAREN

Conditions of Service under the Act

SIR—I am strongly of the opinion that immediate steps should be taken to publish a statement both in the medical and lay Press and also if thought advisable to convey it to the Minister to the effect that the medical profession would almost certainly be prepared to work the National Health Service as set out under the Act if the following questions of principle were conceded

- (1) The right of appeal to the courts against dismissal from the Service
- (2) The right of all boards, councils and committees set up under the Act to appoint and remove their own chairmen
- (3) The removal of anything in the Act which would tend
 - (i) to restrict the relationship between the general practitioner and his patient
 - (ii) to bring the doctor under the direct control of the Minister of Health of the day—namely the clauses in the Act which (a) make the doctor the tenant instead of the owner of his practice (b) restrict his right to practise where he pleases (the distribution of doctors could easily be safeguarded by regulations or orders, and by arrangement with local executive committees)
- (4) The avoidance of any form of basic salary as a means of payment of general practitioners. This would make the doctors' remuneration at least in part dependent on the

Minister's assessment of his worth instead of on the number of patients who choose him and would inevitably create divided loyalties which, among other things might have the effect of restricting the doctor's freedom of action in giving certificates. This state of affairs would obviously militate against the interests of the patients—I am etc

London W 1

DORIS M ODLUM

The Plebiscite

SIR—There are two remarks in the statement by the Chairman of Council on the plebiscite as published in the *Journal* of Dec 21, 1946 (p 957), which do not appear to me to be justified. In the first place Dr Dain states that of the doctors mainly concerned—i.e. the general practitioners—64% had voted against negotiating. I must protest against the statement that general practitioners are those mainly concerned, and would point out that of those who voted only 45% were in categories 2 or 3—i.e. general practitioners or their assistants. If it is the view of the Council that the votes of the remaining 55% were to be considered of less value than those of the general practitioners, a statement to this effect should have been made before the voting took place.

The second statement to which exception can be taken is

The young doctors effectively support the majority against negotiation. There is no question of age overweighting the decision. Reference to the table of results shows that the percentage against negotiating in the four age groups gets progressively larger from the younger to the older groups—namely 47, 50, 56, and 60 respectively. From this it would appear that it is the older members who are responsible for the decision that the committee should not negotiate.

It is to be hoped that the Representative Meeting will bear these facts in mind when considering the recommendation of the Council, who, I understood Dr Dain to say at a meeting held at Hertford, are themselves by no means unanimous as to whether the profession should negotiate or not—I am etc

Welwyn

A P FORD

SIR—Dr H B O Cardew (Jan 4 p 29) asks us to accept his view that the Labour Party, who believe that nationalization is the cure for all evils, and who actually received fewer votes than the other two parties together who take the opposite point of view, has a clear mandate from the country to pass the Health Act. If we do this we must still more recognize the fact that the B.M.A. has a clear mandate from the whole profession by 56% to 44% that no further negotiations on this present Act should take place. Does Dr Cardew really believe that by turning the doctors into Civil Servants and by creating a large army of lay Civil Servants to work the Act the public will get a better service or can it be that it is not only those who are opposed to the Health Act who may have self-interests?—I am, etc,

Camberley

LESLIE HARTLEY

SIR—The plebiscite is stated to be a decision as to the principles of the profession. On a matter of principle all members have an equal voice, just as all are equally subject to accepted ethical principles and serve equally on ethical committees and the G.M.C. whether consultant, G.P., or whole-time salaried M.O. On Dec 12 there was known to be a majority of 3,496 out of 56,671 against negotiation. Dr Dain said (*Journal* Dec 21 1946) The B.M.A. is a democratic body and the Council has no mandate to negotiate.

This majority derived very largely from the 4,959 majority of the 17,841 G.P.s. 21,021 other civilian doctors had a majority for negotiation. The votes of 8,600 Service doctors are omitted. Dr Dain said (*Journal* Dec 21 1946) quoting the recommendation that the Council had decided to lay before the Special Meeting of the Representative Body on Jan 28.

Because of the divergence between the principles of the profession and the provisions of the National Health Service Act the Committee is unable to enter into negotiations. There was this known majority against negotiations on Dec 12 of 3,496. There was a majority against negotiation among general practitioners qualified more than 15 years of 3,597. Dr Dain said 'There is no question of age overweighting the decision.'

By provisions under another Act patients will be paying contributions, but not for medical care after the appointed day since the B.M.A. says 'No.' Hospitals will be expected

to reject Government aid. Chemists will have no Government-franked prescriptions. Doctors will have no Government pay. Patients, hospitals, chemists, and doctors will have less money. The standard of medical care will inevitably fall nor has the B.M.A. been able so far to persuade the Divisions to agree to any scheme of organization of what care will be available. Dr Hill said: 'The doctors will be loyal to their calling and to their patients, to whom as always they owe their first duty. And all this because of a majority of 3,496 out of 56,671. There must be an Amending Act, a precedent for every trade union that disagrees with any future Act. The Commons, the Lords, the Royal Assent go for nothing. This present Act does not exist—because of 3,496 out of 56,671—I am, etc.,

Hove

WILLIAM BOURNE

SIR—As one of the doctors in the Services who did not have an opportunity of voting 'Yes' or 'No' in the recent ballot I would like to draw attention to an aspect of the result to which insufficient attention appears to have been given—and that is the fact that only 40% of the profession actually voted against any renewal of discussions with the Government. No less than 35% voted in favour of negotiating while as many as 25% either did not or could not vote at all.

The point to be observed therefore is that the profession appears to be fairly evenly divided in opinion upon the matter and therefore it is doubtful whether the B.M.A. could count on the support of any substantial majority of the profession in seeking at this juncture to break off negotiations upon an Act which has already become the law of the land.

The Presidents of the Colleges, in their constructive letter to the Minister, dated Jan. 2, have outlined the main objections felt by doctors to the Act, and the Minister has now made a conciliatory reply in which he has expressed a willingness to negotiate freely within the framework of the Act and to endeavour to meet any views of the profession which do not conflict with the principles of the Act.

There can surely be little justification, in view of these circumstances, for now persisting in refusal to negotiate.

The Act is now law, but the details of its shaping still depend largely upon the results of free and constructive discussion between the Government and the doctors. It is surely in our own interest and, even more important in the interest of the nation, for the medical profession at this stage to approach the problem in a spirit of constructive co-operation, free if possible from political bickering, and to do all in its power while there is yet time, to advise the Minister on all matters which require clarification, elaboration or amendment within the framework of the Act—I am, etc.,

London NW 3

A B COOK

The Press and the Doctors

SIR—You write in your leading article entitled 'A Moral Issue' (Dec 28, 1946 p 993) that the medical profession as a result of the plebiscite has had a bad Press. It may be pertinent to point out that some journals have descended to actual misrepresentation of facts in their desire to belittle and traduce the conclusions to be drawn from the answers to the plebiscite. For example *The Times* in its issue of Jan. 6 prints on its front page a statement that 'the clumsy attempt to enforce a closed shop on municipal, medical and nursing staff undoubtedly influenced the doctors voting in the recent ballot'. The forms asking doctors to vote were issued in the week ending Nov. 16 and recipients were urged to reply as soon as possible. The 'clumsy attempt' was made on Nov. 29, by which date it would be a safe bet to assume that nine-tenths of replies had been made.

The *News Chronicle* in its issue of Dec. 14 reported hopefully a 'break-away movement from the B.M.A.' in certain bodies which it described as 'medical unions,' 'the biggest being the Medical Practitioners Union and the Confederation of Health Service Employees'. It went on to say, 'at present there are about 10,000 doctors in 15 or 16 unions' and it urged that these medical unions should 'get together and act as one'. It is reported that the Socialist Medical Association which 'is a political organization affiliated to the Labour Party,' expressed the confident conviction that 'fewer than 10,000 doctors will refuse to co-operate with Mr. Bevan'.

On Dec. 16 I addressed a letter to the *News Chronicle* pointing out that there is only one body—the Medical Practitioners Union—which is recognized both by medical practitioners and by the T.U.C. as a medical trade union, its present membership I stated on the authority of the general secretary to be approximately 4,000, as compared with 7,000 before the war, while the B.M.A. during the same period has grown from 40,000 to 54,000. I asked for evidence supporting the statement that 'there are about 10,000 doctors in 15 or 16 unions'. In a covering note to the editor I said I did not expect him to publish my letter but I hoped he might wish to correct statements which were clearly not in accordance with facts. Needless to say no notice was taken of my communication—I am, etc.

House of Commons

E GRAHAM LITTLE

Five Impossible Clauses

SIR—Mr. Bevan's reply to the Presidents of the Colleges leaves the situation quite unchanged. There are five clauses incorporated in the Health Service Act which it is impossible to remove by negotiation, since Mr. Bevan is only ready to negotiate within the principles of the Act. These are:

- (1) The basic salary
- (2) The refusal to allow an appeal from the Ministers' decision in cases of dismissal
- (3) The direction of doctors. Under the Act no doctor can settle in any district without the permission of some local or county organization
- (4) The refusal to allow the buying and selling of practices. This is fundamental, for eventually the State will be the owner of every practice in the country. This means a State monopoly of medical practice and the complete subjugation of it to the State with all that that implies
- (5) The penal clauses, which are outrageous to any free community

All these things are beyond negotiation now that the Bill has become law. Before, however, we say 'No' finally, is it not possible for the B.M.A. to elect a committee to discuss these vital clauses with the Minister with a view to discovering the possibility of removing these fundamentally objectionable clauses by means of an amending Bill? The rest of the Act is more or less workable, but these five clauses make it impossible for the majority of us to accept the Act. On the result of that discussion we should be in a position in which we could say 'Yes' or 'No' beyond question—I am, etc.

Histon Cambs

A E MOORE

Allergic Reactions to Penicillin

SIR—Allergic reactions to penicillin were reviewed by Dr A. I. Suchocki (Dec. 21, 1946 p 928). He recorded forty-seven cases and divided them into four classes: (a) allergic hyalrthrosis, (b) urticaria, (c) simulating serum sickness, (d) anaphylactic-shock like syndrome. All these reactions followed intramuscular injections of penicillin. The following record is of interest in that the father developed hyalrthrosis and the son developed urticaria after sucking penicillin lozenges, and both proved very sensitive to a penicillin skin test.

CASE RECORD

On Dec. 13, 1946, I was called to a boy aged four and a half years who had pain on swallowing, pyrexia, and swollen discharging tonsils. I prescribed penicillin lozenges to be sucked during alternate hours and small doses of aspirin, phenacetin, and Dover powder. On the first day he seemed to enjoy the lozenges, on the second day he had to be coaxed to take them, and in the evening developed swollen lips and said his 'tummy tickled'. When I saw him on the third day his tonsillitis was considerably improved but he had oedematous lips and large urticarial weals on abdomen, thighs, and upper arms. He had refused penicillin that morning. No more penicillin was given and the next day his urticaria disappeared, to reappear for a short while in the evening.

On Dec. 29 I rubbed some penicillin ointment (500 units in 1 g into an area of approximately four square inches (25 sq cm) on the upper arm. The skin immediately turned crimson and stung so for twelve hours, the patch being visible for twenty-four hours. Plain petroleum jelly rubbed into a similar area produced no coloration.

On the second visit to the boy I was asked to see the father who complained of a tickling throat and a feeling of incipient

head cold I advised him to suck some of the penicillin lozenges. Two days later his left knee was swollen, with fluid in and around the joint. It was tender but not red, and his temperature was normal. The penicillin lozenges were continued, and by the next day his right knee was mildly affected in the same way, and hydrarthrosis of the joints of the fingers prevented full flexion. The penicillin was stopped and within twenty-four hours the joints appeared normal. A skin test showed a sensitivity equal to that of his son.

This record shows once more how indiscriminate use of penicillin can produce startling results. It also points out the benefit of knowing about a patient's sensitivity to penicillin, so that an attempt may be made to desensitize him in preparation for a possible future sudden need for penicillin—I am, etc.,

Leeds

R A MURRAY SCOTT

SIR—Dr A I Suchecki's article on the above subject (Dec 21, 1946, p 938) prompts me to write of a recent case which showed somewhat unusual features. On Oct 14, 1946, a male patient of mine was admitted to hospital because of an acute septic infection of an old gunshot wound above the right ankle. For five days he had sodium penicillin parenterally in repeated doses amounting to 100,000 units each 24 hours, and there was a rapid improvement both generally and locally. Penicillin was continued as a local treatment and improvement was maintained until on Nov 22 he developed a mild urticaria on the neck and shoulders and two days later a generalized angioneurotic oedema, which gradually subsided under "benadryl."

The interesting features seem to be (a) the late reaction—five weeks after cessation of parenteral treatment—and (b) the development of severe sensitization during local application—I am, etc.,

Cambridge

J N TURNBULL

Curare

SIR—The use of curare in the production of relaxation has been hailed by many anaesthetists and surgeons as a milestone in anaesthesia. The comments of the nursing profession are, however, very different. I have made inquiries of half a dozen ward sisters, and without exception they condemn the use of curare on three grounds: first, that patients are more frequently in a condition of shock when they return to the ward. This is probably due to insufficient anaesthesia. Secondly, that marked respiratory depression is usually present, which requires the unremitting attention of a nurse for a long period of time. Thirdly, that paralytic ileus frequently complicates the recovery of the patient. This condition may of course come on after any variety of anaesthetic, but the impression is gaining ground that it occurs much more frequently after the use of curare for an abdominal operation. One of my surgical colleagues has received a letter (which I have permission to quote) from the matron of a nursing home in which she asks whether she is justified in restraining anaesthetists from using curare in her home owing to the many cases of ileus that have occurred and the inability of her nursing staff to cope with them without the presence of a resident medical officer.

Insufficient attention is often paid to the point of view of the nurse in the assessment of a new drug. Too little time is spent by the modern anaesthetist in the ward, watching the post-operative course of his patient. Curare is an extremely valuable addition to the armamentarium of the anaesthetist, but it is not the perfect anaesthetic drug—for which we are still seeking—I am, etc.,

London W 1

MASSEY DAWKINS

"Lissive" Action of Curares

SIR—The recent article on *d*-tubocurarine chloride by Kellgren *et al* (Dec 14, 1946 p 898) is not quite correct where it implies that we attributed the selective rigidity-removing ('lissive') action of some curares to a sedative effect upon the central nervous system.

We were unable to establish the source of the 'lissive' action of curare in canine tetany or in man. We found it to be the property of some samples only, and those samples could not be identified geographically. One of us subsequently found the same property (in respect of canine tetany only) in the non-quaternary alkaloidal fractions of certain *Strychnos* and other

plants (1937), and noted that its presence was accompanied by a mixture of curariform and strychnine-like actions. It thus seems possible that the 'lissive' action of some curares is due to a combination of two antagonistic effects—one centrally excitant, the other peripherally depressant. If this is so, the fact may ultimately be capable of therapeutic exploitation. We are, etc.,

St Bartholomew's Hospital Medical College
LondonH HARTRIDGE
RANYARD WEST

REFERENCE

West R (1937) *Arch internat Pharmacodyn* 56 107

Acroparaesthesia and its Treatment

SIR—Some time ago Dr F M R Walshe discussed this syndrome in the *Journal* (Nov 3 1945, p 596) and also described it in the fourth edition of his *Diseases of the Nervous System*. This syndrome is found chiefly in women but recently I have found it also in men. It consists of weakness and stiffness in the forearm, especially when starting their work in the morning, and dropping things from the affected hand which feels clumsy. In addition there are symptoms of a neuralgic character—numbness, and pins and needles in the fingers and hand. There is always marked tenderness of the extensor muscles in the forearm. Walshe prescribed rest as the only effective treatment. In severe cases he advocated a week in bed propped up during the day, with the arms in slings and taken out only for feeding, etc.

For several months now, following the work of Good (*Minor Medicine* p 169) and Kelly (*Ann rheum Dis* 1945-6, 5, 1 69) I have treated several of these cases with excellent results. The treatment consists of injecting 0.5% procaine into tender spots found in the extensor mass at the level of the neck of the radius. The needle is inserted into the muscle and its point is then used as a probe to find the tender spots. When the exact spot is located by the needle point there is no doubt about it, for the patient, however stoical, will be unable to suppress a wince. Inject 0.5 ml, then probe for other spots watching the patient's face and inject again.

After treatment, when the anaesthetic effect has worn off, the pain may be worse for a day or two. The patient should be warned. Great relief follows. If this is not complete further injections may be given in a week's time. At this second examination the injected spots will no longer be tender but others will be found in much the same area. It is seldom that the injection treatment has to be repeated more than twice—I am, etc.

London S W 4

A P MAGONET

Endogenous Depression in General Practice

SIR—I was interested in the article on this subject by Dr C A H Watts (Jan 4, p 11), particularly in his emphasizing that most of these cases can be treated outside a mental hospital with much better results, with this I am in entire agreement and it is the goal and aim of most medical men. Among the doctors in mental hospitals we have some who are most distinguished and of the highest integrity, but there are others who are unfortunately incompetent for this type of work or who are indifferent, under whom the patient gets better in spite of them and not because of them. Very much good is done in some mental hospitals, but in others there is much that could be improved and there is a tremendous drainage of the nation's money, medical man-power and nursing staff, who take away with one hand what they unsuccessfully and feebly attempt to give with the other. When the patient comes out of hospital he finds attributed to him qualities so peculiar and so amusing that the whole position would be farcical if it were not so deadly dangerous and tragic.

I would most earnestly appeal, Sir, for the complete reorganization of conditions in some mental hospitals which it is public knowledge, are far from good and for breaking completely the archaic laws and decaying bonds which loosely bind the whole structure. They perpetuate the very conditions which they are impotent to cure. It is a system which needs rapid clarification from the shroud of obscurity which surrounds it in an abyss of futility and waste.

I was interested to read also in the same issue (p 33) the remarks of Dr L Sheldon, who states that no fewer than

four cases—two of carcinoma of the stomach, one of gastric ulcer, one of advanced pulmonary tuberculosis—were erroneously diagnosed as cases of anxiety neurosis within six months, to his knowledge alone. I would like to ask Dr Sheldon what would have happened if by a chain of circumstances these patients had unfortunately been admitted into a mental hospital, where most of the patients' complaints are invariably put down to imagination and persecution mania. No doubt they would have died of their organic disease, but not before developing mental symptoms which would of course have justified the original false diagnosis of anxiety neurosis—I am, etc.,

London N W 11

A LIONEL ROWSON

Primary Agranulocytic Angina

SIR—Thank you for your kindness in publishing my paper on agranulocytic angina in your issue of Dec 14, 1946 (p 897), as well as for your courteous and interesting annotation (p 905). I have since ascertained through the kindness of Dr S B Benton, the deputy medical superintendent of the Nottingham City Hospital whom I must thank for allowing me access to the follow-up records, that the patient in question turned up unexpectedly after a year's absence. His condition remains satisfactory. There are no signs or symptoms, while his total white cell count is 8 000 per cmm—the differential count being polymorphs 76%, lymphocytes 24%—thus adding weight to our suggestion of spontaneous recovery.

I feel, however, that the pentnucleotide did help not a little in tiding him over the acute stage and that it should not be absolutely withheld, especially in these cases where septic complications, which of course demand penicillin and perhaps pyridoxine, are not a major factor. I agree that in cases where the causal factor is a chemical poison such as thiouracil or sulphonamides the immediate cessation of administration of the poison will do more perhaps than anything else to get the marrow going again, for obvious reasons—I am, etc.,

Nottingham

I M LIBRACH

Haematological Heresy

SIR—I was greatly interested in the article by Dr R R Bomford (Dec 28 1946 p 996) under the above title. It stimulated thought on a problem which most of us have regarded as settled beyond reasonable doubt, and it is right that all hypotheses should be subjected to such attacks, whether or not they emerge triumphant or are superseded by newer theories more consistent with the known facts. In the case of the maturation theory of the causation of pernicious anaemia the evidence in its favour is so strong as to make it well nigh incontrovertible. However, like Dr Bomford I have often been at a loss to explain the high level of blood destruction which is apparent from the evidence of increased phagocytosis of red-cell elements, the haemosiderosis of liver, spleen and other organs, bilirubinaemia and methaemalbuminaemia (Fairley 1941) and from the increased excretion of urobilinogen. Nevertheless it hardly seems necessary to abandon a well-founded theory on this account if, as I believe it can be modified in such a way as to explain fully these findings without delving into the limbo of hypothetical toxins, as suggested by Dr Bomford.

It has often been shown that the fragility of the red cells in pernicious anaemia is not increased, but there is no evidence that the late precursors of the red cells, the haemoglobinized megaloblasts, are not more fragile than normal, or at any rate more liable to phagocytosis in the reticulo-endothelial system. If this is in fact the case it may well be that lack of the haematinic principle disturbs erythropoiesis in such a way as not only to produce premature haemoglobinization but also to render the cells more liable to destruction—probably at the stage that extrusion or disruption of the nucleus takes place. If I may adopt Dr Bomford's simile of the motor-car factory, it is not the lack of an essential part which is the trouble but the provision of a faulty part rendering the car liable to explode when the starter button is pressed. We then have the position where there is an increase in the rate of production to compensate for the shortage of cars or red cells, in circulation and an increase in "scrap," as evidenced in the body by haemosiderosis, bilirubinaemia, etc. This theory also has the advantage that it

readily explains the lack of reticulocytes in the circulating blood of an untreated case and the dramatic reticulocyte response to liver therapy, even accompanied as it sometimes is by a shower of nucleated cells, since, when the cells are no longer destroyed at the stage when the nucleus is lost, there is bound to be a rapid increase of very young cells in the blood stream.

I am aware that this theory has no experimental backing, but at least it involves less alteration in an otherwise adequate theory than the alternatives suggested by Dr Bomford. Perhaps in these days of tracer elements it may be possible to settle this question once and for all, but in the meantime we must be grateful to Dr Bomford for renewing interest in this subject—I am, etc.,

Harefield

F E T SCOTT

REFERENCE

Fairley N H (1941) *Quart J Med* 10 95

SIR—During the war I found myself transformed from a clinical biochemist into a haematologist responsible for teaching up to 120 students a year. Being initially profoundly ignorant of the subject, and my haematological colleagues being inaccessible I was forced to study the literature and to supplement this wherever possible by my own observations. The maturation arrest theory of pernicious anaemia as Dr R R Bomford (Dec 28 1946 p 996) shows, unable to co-ordinate many of the facts already known. The Ehrlich Ferrata (1914) hypothesis of erythrooiesis (that is, that in pernicious anaemia an abnormal series of red cell precursors—megaloblasts—appears) explains the morphological facts and La Cour (1944) showed that in the marrow of untreated pernicious anaemia mitotic figures were increased and that 70–80% of these were abnormal, treatment with liver extract returns the marrow to normal.

These observations suggest that the liver principle does in fact act on the marrow and that its function is to permit normal mitosis, in its absence abnormal mitosis occurs and produces abnormal cells probably at a faster rate than in the normal. The high urobilin excretion in pernicious anaemia demonstrates that a haemolytic process of considerable intensity is occurring simultaneously. Erythropoiesis can proceed at rates six times greater than normal as is shown by the response to splenectomy for acholuric jaundice during or just after a crisis (e.g. Roth, 1927) and the hypothesis that urobilin is derived from haemoglobin precursors is unsupported by evidence and is chemically most improbable. This means that the theory of abnormal erythropoiesis proceeding at an increased rate and the theory of increased haemolysis are both true and must be reconciled. The hypothesis of selective lysis of abnormal reticulocytes is most attractive. On my reading of the original theory abnormal cells are formed and destroyed by the normal processes of the body more rapidly than are normal cells, and the anaemic state which develops is the resultant of these two processes. To invoke haemolytic toxins may be necessary for the explanation of dibothriocephalus anaemia and for that associated with stagnant loops of bowel, but is surely unnecessary in true pernicious anaemia.

Many haematologists fail to distinguish between normoblastic and megaloblastic erythropoiesis. This fundamental error arises from Doan Cunningham and Sabin (1925) who misused the term megaloblast in that, ignoring the rules of scientific nomenclature, the 30 odd years priority of Ehrlich who applied it to a rather mature cell found in pernicious anaemia and the 12 years priority of Ferrata and Negreiros Rinaldi who extended it to the whole series of abnormal red cell precursors found in pernicious anaemia, they redefined it as the most primitive erythropoietic cell of foetal and adult haemopoiesis. Sabin soon identified her 'megaloblasts' with those of Ferrata and the theory of maturation arrest is a logical necessity of this erroneous identification. It was naturally soon "confirmed" by studies on material from which true megaloblasts (Ehrlich Ferrata) are known to be absent. Not until 1938 did Sabin admit that cells morphologically identical with the megaloblasts of pernicious anaemia are not present in normal rabbit marrow (see Jones, 1943).

It is surely true that the sections on erythropoiesis found in the textbooks should be remodelled to agree with the facts. The maturation arrest theory appears in all the textbooks of

physiology with which I am acquainted, and it does not agree with the observed facts. A lead has been given by Wintrobe and by Whitby and Britton. Let us now persuade the physiologists to describe theories which agree with observation, in this way they would ease the task of their students and of their colleagues in the field of clinical haematology—I am, etc.,

London N W 10

GEORGE DISCOMBE

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 Roth O (1927) *Folia Haemat* Leipzig 35 1.

Diet and Canine Hysteria

SIR—The preliminary report (Dec 14, 1946 p 885) of Sir Edward Mellanby on the experimental production of the hysteria syndrome in dogs by feeding agenzized flour is of very considerable interest to the veterinary profession. Although experience had forced the majority of practitioners to consider the causative factor to be located in wheaten products, yet few appeared to have any idea what that factor was or how it worked. Sir Edward's findings will also prove to be of the greatest assistance to those who are studying canine encephalomyelitis and distemper virus encephalitis, since in both these diseases the hysteria syndrome frequently complicates or rather is superimposed on, the other symptoms in such a way as to puzzle the keenest observer.

The purpose of this note is to suggest the precaution that before any feeding experiments on human volunteers are conducted a thorough study should be carried out of the histology of the central nervous system of (1) heavily agenzized dogs and (2) agenzized dogs infected by distemper virus, for the following reason. During the course of a study of the pathology of disseminated encephalomyelitis of the dog in 1927-9 it was demonstrated by J R Perdrau and L P Pugh (*J Path Bact* 1930, 33, 79) that four out of the fourteen cases investigated showed demyelination of the type commonly found in subacute disseminated sclerosis, and, just as in the case of its human counterpart, the hypothetical demyelinating toxin could not be discovered. In these circumstances it does not seem beyond the realms of possibility that Mellanby's toxin may well open up a still wider field of greater importance than would it first appear—I am, etc.

Suttons

L P PUGH

Sulphadiazine in Infantile Gastro-enteritis

SIR—With reference to Dr C J Penny's letter (Dec 28 1946 p 1006) regarding the efficacy of sulphadiazine in infantile gastro-enteritis, my experience with sulphaguanidine in the treatment of acute bacillary dysentery may perhaps be of interest. While acting as medical officer in charge of the dysentery wing at Changi prisoner-of-war hospital, Singapore from June, 1944, to September, 1945, I carried out a controlled experiment to test the relative efficacy of sulphapyridine and sulphaguanidine in acute bacillary dysentery. Sulphapyridine was extremely effective in practically all cases in doses of 3 g daily for two days. Sulphaguanidine in doses up to 15 g daily (the most we could afford from our small stock) was ineffective in severe bacillary dysentery and was far slower in controlling the symptoms in moderate cases. From these results we concluded that the action of sulphaguanidine was not local but depended upon the amount absorbed into the blood stream. I may add that over four thousand cases of dysentery were dealt with during this period and we had ample clinical material on which to prove the result of the experiment—I am, etc.

Winchester

W J E PHILLIPS

Tuberculosis in Industry

SIR—In his paper on "Tuberculosis in Industry" (Dec 28 1946 p 975) Dr Frederick Heaf refers to the detection by mass radiography of symptomless cases where laryngeal swabs or gastric lavage show tubercle bacilli in conjunction with minimal radiographic lesions. Dr Heaf asks: "Are we to regard them as active infectious cases with respect to their employment and need for treatment?" He answers his own question: "Personally, I think we should take every precaution

to prevent the spread of infection and to arrest the disease, for we have a good chance of curing these cases, and that a compromise between employment and treatment while activity exists should be avoided. [The italics are mine.] In the past too much time and skill have been wasted on the impossible task of restoring the advanced case to health when consideration of the morbid anatomy would have caused us to direct our energies to efficient treatment of early cases."

With that last sentence I agree, but I dissent from the implied suggestion that the former group of cases should occupy sanatorium beds 'while activity exists'. Wherein lies the activity? Not in symptoms since none are present, but in minimal radiographic signs and a few tubercle bacilli detected with difficulty. At this stage there is little risk of the spread of infection. At this stage we have a good chance of curing these cases. We certainly have. In many of them the disease becomes arrested—a word preferable to cured—without any treatment in the ordinary therapeutic sense. So in the first instance these are cases for observation until the need for treatment is shown to be necessary.

Mass radiography has confirmed the dictum of Sir Clifford Allbut at the beginning of the century—that many patients recover from pulmonary tuberculosis unbeknown to themselves or to their doctor who was treating them for something else. Moreover mass radiography reveals gross calcified lesions in persons who so far as they knew never had a day's illness or lost a day's work. The findings of mass radiography are certainly causing some apprehension because they have shown that the essential problem of tuberculosis is as yet unsolved—I am, etc.

London W 8

HALLIDAY SUTHERLAND

Infertility: Cervical Impenetrability

SIR—A review of the present state of investigation and treatment of human infertility, a problem of national and human importance, was presented in the *Journal* of Oct 26 1946 (p 618). The conclusion reached was that although more accurate diagnosis has been achieved the result of treatment on the whole is unsatisfactory.

I wish to limit the following remarks to those cases of infertility (a not inconsiderable number) in which the only discoverable fault is the failure of viable spermatozoa to penetrate and survive in 'ovulatory' cervical mucus. It is suggested that either the interface (the point of contact of the two immiscible colloids semen and cervical mucus) or unknown physico-chemical factors within the mucus devitalize the spermatozoa and they die. These physico-chemical factors of mucus have up to the present time been comparatively neglected. The solitary published work bearing on this aspect of the subject appears to be *Observations on Certain Rheological Properties of Human Cervical Secretion* (Clift A F, *Proc roy Soc Med* 1946, 39 1)—an investigation carried out in the Nuffield Department of Obstetrics and Gynaecology, Oxford. Cervical mucus is secreted continuously throughout the menstrual cycle, and its quality or consistency undergoes cyclical changes due to the influence of hormones. It is known that this secretion is influenced both in quantity and quality by the administration of oestrone.

When considering a body secretion such as cervical mucus we must remind ourselves that secretions are not true fluids; they are complex rheological systems and as such they are characterized by rheological properties—e.g. anomalous viscosity, elasticity, flow elasticity, *Spinnbarkeit* (fibrosity), tack, stickiness, adhesiveness, plasticity, work-hardening and possibly rheopexy, thixotropy, birefringence, etc. Such is the complexity of the cervical mucus. To quote from D Arcy W Thompson's *Growth and Form* (London 1942) under the heading of Rheology and Colloids:

'Where the bacillus lives' [and here we may substitute the word spermatozoa] gravitation is forgotten, and the viscosity of the liquid, the resistance defined by Stokes's law, the molecular shocks of the Brownian movement, doubtless also the electric changes of the ionized medium, make up the physical environment. The predominant factors are no longer of our scale; we have come to the edge of a world of which we have no experience and where all our preconceptions must be recast.'

A more analytical study of the rheological properties of cervical mucus is essential to a clearer understanding of the

relation of variations in consistency of cervical mucus to penetrability by spermatozoa. Rheology—i.e., the science of the deformation and flow of matter ($\rho\epsilon\iota\sigma\tau\epsilon\lambda\omicron\gamma\iota\alpha$)—offers conceptions based on special properties of molecules, such as polarity and length, as theoretical aids to assist in understanding these properties. Efforts are being made to replace rough subjective tests for these rheological properties by more accurate objective measurements—e.g., the Scott Blair meniscope, designed for the measurement of the flow-elasticity of human cervical mucus.

Prof G R Cameron, in his address on cellular pathology given at the Centenary Celebrations of the Pathological Society of London (*Proc Roy Soc Med*, 1946, 39, 827), said: "We are passing from a period of physico-chemical investigation into the submicroscopic period, we are coming to think of protoplasm in terms of giant molecules and mono-molecular surface films and their physico-chemical properties governed by molecular arrangements. This stage is progressing from a relatively simple colloid chemistry to the involved considerations of high polymer chemistry. The methods of such special fields as polarization optics, x-ray crystallography, and electron microscopy would seem to be essential for the investigation into protoplasmic reactions." What Prof Cameron says of the approach to the investigations of protoplasmic reactions can equally be applied to the study of cervical mucus. The biochemistry of bovine cervical secretion is proceeding apace but no similar chemical investigations have been undertaken with human cervical mucus.

The study of this aspect of infertility is therefore a very comprehensive one. No isolated gynaecologist or biologist working individually can hope to approach the subject from all points of view. Access to the appropriate expert opinion should be made available through a team of workers comprising rheologist, biologist, chemical pathologist, endocrinologist, together with a gynaecologist. Medical personnel interested in the study of infertility will appreciate the important observations and "invasion tests" contributed by Mary Barton and B P Wiesner in their article *The Receptivity of Cervical Mucus to Spermatozoa* in the *Journal* of Oct 26, 1946 (p 606).

Discoveries in research and therapeutics go hand in hand (Samuel Wilkes). The solution of the problem of infertility would relieve the 'anxiety, unhappiness, and bitterness that childlessness can cause'—I am, etc.,

Bromley Kent

A F CLIFT

Oedema of Vulva due to Toxaemia of Pregnancy

SIR—The interesting account (Dec 28, 1946, p 988) by Dr J P Bush of a case of oedema of the vulva recalled to my mind a similar case, with a less fortunate ending, which was forced on me at an early stage in my career. In 1934 I was doing my first assistantship in general practice in an isolated and wild country district of north-east England. The country side was delightful, the practice widespread, but the nearest hospital of any sort 28 miles distant.

One spring morning one of the other doctors in the area notified me that he was to be away for the day and asked me to do any urgent work for him that might materialize. He told me that there was a primigravida, not due for several weeks, about whom he was rather worried, as she had considerable oedema and very heavy albuminuria, whom he would see before he left, but said it was very improbable I would have to call inevitably of course a call came to that case in the late afternoon, and I got there to find the girl was having vague pains which her mother thought might be the onset of labour.

I had never seen the patient before and my dismay can hardly be imagined when I discovered that there was such gross oedema of the vulva (as well as of legs, thighs, and abdomen) as to make vaginal examination completely impossible. In a cottage deep in the country and far distant from hospital, methods very different from those possible at St Thomas's were necessary, and under local ethyl chloride anaesthesia I incised both labia, releasing a large jet of pale yellow fluid under pressure from each side. After 15–20 minutes the ballooned vulva had subsided enough to allow of vaginal examination, which confirmed that the first stage of labour was well advanced, and an exceedingly anxious assistant discussed with the patient's mother the choice

between the chances of the patient arriving safely at hospital for Caesarean section or of keeping her at home with safety.

With time obviously short it was decided to carry on at home, and within an hour and a half a live child was born only to reveal—what had been hidden by the gross oedema of the abdominal wall (and 'ascites')—that another was to follow. The second child, a breech, followed safely within the next 15 minutes, and all so far had gone well. But an hour later the patient went into her first eclamptic fit and from then on till her death 36 hours later fits followed at pretty regular hourly intervals despite all the usual treatment.

This, Sir, is a sad story and should never have happened. I tell it so that others who read Dr Bush's case report may not be deceived into taking the slightest and very unwarrantable risk of temporizing or delay. That way lies disaster—inevitably—I am, etc.,

W H G

Prevention of Infant Deaths

SIR—Dr J Tudor Lewis (Dec 14, p 893) discussing a scheme to attain improved liaison between hospital and home maternity services in order to salvage a certain number of infant deaths, quotes from seven case histories to illustrate his view point, under the heading 'The Need for Liaison'. The illustrative cases cited, however, predominantly indicate that the main onus for the infant deaths in at least five of the cases must be related back to their too early discharge from hospital. It is hard to conceive how the premature infants mentioned could have become established during their short hospital stay, and irrespective of the home conditions they had to contend with afterwards their chances of survival were unnecessarily gravely prejudiced by their early discharge. Despite the all too common excuse of shortage of beds in obstetric units, surely it is a false economy to prejudice these premature infants' chances of survival at the expense of a further week's or ten days' stay in hospital. Another disturbing feature was the frequent incidence of anaemia of the mothers in the quoted cases. Dr Lewis does not state whether the blood counts were taken ante or post partum, but from the histories they would appear to have been estimated prior to delivery. There is no indication given whether any measures were instituted to correct these anaemias, although the comments he made tend to suggest that they were not.

In our experience quite the commonest maternal cause of the failure of a mother to make a success of rearing her child is post partum anaemia and debility. It would appear, therefore, that the additional burden of a premature infant not yet fully adapted to its extrauterine environment, was being placed on an already debilitated mother, who, no matter how willing she may have been in spirit, was physically unable to cope with her task. Case 6 illustrates how immense such an unfortunate parturient woman's task can be. She poor soul, had an unpleasant antenatal period from hyperemesis, and in addition to being of a naturally apprehensive, nervous disposition was also suffering from some degree of general debility. She could not reasonably be expected, therefore, to be in any better health after her delivery than before it, but in addition to being sent home on her ninth post partum day, with a small premature infant, she was expected to feed it every two hours. It is difficult, thus, to concur with Dr Lewis when he states that 'clearly the death of each one of these infants was caused directly or indirectly by the poor 'mothering' and care it received after (italics ours) leaving the hospital or maternity unit.

Could it not be more justifiably said that the death in the case of each premature infant be related primarily back to the too short period of institutional care?

The provision of a hostel for the transitional stage between hospital and home periods, to enable the difficult and premature infants to be 'hardened off,' has the definite advantages claimed for it and these advantages, we think, are not outweighed by such disadvantages as cross-infection and epidemic types of illness provided reasonable care is taken by the charging maternity unit that these infants are themselves

and have not been in contact with any such types of infection. Much, however, can be done during the antenatal period to stimulate parental interest and foster both 'mother and faith

craft by the institution of simple lecture demonstrations for both parents these being developed as a part of the antenatal service. This interest can be further developed in hospital in the case of a mother with a difficult or premature infant by making her responsible under supervision for the entire care of her baby during the additional period of hospital stay allowed for the infant to become established. The hospital almoner also is of great assistance in the welfare of both mother and infant. It is our practice to have the home circumstances of each case investigated by the almoner during the lying-in period, and to be satisfied that sufficient home help and reasonable home conditions exist before discharging the mother and infant from hospital. Although Dr Lewis states that the liaison obtained by notifying the Health Department of such an infant's discharge and requesting an early visit from the health visitor is ineffective we have found that in practice by ensuring a home visit on the day following discharge, the continuity of supervision of the mother as to the care of her infant is preserved with reassuring results.

We feel therefore that the major responsibility in the establishment of small difficult or premature babies after birth lies primarily with the maternity unit and that such a unit must be fully satisfied when such infants are discharged home that they are fit to withstand the less suitable conditions in the average household, and that in addition their mothers must be fit at least physically, to look after them.—We are, etc.,

Nottingham

I M HARKNESS
J B COCHRANE

"Anaesthesia" or "Analgesia"?

SIR—Dr F W Roberts in his letter (Dec 28 1946 p 1007) raises two points to which I feel I must reply in self-defence. First he states that 'novocain' and other local anaesthetic agents do not abolish touch deep pressure and thermal sensitivity and are therefore true analgesics. I believe that they abolish all these and are therefore true anaesthetics which is the base of the reasoning that appears faulty. Authority for this may be found in any textbook and I would quote Langton Hewer's *Recent Advances in Anaesthesia and Analgesia* fifth edition p 143 where reference to the literature is given. Secondly if I had meant intravenous anaesthesia I would have said so. Reference to the slow drip infusion of dilute procaine in glucose saline is given on p 139 of the same work.

Whether analgesia is an ugly word is of course purely a matter of opinion. It is much more frequently written than spoken which suggests that others besides myself find it so and I have not yet heard of its being used as a girl's name which is a touching tribute to the beauty of the word anaesthesia. As a matter of fact I find from Liddell and Scott that there is no distinction between the words in Greek although the adjective derived from analgesia was used to mean 'very painful'. This might be held by some to justify the use of the word to describe the occasional nerve block which does not come off.—I am etc.

Colchester

J N FELL

Abacterial Pyuria

SIR—Dr D P Wheatle, (Nov 30 1946 p 837) brought attention to the fact that no mention had been made of penicillin in the treatment of abacterial pyuria. I have treated several of these cases with large doses of penicillin (over a million units) and can record only a temporary slight improvement followed immediately by relapse on cessation of penicillin administration. In contradistinction to Capt Meldsend R A M C I have always found evidence of prostatic infection with the presence of pus cells and a lessened epithelial content in prostatic beads.

Search for the *Trichomonas vaginalis* has been negative on each occasion despite repeated examination for the same. I have always regarded these cases as infection of the bladder gone by simple extension from a posterior urethritis and prostatitis. Two cases gave a history of non-specific urethritis in which high urethral lavage had been administered. I have treated several of these patients with intravenous oarsphenamine and while recording an improvement and clearing up in the majority must submit that some

responded only to long-term hospitalization and rest. I should like to add that all were subjected to complete pathological and physical investigation to exclude other causes, and only in the end labelled abacterial pyuria.—I am etc.

F LANCELEY
Major R A M C.

Chester

Pre-operative Blood Transfusion

SIR—Many surgeons have wisely adopted the pre-operative blood transfusion to hasten recovery and to minimize the risks attendant upon operation in the anaemic subject. It would seem however that some of these surgeons or their house-surgeons are unnecessarily delaying the giving of these transfusions until almost the immediate pre-operative period. I would suggest that such a delay except in a case of active haemorrhage is not in the best interests of patient or surgeon.

My reasons for making this suggestion will be obvious to all surgeons but for those who would appear to have overlooked them I append the following: (a) Even under the best conditions a transfusion may be followed by a reaction. This complication is always undesirable but especially so just before an operation. Even in the absence of reaction a transfusion places a considerable physical and mental strain upon the patient. (b) Attention has recently been drawn in your columns to the value of adequate nutrition during the week or two preceding operation. Anorexia a frequent accompaniment of chronic anaemia is often not overcome until the anaemia has been satisfactorily treated. Moreover it is surely desirable that the patient should be given the advantages ensuing from improved oxygenation of vital organs for a greater period than the 24 hours or less before a major surgical ordeal.

For these reasons I would plead that the transfusion of surgical cases complicated by anaemia should be undertaken at least one week prior to operation. It may be objected that the adoption of such a measure is quite impracticable because of the shortage of hospital beds. It would seem probable however that the increased time spent in hospital during this preparatory period would be counterbalanced by the hastening of recovery following the operation. In some instances it may be of value to admit the patient for two or three days only for the transfusion and then to re-admit for the actual operation.—I am etc.,

Bristol

GEOFFREY H TOVEY

Conservative Treatment of Perforated Ulcer

SIR—I was interested in the summation and verdict on the above given in the annotation in the *Journal* of Dec 21, 1946 (p 950). During the past three years I have been investigating these cases from the radiological and clinical aspect and in a paper to the Faculty of Radiologists in June, 1945 I suggested in view of the observations to date that the conservative line of treatment should be given a fair trial. The idea was ridiculed at the time and it was with considerable difficulty that some of my surgical colleagues were persuaded to try the method. The investigations were on the acute abdomen with particular reference to the presence of free gas in the peritoneal cavity.

The radiological detection of free gas in the uppermost dependent portion spells only one thing—a perforation somewhere in the gastrointestinal tract. The subdiaphragmatic gas gives us a fairly accurate estimate of the degree of gas-leak and consequently an idea of the size of the perforation. I would be interested to know the views of surgeons as to the value attached to the presence of free gas in the diagnosis of perforation and if they have utilized the volume of gas present as an index of the degree of leak and size of perforation. Assuming there is a gas-leak in the majority of perforations it would appear to me that the estimation of volume would be of assistance in determining the suitability of the case for conservative treatment or otherwise. The gas may vary from a millimetre to a couple of inches (5 cm) and a check can be made during the first few hours as to increase or otherwise. Unfortunately there is at present no method of indicating the stoppage of leak but we can at least indicate any increase. The gas is absorbed slowly and may take according to the volume anything from five to fourteen days. The direct or scout r-ray examination should be helpful not only in assessing the degree of leak but also in the differentiation between intra- and ref-

peritoneal perforation—the latter, unfortunately, a more serious drama and with a very high mortality rate

Two aspects of the radiological investigations impressed me: the number of cases of spontaneous recovery with conservative treatment, and the frequency of perforation in peptic ulcer, without the knowledge of the patient, his medical attendant, or surgeon. Perforation is not always the dramatic picture it is painted and may manifest itself as an acute and transient exacerbation of the ulcer symptoms, when the patient seeks the attention of his relatives, the usual alkaline mixture and rest in bed before calling his medical attendant. An examination of these cases will reveal minimal free gas—a perforation with rapid sealing. The following morning he is having his breakfast in bed.

I feel confident that peptic ulcers perforate more frequently than we imagine with quick and transient symptoms and if a check up is made in all cases of acute exacerbation of ulcer symptoms free gas will frequently be found. The frequency of the perforating type of ulcer found in routine barium meal examinations would tend to confirm this, and a careful check up on the past history may reveal a short period of acute exacerbation of symptoms. The patient may state he remembers a period when he was doubled up with pain, lasting perhaps for two hours. There is little doubt that he has perforated. Every acute or subacute abdomen should, on admission to hospital, have a scout film of the abdomen which must be taken in the upright, semi upright or lateral decubitus, in order to show free gas or indicate the presence of bowel obstruction. The absence of free gas strongly contraindicates perforation.

My admiration goes to those surgeons who have at least the courage to investigate the field of conservative treatment. Please do not let us precipitously condemn the method, rather let us proceed cautiously with an open and balanced mind, for the treatment is still young, and half a century of surgical tradition is difficult to change. As you state, a perforation is the surgeon's apotheosis, dramatic in the extreme, with the patient gravely ill and shocked. The addition of laparotomy is only too often the last act of the drama: the dropping of the curtain—I am, etc.,

Hill

J E BANNEN

SIR,—As you point out in the annotation (Dec 21, 1946 p 950) on the conservative treatment of perforated peptic ulcer, the mortality rates disclosed do not compare with those obtainable by surgical closure. There is other evidence against the adoption of this method as a routine procedure. It is not a recent innovation everywhere and has been practised on selected cases in at least two surgical units to my knowledge in Glasgow for over fifteen years.

The treatment is reserved—as Hedley Visick suggests—as reasonable—for patients in whom the initial spill is small and the signs suggest that the effusion is not increasing in size. Cases of this type amount to less than 5% of all ruptured ulcers. They are nursed on an inclined plane or in Fowler's position adequately morphinized, and nourished only through the rectum for forty-eight hours thereafter a conservative oral regime is started. This method has not had an extended application for the following reasons.

A study of the clinical pathology at operation shows that when a ruptured ulcer seals itself before laparotomy the seal is formed by adhesions to some structure of the biliary tract, commonly either liver or gall-bladder. For obvious reasons these are unsuitable structures to form the floor of a chronic ulcer. Infrequently the lesser omentum, mesocolon, or colon, and only rarely the omentum fills the gap. The last step in operative closure of a ruptured ulcer is or should be the completion of the repair by the interposition and fixation of a tag or tags of the lesser omentum between the sutured ulcer and neighbouring viscera. This has the double purpose of preventing less desirable adhesions and providing a possible source of enrichment to the blood supply of the ulcer-bearing area.

There is a further consideration in favour of operative closure. The removal by suction of effusion and particulate matter may not be necessary, but if Rutherford Morrison's pouch is sucked dry and the suprahepatic spaces similarly evacuated the convalescence is eased by the withdrawal of the highly irritant chyme from the peritoneum and the incidence

of subphrenic abscess lowered well below that published by Visick for conservative treatment.

In conclusion it is regrettable that Murphy's route for fluid replenishment is *demiode* among surgeons. When complete gastric rest is required absolute starvation combined with a constant-drip rectal saline will maintain the fluid balance more readily, more equably, and with greater safety to the patient than the alternative method. Hypoproteinaemia can if necessary be dealt with by intravenous plasma or reconstituted serum. Suction drainage through an indwelling nasal tube is uncomfortable while saline administered intravenously serves principally to stimulate renal function and always carries the danger of pulmonary oedema—I am, etc.,

Glasgow

A IAN L. MAITLAND

SIR—Courage is needed to sit on a perforated gastric ulcer, for most of us have been taught that a perforated peptic ulcer is a paramount emergency which needs surgical treatment at once, and any failure to effect this represents the dropping of a major brick, but to some Mr A Hedley Visick's most interesting article (Dec 21, p 941) on its conservative treatment will be hailed with much approval—though this does not apply to his remarks on bigger and better gastrectomies. It is a hard job sometimes to practise masterly inactivity, and some of his observations will act as a powerful encouragement. Sometimes activity seems to run in inverse proportion to experience. One of my duties is to attend a large body of men for whom a considerable first-aid department exists. With one exception the first aiders know little of medicine and recently they have been given a preparation of gentian violet—I imagine as an antiseptic. It produces a striking appearance and every kind of disability is treated with it. So far as I know it does no harm. Patient and attendant are well satisfied at the dramatic evidence of therapy and so it may well do good. It is a hard and thankless task to do nothing.

The use of morphine for the pain of a perforation seems sensible enough, though I have the feeling that the stomach lavage, the Ryle tube, and the sulphonamides might well be omitted. But there is the danger that it will be considered by friends of patients and attendants that not enough is being done. Mr Visick's article will sustain them in their conservatism to leave Nature to repair its transgressions. It is a relief to know that the peritoneum can deal with many strange and unexpected foreign bodies. Although I have seen my fair share of the catastrophes to which the human frame may be heir, withal I cannot resist a sneaking attraction for Wordsworth's simple faith 'that Nature never did betray the heart that loved her'—I am, etc.

London S W 1

E GALLOP

Wholesome Bread

SIR,—It is gratifying to find no less an authority than Sir Edward Mellanby drawing attention (Dec 14 1946 p 88) to the harm that is done to our food by certain organizations who put profits before public health.

For their own convenience the millers of this country by means of subtle propaganda have succeeded in building up a demand for wheat flour that has had the germ and pericarp removed and is in consequence considerably inferior as an article of diet to the wheat flour eaten by our grandparents. We are then faced with the absurd situation of the public spending enormous sums of money on vitamin B products many of which are prepared from the very substances the millers have removed while the widespread constipating effect of white denatured flour is relieved by paying certain firms to replace in our diet the selfsame bran that was removed in order to give wheat flour an unnaturally white colour.

But this is not the whole story. Having created an artificial standard of whiteness as a sign of good quality (by which standard strychnine would be regarded as a much more wholesome substance than cocoa) the millers were forced to put this fallacious teaching to its logical conclusion by saying that the whiter the flour the greater its food value. Unfortunately wheat flour is not pure white even after extracting important food elements which give wholemeal flour its brown colour and so a further artificial process of bleaching is introduced in order to render flour dead white in colour.



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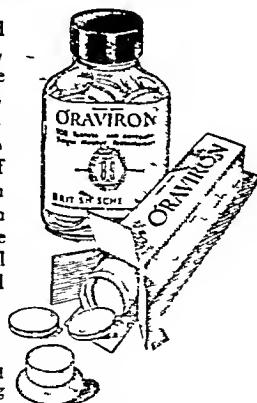
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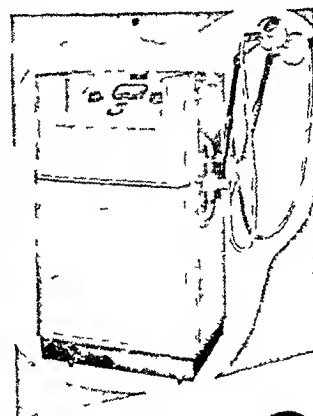
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be it noted, not for food or health purposes but for commercial money-making only. Still pursuing this self-interested propaganda the great commercial interests concerned described this process as an "improvement" and the chemicals used as "improvers," and it is here that I would like to enter a plea for the abolition of this unnecessary interference with our food and for the accurate use of English words, especially in scientific journals.

Hitler gave us many examples of how to disguise unpleasant truths by substituting mild-sounding words, as when he described his cold-blooded murders as "liquidation", and when commercial firms adulterate our food with poisons which have caused madness and death in numerous dogs let us call it quite plainly "adulteration" and not "improvement"—I am, etc.,

Slough Bucks

H TUDOR EDMUNDS

Sterilization of Syringes

SIR—The evidence in favour of boiling as opposed to fluid antiseptics for the sterilization of syringes is overwhelming and is quite untouched by the anonymous impressions described by "EX-RAMC" (Dec 14, 1946, p 920). Rather in the spirit of offering testimony against a method that has already been found guilty but not yet condemned to die, the salient points may be stated as follows.

For many years past in venereal disease clinics there has been a small but definite incidence of jaundice, but this condition became more and more common in the Services after 1941, reaching a very high rate in the years immediately following.¹ Its nature and mode of infection were at that time unknown, but it was in many quarters considered as primarily due to arsenic. In 1943 Bigger showed that the existing methods of syringe sterilization by means of spirit were in fact far from effective, and he and MacCallum² independently suggested that this faulty sterilization might be in part responsible for the jaundice. The following year, Salaman *et al.*³ showed that if the syringes were autoclaved and strict antiseptic precautions adopted then this disease could be practically eliminated from a clinic. (This was later amply confirmed by Laird,⁴ who employed boiling.) Boiling of syringes became compulsory for intravenous work, and the subsequent drop in the incidence of jaundice in a department where previously the rate had been high has been described.⁵ While the policy was approved it was not as vigorously pursued in respect of intramuscular injections not only on account of a relative shortage of syringes but also as it was considered that syringes were not likely to become contaminated during routine injections by this method as long as care was taken always to boil the needles.

Before syringe transmission was incriminated in respect of intravenous injections there had been several published cases where jaundice had followed administration by the intramuscular route. Hartfall *et al.* (1937) reported hepatitis following the use of gold salts. Kulchar *et al.*⁶ described 120 cases following bismuth therapy, and penicillin injections were themselves held responsible in 47 cases by Howells *et al.*⁷ in 1946, and 26 others were more recently collected by Hughes.⁸ By the present time most venereologists can recall seeing one or several such cases. And now Hughes⁹ has shown that with the intramuscular technique syringe contamination is far from infrequent but there seems to be a little reluctance in accepting the obvious implications of this modern version of the asepsis-antiseptis controversy.

The only point at which there is agreement with "EX-RAMC" is when he writes "It is hard to see why an injection of penicillin would be more likely to contaminate a syringe than one of T.A.B. tetanus toxoid or any of the other routine injections"—I am etc.

London W 2

R R WILLCOX

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Man in Relation to His Environment

SIR—With reference to the letter on "Man in Relation to his Environment," by Dr Frank Marsh (Nov 9, p 710), and the report of the British-Swiss Medical Conference (Sept. 28, p 471), perhaps the experiences and conclusions of one who has lived for very many years in hot climates may be of interest. That experience has been a very long and varied one, in the hot back blocks of New South Wales, thirty years in India and Assam, three years in Mesopotamia and a considerable time in South America. Five years at sea have given him an insight into ships engine-rooms and stokeholds.

In studying the question of ventilation of spaces, rooms, buildings, and the effects on the human body, three factors must be constantly borne in mind: temperature, saturation, and movement of the air. Of these, temperature is by far the least important. The human body can adapt itself to very large variations of temperature provided the other two factors are favourable. Cold, if the air is still and dry, as in Switzerland, is hardly felt. In a blizzard death will occur rapidly if there is no protection. Very high temperatures can be borne if the air is dry and moving. In regulating the loss of heat from the body the skin surface is in man the most important factor. The experiment has been tried with a man exposed to a vitiated atmosphere of keeping the body in that atmosphere and allowing the head to be in the air through a rubber dam. Under these circumstances there is little improvement in his sensations. Reverse the process, body in fresh air, head still in the bad atmosphere, and relief is rapid. A place is spoken of as bracing when the air there is dry and moving, relaxing when the opposite conditions prevail, and this irrespective of the temperature. The Iraqi deserts are bracing if the cardinal conditions are observed: keep away from water, keep away from trees and keep away from buildings and streets. When new units came to Mesopotamia, the tendency was to camp in the shady date groves along the banks of the rivers. Part of the duties of the writer was to chase them out of this into the open desert. He was met with strong expostulations and it had to be explained why they would keep fitter in a dry and moving air in contradistinction to a still and moist one.

In all his residence in hot climates the writer has never seen or heard of an authentic case of sunstroke, insolation, or collapse through direct action of the sun's rays, though heat stroke and sunstroke are commonly confounded. Instances may be cited which bear out what has been said above. At one time in Bagdad during the 1914-18 war there were a very large number of cases of heat stroke with a very high mortality. Sir William Willcox came out to investigate. He asked how the cases were being treated and was shown a beautifully cool underground cellar such as is common in Iraqi houses. There the cases were taken and splashed and bathed with cold water. What could be better than to treat such cases in the cool cellar? But Sir William thought otherwise. He said take them out into the open with improvised shade where there is a breeze, and then use your cold water and electric fans if available. The cases began to recover. In the cellar the temperature was low, but the air was still and damp from the breathing of the staff and the water used. Again, in the attack on the Malakand, troops had to be sent in a forced march from Durgai. Capt Wooley, I.M.S., in medical charge, related that while the men marched through the heat of the day they were perfectly fit. During the much cooler night, when they passed through a deep rocky gorge where there was little perfusion of air, the men went down like ninepins.

One very important point must be remembered. In a dry hot moving air the loss of water from the body through invisible perspiration is very large, and large quantities of salt are washed out of the blood—it may be with serious results. In the stokehold this is frequently seen as "fireman's cramp." Give such a sufferer a long drink of salt and water, which he laps down with the greatest gusto, and his cramps rapidly disappear. Intravenous injections of hypertonic saline have been used as an aid to the treatment of heat stroke. Dief in hot climates requires consideration. In cold climates a large number of calories are used in keeping up the body heat. The amount eaten is largely a matter of habit and those coming to the Tropics are inclined to eat as much as they did in a cooler climate. Another point which affects health in the Tropics

is housing. Masonry houses must be of good size, with large and airy rooms and good verandas. Most European houses conform to this standard. It is otherwise with most of the Indian-masonry dwellings. The rooms tend to be cellular and ill-ventilated, and in many cases the houses are too small—I am, etc.,

Taynult Argyll

P F CHAPMAN

Unemployed Specialists

SIR—Hospitals all over the country are being asked to consider the employment of full-time specialists at salaries of £1 000 per annum, and the Minister of Health has intimated that the Treasury will be willing to meet the cost of these salaries if the hospitals are unable to do so from their funds. Several points arise from a consideration of this scheme. It seems grossly unfair that specialists should have this preferential treatment over doctors who are desirous of entering general practice. It may be said that provision was made for them under the rehabilitation scheme, but this scheme was also available to specialists if they so desired. There must be many hundreds of doctors who would be only too glad of a subsidy of £1,000 for their first year in practice, and there seems no legitimate reason why they also should not be given a grant. It has been said that the specialist will suffer greatly owing to the difficulty in getting established before the coming of the National Health Service and that if something is not done he will be lost as a specialist. This is illogical, as presumably every doctor will be included in the Service, and if a doctor holds specialist qualifications I cannot believe that he will suffer by reason of having done other work in the meantime.

There are many doctors who were discharged from the Services on health grounds long before any provision for rehabilitation was made. Many of these must have suffered considerable hardship, and I have personal knowledge of one case in which neither the BMA nor any other body would give help even in the nature of a short term loan where a doctor's health had been so impaired as to render him unable to insure his life.

This 'spoon feeding' is nothing short of deplorable, is being played into the hands of the Minister of Health, with whom we are still in disagreement, and to those who accept it nothing short of charity or unemployment pay—call it what you will. And all this at a time when there is plenty of work to be done. It is to be hoped that the young men now out of the Services will put their backs into the job, and even if the job is not quite what they would wish do it with a will and do away with any sense of weakness and dependency either on the State or their fellow men—I am, etc.

Sonning

J J DAVIS

Colonial Medical Service

SIR—Further to your correspondent 'West Africa' (Dec 21 1946 p 963), may I after nearly four years' service on the Coast add a few points. Like 'West Africa' in his early days I have been encouraging medical friends to consider the Colonial Service, but with the new salary scale suggested by the Harragin Commission I shall hold my tongue.

Even since 1943 the cost of living has risen considerably and, as 'West Africa' points out, will rise even further. For example, my cook gets and needs 75% more than when I took him over from another European who was leaving the country in 1943. Market prices are, theoretically, controlled in so far as fruit, fish, meat and one or two other items are concerned but a very skilful 'fleece-the-white-man campaign' makes a mockery of the control. Household goods and basic foodstuffs imported from the United Kingdom are all more expensive than at home. Glassware, china and other breakables suffer from constant packing and unpacking as well as from 'boys'. Linen and clothing generally suffer from the effects of a tropical climate. Replacements of all kinds therefore are heavier than would be the case in England. The necessity of providing a second home in England for a wife and children is an additional expense which must be considered in assessing the value of incomes applicable to tropical service.

To offer a man in these days £660 with the possibility of rising to £1 200 may attract unmarried adventurers for a short time but will not retain the services of many men with a family or

other commitments to consider. As a result of the Commission's report I will gain financially in the immediate future. In view however, of the whole trend of policy in the past as referred to by 'West Africa' and one's older colleagues, I view my future in the Service with some apprehension. In consequence, much as I enjoy the type of life and the work and the friendly relationships existing in the department I for one will leave the Service if the Commission's recommendations are adopted—I am, etc.

'THIRTY

The Unstable Adolescent Girl

SIR—In her letter (Jan 4, p 30) on the subject of the unstable adolescent girl Dr Muriel Barton Hall gives I.Q.s as criteria for the diagnosis of degrees of mental deficiency, names mental defectives, moral defectives, and social defectives as separate entities, then criticizes the appendix to the report of the Committee on Psychiatry and the Law for offering no explanation as to which cases may be dealt with under the Mental Deficiency Acts. Surely the answer is mental defectives, and the definitions in the Act are quite clear. Mental deficiency is defined as a condition of arrested or incomplete development of mind existing before the age of 18 years, whether arising from inherent causes or induced by diseases or injury. It should be noted that the deficiency is of *mind*, not of that particular aspect of mind which enables a patient to say why it is foolish for Bill Jones to put his trousers on over his head.

It follows that any type of mental inadequacy necessitating care and supervision can properly be dealt with under the M.D. Acts provided the inadequacy is due to inherent causes or was induced by disease or injury before the age of 18 years. Under the M.D. Acts machinery already exists for the care and treatment of a large proportion of unstable adolescent girls, including those unnecessarily labelled psychopaths. While no one would wish to deny the value of mental tests when properly used, a little healthy debunking of the I.Q. may serve to clear the air and stimulate the utilization of the machinery already in existence—I am, etc.,

St Albans Heris

C GUY MILLMAN

Medico-Legal

A STERILIZED HUSBAND

Before the passage of Herbert's Act—The Matrimonial Causes Act 1937—wilful refusal to consummate a marriage was not a ground for proceedings in either divorce or nullity. That Act, however, laid down that a marriage should be voidable on the ground that it had not been consummated owing to the wilful refusal of the respondent. In *Cowen v Cowen* (1945) the Court of Appeal gave a wife a decree of nullity where her husband had either insisted on using a contraceptive or had practised coitus interruptus, so that he intentionally frustrated conception, one of the principal ends of marriage. The concept of wilful refusal has now been still further widened.

In *J v J* a husband, just before the marriage, had himself sterilized by vasectomy, telling the doctor who performed the operation that he desired it because there was insanity in the wife's family. Mr Justice Jones found that this act amounted to wilful refusal to consummate the marriage. He rejected the wife's petition, however, on the ground of her acquiescence. Apparently the doctor who performed the operation had insisted that both parties should sign a statement declaring that they fully understood and realized that the operation while likely to improve general conditions of health and function produced total and irremediable sterilization. This statement was produced in court. The wife gave evidence that she had signed it on the husband's promise not to have the operation until after they were married, but admitted that she knew of the operation before the marriage. The judge therefore held her to have acquiesced, and ruled that it would be inequitable and contrary to public policy to grant her a decree.

Obituary

SIR HENRY MARTYN, KCVO, FRCS

We record with regret the death on Jan. 7 of Sir Henry Martyn, lately surgeon apothecary to H.M. Household at Windsor. Henry Linnington Martyn was born in London in 1888, the son of Henry Matthews Martyn of Broadelyst, Devonshire and was educated at King's College School, Wimbledon and at King's College Hospital, where he gained three open scholarships in the University of London intermediate examination in anatomy, physiology, and pharmacology in 1908. Two years later he won the senior scholarship and qualified MRCS, LRCP, and in 1911 took the degree of MB, BS with honours in medicine, surgery, and forensic medicine, winning the university gold medal. He was elected FRCS in 1913. Martyn held the posts of house surgeon and house surgeon to the aural department at King's College Hospital in 1911. He was resident medical officer at the King Edward VII Hospital, Windsor, in the following year, and clinical assistant at King's College Hospital in 1913. During the war of 1914-18 he held a temporary commission in the R.A.M.C., serving successively as second surgeon and registrar to No. 12 General Hospital, surgeon to the Princess Christian Military Hospital, and surgical specialist to No. 10 General Hospital. In January 1919, he was invalided out as a result of sickness contracted on active service.

On return to civilian life Martyn settled in practice at Windsor and became surgeon, later consulting surgeon to the ear, nose, and throat department of the King Edward VII Hospital. In 1936 he was appointed surgeon apothecary to H.M. Household at Windsor, a position he held until 1938, when he was succeeded by Dr E. C. Malden. He was also consulting aural surgeon to the Maidenhead Hospital, the Staines Chalfont Windlesham, and Iwer Cottage Hospitals, the Staines Joint Fever Hospital and Cippenham Fever Hospital. His contributions to medical literature included notes on the treatment of septic wounds in a base hospital (*Journal of the R.A.M.C.* 1915) and on the operative treatment of septic meningitis (*Lancet* 1923). Martyn was in attendance when the late King George V suffered from bronchitis in 1931 and he also signed the official bulletins during the late King's illness in 1929. In 1923 he was appointed M.V.O. He became C.V.O. in 1927 and four years later was created KCVO for his services to King George V.

JOHN H. WEST MRCS LRCP DA

The news of the death of Dr. John Hardstaff West at Hill End Hospital, St. Albans, on Dec. 25, will come as a great shock to his many friends and colleagues at Barts and in Cardiff. John West qualified at St. Bartholomew's Hospital in 1932 and after holding various junior hospital appointments became senior resident anaesthetist at Barts. After holding this position for some years he went to Cardiff as lecturer in anaesthetics to the Welsh Medical School. He served in the R.A.M.C. during the war years. Dr. John West was an outstanding anaesthetist and was respected and liked by both colleagues and patients. Many of his former students will remember with gratitude his patient instruction and his pleasant personality. Among all his many friends and acquaintances there was no one who did not speak of him with affection. His last illness was borne with the courage and cheerfulness so characteristic of him.

A former colleague writes: Recently saddened by his impending departure from among us, the friends and colleagues of John Hardstaff West will be doubly distressed at the news of his death from acute illness on the eve of his setting out for Nairobi. Ten years ago he had come to Cardiff from Barts with the highest recommendations—which we soon found were no overstatements—of his charm as a colleague and his excellence as an anaesthetist. As a lecturer in his subject in the Medical School and as anaesthetist to the local teaching hospitals he was much in demand. His work was outstanding and he was the only anaesthetist in the town engaged

solely in the practice of anaesthetics. As such he succeeded Gordon Greaves who was killed in a motor-car accident in 1936. Early in the war a strong case was made for keeping him in this country but Johnny West was not of the type to remain long away from a fighting front. One day when examining in London, I was not surprised to receive a visit from him in uniform—to say goodbye on his way abroad. As a major in the R.A.M.C. he was for a time in Kenya. He and his wife, who was also in the R.A.M.C., were married in the cathedral at Nairobi, and they were much attracted to the country. It was not perhaps surprising that after his demobilization and his return to Cardiff we noticed that he was somewhat restless. He soon announced his departure for Nairobi, where he had been invited to become anaesthetist to the hospital and lecturer in the medical school. This was sad news indeed to those of us who valued his friendship and had come to depend on him and his work. He was always quiet, cheerful, and kind. I have never seen him angry or put out in any way, and his benevolent smiling eyes gazing through large glasses gave the utmost confidence to his patients as well as to those of us who knew him and the high standard of his work. Johnny West, as his friends called him, was beloved by all. Our sympathy must go to Mrs. West and to his parents, but for him what Lord Grey wrote of his nephew is very applicable, 'I do not feel that we ought to be sorry for Adrian, if the object of life is to live without reproach to become a fine character and to act nobly, then Adrian's life has been a complete success'—L. C. R.

C. GRANT PUGH M.D.

Charles Grant Pugh, for thirty-two years medical officer of health at Southend-on-Sea, died on Dec. 19, 1946. Of mixed Scottish and Welsh descent he came of a family with a decided medical bent for his elder brother, the late William Thomas Gordon Pugh, was for many years medical superintendent of Queen Mary's Hospital for Children at Carshalton and his sister was before her retirement, a senior member of the London County Council nursing staff. His surviving brother is a dental surgeon in practice in Streatham.

Charles Pugh was educated first at Aberystwyth and then at the Middlesex Hospital, where in 1898 he was Senior Broderip scholar and Murray scholar. He graduated MB, BS with honours in medicine in 1899, proceeded M.D. in 1900, when he was gold medallist, and two years later took the Cambridge D.P.H. It was characteristic of Pugh that he selected his medical school for the reason that the house appointments there were made on the examination results. He would doubtless have been a consultant physician had not the particular circumstances of the Middlesex Hospital made it likely that a considerable time would elapse before he could expect promotion to the honorary staff. After some fruitful years of service on the Metropolitan Asylum Board and experience as deputy medical superintendent at Bethnal Green, he was for some time with Dr. J. C. Thresh, then in Chelmsford, Essex, finding in him a formative influence of the first importance.

At Southend he was appointed M.O.H. in 1908, and there he found ample scope for his all-round talents, both as physician and as administrator. In those days when the area was less well served by consultants than it is at the present time, his opinion was frequently sought by his general practitioner colleagues in difficult medical cases. The health services of this rapidly growing population were developed on him on sound lines until the outbreak of the first world war temporarily interrupted his programme. After serving in the Balkans with the rank of captain R.A.M.C., he returned to Southend, where he was foremost in calling attention to the urgent need for better hospital provision. Within a few years the generosity of Lord Iveagh and a spirited local initiative resulted in the creation of the New Southend General Hospital.

The Local Government Act of 1929 afforded a great opportunity, of which, on Pugh's advice, the corporation took full advantage. The sick wards of the Poor Law Institution at Rochford were transferred from the Board of Guardians and appropriated for hospital purposes and when the extensions begun by the guardians were complete Pugh set himself to the great task of modernizing the hospital. In 1940, a few weeks before his retirement, he had the satisfaction of seeing

completion, at a cost of £400,000, of new buildings of the most modern design

Pugh's was an arresting figure in any company. Distinguished in appearance, courtly in manner, and deadly in argument, there were few gatherings which he failed to dominate through sheer personality. In him his committees invariably found a shrewd, far-sighted, and courageous adviser. To his staff he set an example of all that is best in the public service, and with his professional colleagues he was invariably helpful, considerate, and popular. Pugh was instinctively liked and trusted by children and some of his happiest hours were spent in their company in the wards of his infectious diseases hospital. His own clinical knowledge discerned clearly the nature and progress of the malady which was to cause his death and he faced the inevitable end with all the stoic courage and lack of complaint which were characteristic of the man. His staff retained their affectionate admiration for him, undimmed by his absence in retirement and his passing is felt acutely by all who knew and worked with him.

SIR WILLIAM COLLINS K C V O , M D , M S , F R C S

A correspondent writes: One could scarcely think of Sir William Collins without reference to the brilliance of mind which adorned his person. To that brilliance his scholastic attainments testify, but alone they might present a picture of one whose interests were purely academic. To a superficial observer his natural dignity and reserve might even have given such an impression which would be quite untrue. A habit of philosophy and practice in medicine are humanizing influences. Added to a depth of kindness and understanding of the problems of life, they moulded a great man whose gifts were used in the service of others in public and in private relationships. His conversation which he illuminated with his own interest made one realize how wide were his sympathies and his friendships. Among his medical and nursing interests district nursing owes him much, for he was deeply concerned that the benefits of home nursing should be available without cost to all who needed that trained skill and comfort. As chairman of the Central Council for District Nursing in London for over thirty years and later as president, an office which he held until his death, he was able to advise out of a wide professional experience, a profound knowledge of affairs, and a liberal and statesmanlike habit of mind which made him a generous opponent. In discussion one might momentarily disagree and later realize that he had only more quickly reached the fundamental truth. Thus one learned to rely on him to a degree that makes the loss of his counsel the greater, even if it were possible to fill the place in mind and heart of one who so combined human wisdom and kindness.

J J THOMSON, O B E , M D

Dr John James Thomson, who died on Nov 18 1946, was born in Lanark in 1883. He completed a five-year apprenticeship in engineering in Edinburgh before he turned to medicine. He was awarded the Beaney prize for anatomy and surgery and graduated M B , Ch B with first-class honours in 1908. After a short period in general practice and as a ship surgeon he emigrated to Canada, and was for a time in practice in Vancouver City and also on Vancouver Island. He was later tuberculosis officer for Vancouver City. He was married in 1912, and in 1914 he entered the Royal Canadian Army Medical Corps and served in France and Gallipoli. As Major Thomson he was then for a long time at the 10th Canadian General Hospital at Brighton, and was awarded the O B E for his services there. On being demobilized he remained in England and was appointed tuberculosis officer for the West Riding of Yorkshire. In 1921 he became tuberculosis officer for the North Riding and continued in this position until ill-health enforced his retirement in August, 1946. He published papers on the early diagnosis of pulmonary tuberculosis and on the immunization of cattle against tuberculosis. He is survived by two sons.

A correspondent writes: Dr Thomson's outstanding characteristics were his devotion to his work and his complete selflessness. He was a man of profound intellect, but he had no ambition for himself, and preferred that the good

work he did should be kept hidden. He was interested in many subjects—more especially genetics, stockbreeding, philosophy, theology, geology and music.

We announce with regret the death on Dec 6 at his home in Dorset, of JOHN LAWRENCE GRAHAM-JONES. Born in 1881 he was the eldest son of the Rev C E and Mrs Graham Jones and was educated at Magdalen College School, Emmanuel College, Cambridge, and at St Thomas's Hospital. As a young man he saw active service in the South African War as a trooper in the Imperial Yeomanry. He qualified M R C S , L R C P in 1908, graduating M B , B Ch at Cambridge in 1910. After various residential appointments at St Thomas's he entered into private practice at Guildford with the late Mr Branson Butler. Then his bent towards surgery found expression in the 1914-18 war when he served as surgical specialist in France and later in association with his friend G R Girdlestone at the Ministry of Pensions Orthopaedic Hospital, Oxford. After five years in Oxford he removed to Parkstone, Dorset, and was appointed honorary surgeon to the Cornelia and East Dorset Hospital, Poole. In 1933 he retired from practice, and settled in the country near Dorchester. But it was not a life of sheltered ease that he sought, for his activities continued unabated and his liking for a country life gained added scope. He had a deep sense of public duty and gave much time and thought to educational and parochial matters. He was one of the governors of Dorchester Grammar School until 1945. During the late war he became chairman of the Ministry of Labour and National Service Medical Board for Weymouth and Dorchester.

F B writes: It was the happy circumstances of his own son's friendship for my two boys at their preparatory school that introduced me to 'G-J' on my settling again in England after some years of practice abroad. I became his partner, and the pleasant professional association ripened into a permanent friendship though latterly war conditions limited our opportunities for meeting. A man of taste and culture, widely read and a musician of considerable talent, he was at the same time a first rate practitioner, and though his inclinations were largely surgical he was none the less a sound physician. His wise counsel and advice were always freely available and unselfishly given and I valued his opinion. At the Cornelia and East Dorset Hospital, Poole, he rendered devoted service clinically and in committee, ably supporting every measure designed to enhance efficiency. He was medical officer to several residential schools and was especially sympathetic and successful in his care and treatment of children as likewise of the aged. He was not only doctor but also friend and adviser to many. Combined with high professional attainments he had a love of outdoor pursuits. His family life was ideally happy, and the sympathy of a wide circle of friends and colleagues will be extended to Mrs Graham-Jones and their son and daughter.

DR GEORGE FOGGIN of Newcastle, who died on Christmas Day had spent almost his entire professional life in the school medical service. He qualified at Edinburgh in 1890 and from that time onwards his main interests were in ophthalmology and paediatrics. He became ophthalmic surgeon to the Royal Victoria School for the Blind and was for some years assistant surgeon at the Northumberland, Durham, and Newcastle Infirmary for Diseases of the Eye. He was the author of several papers on the prevention of early blindness and on errors of refraction in school children. As long ago as 1894 as a member of the old School Board, he was chairman of the Special Cases Subcommittee of Newcastle upon Tyne which afterwards became known as the Children's Care Subcommittee. His appointment as school medical officer to the Newcastle Corporation was one of the first of its kind, and in 1902 it carried with it a salary of £125 a year. His connexion with the Eye Infirmary allowed him to arrange for the sight testing of school children some years before this became usual in other parts of the country. Dr Foggin had almost forty-three years' service as a school medical officer, and his death has come less than a year after his retirement at the age of 85. He had been responsible for opening one of the early central kitchens for feeding school-children in 1908, and right up to his retirement he maintained his interest in all aspects of the care of school children and in their nutrition.

DR HARRY MCENTEE died suddenly in his own surgery on Dec 29. Patrick Henry Maurice Clifford McEntee qualified in Dublin in 1926 at the age of 29. He had been in general practice at Whalley Range, Manchester, for many years and had overworked steadily through the war years. He acted as a member of one of the local medical boards during the war and was extremely popular with the patients in his large practice. He is survived by his widow and four children.

Universities and Colleges

UNIVERSITY OF LONDON

The following candidates have been approved at the examination held

AD—Branch I (Medicine) R A J Asher R D Blachford A Bloom
A C Cochran I S Dalton N H Desai R G Evans W Fine R A Henson
E Joles P D C Kimmont D C Lewin R I McCallum A T M Roberts
Stafford Clark P H Sutton Branch II (Pathology) K R Hill C C S Pike
Branch III (Psychological Medicine) B M C Gilsenan Branch IV (Midwifery
(Diseases of Women) G H Bancroft Livingston Jean R C Burton Brown
J Medal D A Davies P S Jaikaran Muriel G Rose Branch V (Hygiene)
J Plydell T D Spencer S J Sutton Branch VI (Tropical Medicine)
W Hinds O N Ransford

A course of four public lectures on Some Aspects of Pharmacological Chemistry will be delivered by Dr F Bergel on Tuesdays Jan 21, Feb 4, Feb 18, and March 4, at 5.15 p.m., in the Physiology Theatre, Gower Street W.C.

UNIVERSITY OF DURHAM

A congregation held on Dec 20 1946, the following medical degrees were conferred

M.B. B.S.—Irene O Blankley A Ross *Diana L Priest *P Wise
* In absentia

ROYAL COLLEGE OF SURGEONS OF ENGLAND

At a quarterly meeting of the Council of the College held on Jan 9 with Sir Alfred Webb Johnson, Bt., President in the chair, the Honorary Fellowship was conferred on Dr Louis Bazy formerly resident of the Académie de Chirurgie, and consulting surgeon to the French Army and on Dr Leopold Mayer President of the International Society of Surgery

Prof G Grey Turner was appointed honorary curator of the instrument collection in the College. It was reported that Sir Alfred Webb Johnson had been elected *Associé Etranger* of the Académie de Chirurgie of Paris. It was agreed that Dr James Craigie formerly of Toronto, should give an Imperial Cancer Research Fund lecture in the College in place of Prof W E Gye

The Council reiterated its opinion that a Statutory register of specialists is neither necessary nor desirable

The Princess Beatrice Hospital London was recognized for the resident surgical post required of the candidates for the Final Fellowship examination, and the additional post of Resident Surgical Officer was recognized at the Victoria Hospital, Blackpool

A Diploma of Fellowship was granted to J G Coxon

Diplomas of Membership were granted to H Rawlings and J Redfern

A Diploma in Child Health was granted jointly with the Royal College of Physicians of London, to N F E Burrows

Diplomas in Psychological Medicine in Laryngology and Otolaryngology and in Industrial Health were granted jointly with the Royal College of Physicians of London to the following successful candidates

DIPLOMA IN PSYCHOLOGICAL MEDICINE—H S Capote Margaret T Collins
Cowan G R Debenham J Farr T C N Gibbins J R Hawkings R M M
Lunter A Kamal P W W Leach L F E Lewis D O Lloyd N J de V
Lather P R A May A R Norton G O Gorman M A Partridge Mulder J
M D Rice R A B Rorie D Rumney F T Shadforth I C P Smith
R Stallworthy K R Thomas M G Valentine G A van Someren
DIPLOMA IN LARYNGOLOGY AND OTOLARYNGOLOGY—A D Bateman P Chandra
A D Sa P R B Gimaldi A R Harper S Kavanagh D G Lloyd Davies
A McO Macreor J Magill T A Narayanan H N Perkins H C Purser
Tith S N Sarma C J Scott J B Scott E M Sewell H J M Stratton
S Walker H A Ware
DIPLOMA IN INDUSTRIAL HEALTH—A L L Silver

On April 10 the Council will elect a member of the court of examiners in the vacancy occasioned by the retirement in rotation of Mr L A Crook who is applying for re-election. Fellows of the College desirous of becoming candidates for the office must make application in writing to the assistant secretary of the College (Lincoln's Inn Fields W.C.) by Monday Feb 3

In the announcement of Dr Meave Kenny's appointment to the University Readership in Obstetrics and Gynaecology at the British Postgraduate Medical School (Jan 4 p 57) she should have been described as Miss Meave Kenny

The Services

Major Hoo Min Sein M.S. medical superintendent, Rangoon General Hospital has been appointed OBE (Civil Division)
Squad-Ldr H H S Brown R.A.F. has been awarded the Air Force Cross

The Efficiency Decoration of the Territorial Army has been conferred upon Lieut-Col (Hon Col) J A Matheson OBE R.A.M.C.

Medical News

A meeting of the Society for the Study of Addiction will be held at the Medical Society of London (11, Chandos Street, W.) on Tuesday, Jan 21 at 4 p.m., when Dr A P Rossiter Lewis will read a paper entitled 'Alcohol and Abnormal Behaviour in Head Injury Cases'

A meeting of the Middlesex County Medical Society will be held at Busch House Open Air School, Isleworth, on Tuesday Jan 21 at 3 p.m. Agenda: The special education treatment of handicapped pupils

A scientific meeting of the Association of Clinical Pathologists will be held at the National Hospital Queen Square London, W.C., on Friday and Saturday Jan 24 (at 9.45 a.m.) and 25 (at 12 noon) when papers will be read. Demonstrations will be on view from 11 a.m. on Jan 24 to 4.15 p.m. on Jan 25. A copy of the full programme may be obtained from the honorary secretary Dr W H McMenemey Royal Infirmary, Worcester

A meeting of the Royal Sanitary Institute will be held at South Shields Town Hall on Saturday, Jan 25, at 10.15 a.m., when papers will be read by Dr T Lloyd Hughes on 'The Future Public Health Responsibilities of Local Authorities' and by Lieut-Col John Reid on 'The Present Trend of Local Government Administration from an Engineer's Point of View'

The Ministry of Supply will hold a disposal sale at its depot at Ashchurch Gloucestershire on Jan 28-31 Feb 4-7, and Feb 11-14 (all dates inclusive). The sale includes a large quantity of medical equipment. Ashchurch is two miles from Tewkesbury and seven miles from Cheltenham and sale catalogues are obtainable from Bruton Knowles and Co Albion Chambers, Gloucester or from Mr G Hone, 120, High Street, Tewkesbury

Mr P H Mitchiner will deliver an address before the Medico-Chirurgical Society of St Mungo's College at Glasgow Royal Infirmary on Wednesday, Jan 29 at 7.30 p.m. His subject is 'Surgical Experiences in the Middle East'

On Jan 29 the governors of Wembley Hospital will consider a scheme whereby the hospital will be amalgamated with the Charing Cross Hospital when the latter takes over its site at Northwick Park where it intends building a teaching hospital. Investments and cash held by the Wembley Hospital, as well as private donations in future would remain for its own use

A course in diseases of the ear, nose, and throat, specially designed for paediatricians and school medical officers, will be given at Metropolitan Ear Nose and Throat Hospital, Granville Place W on Saturday and Sunday, Feb 1 and 2 from 10 a.m. to 4.30 p.m. and will include lectures and practical demonstrations. The class is limited to fifteen and applications must be made to the Fellowship of Postgraduate Medicine 1 Wimpole Street, W.1

The National Association of Maternity and Child Welfare Centres and for the Prevention of Infant Mortality has arranged a conference on 'Parentcraft and Homecraft' to be held at Friends House, Euston Road, NW on Thursday, Jan 30, at 10.30 a.m. The speakers will include Dr Leslie Housden, at 10.40 a.m. on the need and scope of parentcraft and Dr John D Kershaw, at 3 p.m., on the organization of parentcraft and homecraft teaching on a national basis. The fee for the conference is 7s 6d, which includes a printed copy of the proceedings. Applications for tickets should be addressed to the secretary of the association Miss M R Lovelock at 5 Tavistock Place London, W.C.1

The Westminster Diocesan Catholic Doctors Guild dinner and dance will be held at Dorchester Hotel, Thursday, Jan 30, at 7 p.m. when His Eminence Cardinal Griffin will receive the guests. Tickets (£2 2s each) can be had from the Honorary Secretary, 5 Wimpole Street W.1

Major-Gen R J Blackham CB CMG, CIE DSO M.D. has been re-elected a member of the Common Council of the Corporation of London for the twenty-second consecutive year. It was on the proposal of Gen Blackham that the Corporation of London entertained the British Medical Association to a reception at the Guildhall as part of the Association's centenary celebrations in 1932 and he was chairman of the special committee of the Corporation which arranged the reception

Lord Horder, chairman Prof Winifred Cullis vice-chairman and Mr Cyril Bibby hon secretary, have announced the formation of the Family Relations Group. At present it comprises the British Social Hygiene Council, the Central Council for Health Education the Eugenics Society, the Family Planning Association the Family Welfare Association, the Marriage Guidance Council, the National Council for Maternity and Child Welfare, and the Pioneer Health Centre

No 52

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Dec 28

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year for (a) England and Wales (London included) (b) London (administrative county) (c) Scotland (d) Eire (e) Northern Ireland

Figures of Births and Deaths and of Deaths recorded under each infectious disease are for (a) The 126 great towns in England and Wales (including London) (b) London (administrative county) (c) The 16 principal towns in Scotland (d) The 13 principal towns in Eire (e) The 10 principal towns in Northern Ireland

A dash — denotes no cases a blank space denotes disease not notifiable or no return available

Disease	1946					1945 (Corresponding Week)				
	(a)	(b)	(c)	(d)§	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	38	3	23	2	1	38	1	25	2	3
Deaths		1	—	—	—	—	—	—	—	—
Diphtheria	180	10	71	56	10	514	30	165	130	19
Deaths	5	1	1	—	—	9	—	6	1	1
Dysentery	55	4	12	2	—	265	22	66	14	—
Deaths	—	—	—	—	—	—	—	—	—	—
Encephalitis lethargica	—	—	—	—	—	2	—	—	—	—
Deaths	—	1	—	—	—	—	—	—	—	—
Erysipelas	—	—	38	19	3	—	—	54	8	1
Deaths	—	—	—	—	—	—	—	—	—	—
Infective enteritis or diarrhoea under 2 years	104	15	15	46	3	55	8	8	22	—
Deaths	—	—	—	—	—	—	—	—	—	—
Measles*	7 068	229	224	67	325	565	69	58	303	2
Deaths	5	—	2	1	—	—	—	—	—	—
Ophthalmia neonatorum	41	2	11	—	—	50	9	17	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Paratyphoid fever	6	2	—	—	—	5	—	1(A)	1(B)	—
Deaths	—	—	—	—	—	—	—	1(B)	—	—
Pneumonia influenzal	760	41	16	10	6	1 118	91	14	14	3
Deaths (from influenza)†	33	5	6	—	—	72	9	5	—	2
Pneumonia primary	—	63	389	51	10	—	64	276	55	10
Deaths	—	—	—	—	—	—	—	8	—	—
Polio-encephalitis acute	—	—	—	—	—	1	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Poliomyelitis acute	1	—	—	18	—	25	2	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Puerperal fever	—	1	10	—	—	—	2	20	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Puerperal pyrexia‡	90	4	7	—	—	94	4	7	3	—
Deaths	—	—	—	—	—	—	—	—	—	—
Relapsing fever	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever	943	67	299	44	33	1 376	126	252	43	30
Deaths	—	—	—	—	—	1	—	—	—	—
Smallpox	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid fever	3	—	—	10	2	9	3	1	8	—
Deaths	1	—	—	—	—	2	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough*	1 149	82	146	80	36	724	44	24	104	5
Deaths	4	—	—	1	—	10	2	1	1	—
Deaths (0-1 year)	590	78	83	—	11	407	51	51	37	17
Infant mortality rate (per 1 000 live births)	—	—	—	—	—	—	—	—	—	—
Deaths (excluding still births)	6 260	1031	758	166	5 704	850	686	165	142	—
Annual death rate (per 1 000 persons living)	—	—	16.7	—	—	—	15.6	10.6	—	—
Live births	7 548	1018	1127	191	4 963	570	787	209	226	—
Annual rate per 1 000 persons living	—	—	22.7	—	—	—	15.7	13.5	—	—
Stillbirths	220	22	38	—	205	21	36	—	—	—
Rate per 1 000 total births (including stillborn)	—	—	33	—	—	—	44	—	—	—

* Measles and whooping-cough are notifiable in Scotland and the returns are therefore an integral part of the vital statistics of Scotland and Northern Ireland

† Includes puerperal fever for England and Wales and Eire
‡ Totals for Eire notifications include those for the previous week
§ It is still not possible to publish the return of births and deaths for Eire for the weeks ended Oct 26 Nov 2 9 16, 23 30, Dec 7 14 21 and 28

EPIDEMIOLOGICAL NOTES

Infectious Diseases, 1946

A comparison of the number of notifications of infectious diseases with the preceding years is as follows

	1940	1941	1942	1943	1944	1945	1946
Scarlet fever	65 573	59 111	84 932	116 217	93 801	74 392	57 614
Whooping-cough	53 403	171 406	65 563	95 859	93 107	62 022	92 023
Diphtheria	46 683	51 091	42 318	35 944	29 446	25 059	18 186
Measles	407 908	406 507	285 300	374 198	117 437	443 002	154 761
Acute pneumonia	47 712	50 214	42 487	52 225	38 175	34 059	36 106
Cerebrospinal fever	12 791	11 129	6 089	3 380	2 883	2 691	2 697
Dysentery	2 843	6 597	7 177	7 772	10 150	16 533	8 441
Enteric (typhoid and paratyphoid)	2 824	4 703	887	707	536	679	1 367
Deaths from influenza in the 126 great towns	5 510	2 993	1 544	6 280	1 744	1 307	2 699

A further large decline in the notifications of diphtheria was recorded for 1946, despite a poor start. The 6 220 notifications in the first quarter were slightly in excess of the 6 061 for the same period of 1945. The largest relative decline was in the fourth quarter when 3,831 cases were reported as compared with 7,590 in the fourth quarter of 1945.

The notifications of scarlet fever were the lowest for the seven years reviewed. Measles and pneumonia were also less prevalent than usual. The incidence of cerebrospinal fever has apparently become stabilized at two to two and a half times the pre-war level after the epidemic in the early war years. Dysentery accounted for only half the number of cases recorded in the preceding year. There is no obvious explanation for this rapid decline and it may be due to variations in the standards of notification.

The rise in enteric fevers was partly due to an outbreak of typhoid in Aberystwyth. The increase in deaths from influenza in the 126 great towns was due to a relatively heavy incidence in the first quarter, when 2 156 deaths were registered as compared with 692 and 1,131 in the preceding first quarters. In the fourth quarter 221 deaths were returned against 395 and 317 in the same quarter of 1945 and of 1944.

Discussion of Table

In England and Wales infectious diseases were less prevalent. The decreases in notifications included measles 701, whooping cough 437, scarlet fever 258, and diphtheria 63, the only increase was acute pneumonia 61.

The largest falls in the notifications of measles were Durham 205, Northumberland 200, and Warwickshire 146. An exception to the general trend was an increase in Yorkshire North Riding 106. The incidence of whooping cough declined in most areas, the largest falls were Lancashire 65 and Yorkshire West Riding 57. A small decline in cases of scarlet fever occurred throughout the country, but the only decrease of any size was Lancashire 70.

There were 180 notifications of diphtheria—the smallest number ever recorded—the decreases during the week being Lancashire 42 (mainly in the C.B.s), Northumberland 11, and London 10. Dysentery was prevalent in only two areas—Lancashire, Preston R.D. 17, and Glamorganshire, Cardiff C.B. 14.

In Scotland decreases were recorded in the notifications of scarlet fever 31, whooping cough 85, dysentery 19, and measles 16 while a small rise occurred in the incidence of acute primary pneumonia 24.

In Northern Ireland there was a decrease of 24 in the outbreak of measles in Belfast C.B.

Week Ending January 4

The notifications of infectious diseases in England and Wales during the week included scarlet fever 1,161, whooping cough 2,030, diphtheria 242, measles 10,823, acute pneumonia 1,264, cerebrospinal fever 61, dysentery 65, paratyphoid 3, typhoid 5.

Corrections

Corrected figures for the notifications of diphtheria and measles for England and Wales were for the week ended Dec 14, diphtheria 299 and measles 6,986 (Lancaster 79 and 1,482), for the week ended Dec 21, diphtheria 263, and for the week ended Dec 28, diphtheria 180 and measles 7,068 (Stafford 6 and 184).

Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Potency of Oestrogens

Q—A patient requires an oestrogen preparation for menopausal rheumatism. She is allergic to fish. She can take stilboestrol by mouth but I have always found that menopausal rheumatism requires fairly large doses of stronger preparations. Are there any of these which are not made up in cod-liver oil?

A—It is difficult to compare the potency of various oestrogens for their effects depend so much on the route of administration, esterification, the vehicle and the spacing of doses. If the implication of this question is that natural oestrogens are more powerful than the synthetic ones then it can be said that stilboestrol is two to five times more active than oestrone when both are given by mouth and the effects of stilboestrol by mouth and of oestrone by injection are about equal. Oestradiol benzoate or dipropionate in oily solution and given by injection may weight for weight be more active than stilboestrol given by mouth but any such advantage is cancelled out by the fact that stilboestrol can be given more frequently and in regular and equally spaced doses by the oral route. In practice it seems likely that 10 mg of stilboestrol by mouth three times a day is at least as effective as twice-weekly intramuscular injections of 50 mg of one of the esters of oestradiol. Moreover the dose of stilboestrol can be readily and all too easily increased. Another synthetic oestrogen dienestrol, is often stated to be even more active than stilboestrol but this has not yet been established.

In any case, however it is doubtful whether it is wise or necessary to give large doses of oestrogens to a woman at or past the menopause. Stilboestrol given at the rate of 1 mg three times a day for any length of time will almost certainly cause endometrial hyperplasia and uterine haemorrhage which may be heavy and prolonged is likely to occur during or after treatment. If the rheumatism is due to lack of oestrogen it should respond to very much smaller doses of either stilboestrol or oestrone by mouth. If large doses are employed they should be given only for an initial period of two or three weeks in order to bring the condition under control whereupon the dose should be decreased.

The nature of the oily solvent used for natural oestrogens is not usually disclosed by the makers of the various proprietary preparations. If for some special reason the use of such oily solutions is desirable the makers of any particular preparation should be approached directly for an assurance that it does not contain fish oil.

Curare and Surgical Shock

Q—Wutac and Fisher have shown that under curare alone patients found the pain of operation intolerable and welcomed the subsequent administration of cyclopropane. In other words the cerebrum is bombarded by painful stimuli arising at the site of operation. From practical experience there seems to me to be a real risk of producing surgical shock by maintaining anaesthesia at too light a level for the surgical procedure taking place. I have seen it stated that a light level of anaesthesia together with sufficient curare to produce the necessary relaxation is all that is necessary. If my reasoning is correct is this very real danger of surgical shock resulting from insufficient curare or is curare fully appreciated by anaesthetists?

A—There is no conclusive evidence that curare extracts have an anaesthetic effect in normal doses. In very large quantities they have produced unconsciousness in man. There is some evidence that they interrupt conduction across the preganglionic synapses of the autonomic nervous system. The remarkable immunity of most patients from shock in severe operations where *d*-tubocurarine chloride has been used suggests either that painful stimuli in the absence of any active reaction are of no importance in the development of operative shock or

that *d*-tubocurarine chloride has a specific protective effect comparable with that of nerve block.

Two patients were subjected to mid-thigh amputation under light first-plane anaesthesia tubarine being used to ensure quiescence in neither of these did any noticeable degree of shock develop. In my personal experience better results are obtained in abdominal operations with light anaesthesia and more tubarine than with moderately deep anaesthesia and less tubarine. In either case it seems to be important to avoid so far as possible any active reaction to surgical stimuli. It must be understood that the views expressed are purely speculative that the use of curare extracts in anaesthesia should be regarded as still in the experimental stage that deaths have occurred during its administration and that a close watch should be kept during any major operation for signs of the development of operative shock. In one prostatectomy shock did develop and there it was unexpectedly severe for the degree of surgical trauma.

Cheirpompopholyx

Q—A practising surgeon in India has a severe cheirpompopholyx affecting the ring and middle fingers of his left hand. The hands are being constantly washed in all the usual antiseptics recommended for the treatment of this condition. Carbolic lotion, surgical spirit and penicillin ointment have all failed to help. Can anything further be recommended?

A—Cheirpompopholyx may be a secondary trichophytide reaction from ringworm infection of the feet and is not commonly due to direct infection of the skin of the hands. If that is the diagnosis in this case then the fierce treatments which have been employed would have been better directed to the feet and will, in any case be likely to aggravate the pompholyx if applied to the hands.

However, the great majority of cases of pompholyx of the hands are constitutional and nervous in origin and are aggravated by heat and moisture. Tab phenobarbitone gr 1/4 (16 mg) two or three times a day by mouth and the cessation of all local treatment to the hands might be more helpful. If any local treatment is employed it should be of a bland type antiseptics and parasiticides being avoided. Dabbling the hands in saline or a weak lead lotion and the use of a calamine cream and then perhaps very small fractional doses of unfiltered x rays would help. It is clearly necessary to establish the diagnosis and to assess the patient's health and temperament in relation to his environment.

Plastic Induration of the Penis

Q—What is plastic induration of the penis? What are the current views on its aetiology and treatment?

A—Little is known about the aetiology of plastic induration of the penis or what is generally known as fibrous cavernositis. A few cases are due to some recognized local cause such as infection. But the aetiology of the primary cases is obscure. Gout, diabetes and rheumatism are sometimes mentioned as causes. Treatment is unsatisfactory but usually after progressing for a time the trouble becomes stationary. I have seen cases improved by the application of small doses of radium. Recently Lowsley has again advocated operative treatment. This involves dissecting away the fibrous tissue which has formed on the dorsum of the penis between the two corpora cavernosa. As this trouble usually affects middle-aged men and never interferes with micturition operation is required only in exceptional cases.

Legal Duration of Pregnancy

Q—What are the current views as to the maximum legal duration of pregnancy?

A—There is no legal maximum or minimum duration of pregnancy. Some countries have statutory limits but we have none and when the point is raised our Courts hear medical evidence which often includes the quotation of textbooks. A very interesting case in which the possible minimum was considered was *Clark v. Clark* (Journal 1939, 1 647). Dr D. J. A. Kerr (*Forensic Medicine* 4th edition p. 173) quotes a case in which the Court accepted a gestation period of 331 days. The practice of the Court is not to be bound by any hard and fast

rule but to take all the facts into account. I know of no reported case in which the Court has decided merely on the alleged length of pregnancy that the child was illegitimate.

Grittiness in the Eye

Q—What is the cause of the common ocular symptom of grittiness in the eye? A characteristic feature of this condition is that it is worse on waking.

A—There is no clear answer to this question. There are probably a number of different causes that can produce the sensation of grittiness in the eye. A not uncommon cause is the presence of small calcareous granules in the conjunctiva. These are fairly easily levered out by means of the sharp point of a cataract knife. The characteristic feature mentioned—that it is worse on waking—rather suggests that the symptom may arise from an excessive concentration of the solid contents of tears. This raises the complicated issue of minor metabolic disturbances. As an empirical measure your correspondent may find it worth while trying the effect of diuretics.

INCOME TAX

All inquiries will receive an authoritative reply but only a selection can be published.

Postgraduate Education for Medical Officers released from the Forces

Income Tax Liability

A question and reply in a recent issue of the *Journal* (Dec 28, p 1012) have aroused considerable interest, and a note clarifying the questions involved may help readers who are receiving payments under the Government scheme for postgraduate education to understand their position. There is a broad, and in theory at least a fairly clear distinction to be drawn between a Government grant to enable the recipient to continue his professional training and a Government payment to facilitate such training by enabling the trainee to take up professional duties in such circumstances as will give him suitable opportunities for the further studies. In the actual working out of such schemes the sharp edge of the distinction becomes blurred, the recipient of, for instance, a training grant paid by the Ministry of Labour usually finds it very desirable and often necessary to do practical work which has an objective value and the individual who holds a 'post and receives a salary' may find his duties to be so light that the post is in effect a sinecure. But where income tax liability is concerned the fundamental distinction holds good. If the individual receives a training grant the conditions of which do not require him to perform duties it is apparently accepted that the grant is not taxable income in his hands, if on the other hand, the individual holds an employment or office of profit, then any sums receivable by virtue of that position are liable to tax.

The scheme for postgraduate education for medical officers is set out in a Ministry of Health circular (P.G. 5 (MED) R) in which a distinction is drawn between "vacancies in existing establishments" and vacancies arising from the creation of additional posts. The position of medical officers filling the former class of post is quite clear: they are liable to perform and in fact do perform, certain duties; they hold offices of profit and their salaries are taxable in the ordinary way. The second class is perhaps less clear. In those cases it may be that some individuals are fulfilling a merely nominal roll as medical officers and, whether or not they are liable to render services to the hospital to which they are attached, are in fact doing no more than they would feel it necessary to do in an unrestricted course of study and that the payment received is therefore a 'subsistence allowance' and not a salary. Such cases may be open to doubt, but it seems not unlikely that a Court would regard them as offices of profit, however small the actual service requirements might prove to be. Indeed there is something Gilbertian in the alternative—namely that because no work is required the office ceases to be one of profit. Taking the matter a step further, however, if a man who is attached to a hospital under this scheme and is paid accordingly is not legally under obligation to perform any duties, it would seem to follow that the element of employment does not enter into the matter, and in such a case the recipient might well have a claim to be regarded in the same light as a recipient of a Ministry of Labour grant. From one or two letters we have received on this matter, it appears that the writers regard themselves as under no obligation to perform services in the hospitals to which they are attached—or at most only negligible services—and the brief reply to the inquiry referred to above may have led to misunderstanding on the part of others who occupy a less abnormal position in the scheme.

Letters and Notes

Time Marches On

Dr J. B. SIMSON (Romford) writes: Having recently reread Sir John Simon's admirable work, *English Sanitary Institutions* I have from certain passages been endeavouring to draw an analogy between the proposed conditions of service for general practitioners under the National Health Service Act and the conditions of our "colleagues" that prevailed in ancient Rome. Apparently Julius Caesar and the earlier emperors encouraged the practice of medicine by granting to those who practised certain privileges—namely the status of citizen and exemption from certain ordinary civil obligations until in time such largesse was no longer required and practitioners existed in such excessive numbers that 'the less employed among them were willing to lend a hand to the next door function of corpse bearing at funerals, or would even (more remotely from their profession) be ready to officiate as gladiators. Such being the overcrowdedness of the profession, Antoninus Pius found it prudent to restrict to a certain number of practitioners in each centre the immunities which had been so lavishly granted and from the date of his law the medical immunity from local burdens might not be held by more than five practitioners in small cities, nor more than ten in even the largest. While also, in general, the immunity could not be claimed by practitioners migrating into new districts. When the number of immunes was limited by law certain public duties were made to accompany the privilege and later it was enacted that grants of privilege should be made on local responsibility and the responsibility was assigned as the law expresses it, that they who were most interested would make sure of the probity and skill of the persons to whom they had to entrust their own and their children's lives.' At a comparatively late period in the city of Rome it was enacted that a local medical officer who 'knowing himself to be paid by salary for attending to the poor, must think of them rather than of the rich and who where there is a question of fees must take as his standard not what men fearing for their lives will promise but what men recovering from sickness will offer, and when a vacancy occurred among these officers, the filling of it was not to be by favour or on solicitation of magnates, but the remaining district officers are to propose a man who shall be worthy of their ranks and of the dignity of the office and of the emperor's approval.' Time indeed marches on.

Animal and Human Influenza

Dr J. N. McINTOSH (Stonetown, Glos.) writes: In the *Journal* of March 16 1935 (p 570), you kindly published an article from me under Letters Notes etc. entitled 'Influenza Epidemiology and Prophylaxis' in which I pointed out *inter alia* that whenever "human influenza" occurred human influenza followed. From reports there is now occurring in this country influenza in horses and cats of an epidemic nature. Are these cases notified to the public health authorities? If not could something be done about it by the Ministry of Health? If my theory is correct it appears that with our present deficiency in fats and proper foods the stage is all set for a human influenza epidemic of even greater proportions than that of 1918-19.

Medical Art Society

The Medical Art Society is to be revived, and it is hoped to hold an exhibition of members' works in the summer. Doctors who do painting or sketching work are invited to communicate with the secretary, Dr Henry Wilson, 142 Harley Street, London, W1.

Correction

Dr S. LIPETZ writes: The words 'the enabling Bill demanded by Dr. Dain' in my letter in the *Journal* of Jan. 4 (p 30) should read 'the amending Act demanded by Dr. Dain'.

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THE CARE OF CHILDREN IN HOSPITAL

BY

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The form of human institutions is predetermined as much by the age in which they are set as by the men who set them. Charles West founded the Hospital for Sick Children in Great Ormond Street in 1851. In this instance the age overcame the man. He was an obstetrician of the restless reforming type, as became the son of a nonconformist minister who was half pedagogue and half evangelist. Through his father's school, through an apprenticeship to a local apothecary through St Bartholomew's Hospital and through several Continental universities he pursued a notable academic course with serious pertinacity. Afterwards he practised midwifery in London, with a reputation and success which made him Lumleian Lecturer, Harveian Orator, and Senior Censor of this College. Near the age of 40 which is the climacteric of the reformer, he turned his energies to propagating the study of disease in childhood in lectures, books, and pamphlets. He was obsessed by the appalling ignorance in this branch of medicine. That more than one-third of the children he delivered would die before the age of 12 seemed to weigh heavily on his mind. He conceived the idea, rightly or wrongly, that the quickest remedy was to open a children's hospital which, he said, "would afford the means of instruction to students, as well as furnishing opportunities for extending the boundaries of our knowledge concerning a class of disease frequent in their occurrence, dangerous in their character, and often very obscure in their symptoms". Against much opposition he succeeded in founding his hospital, in the famous house of the famous Richard Mead, and there he worked for twenty-three years. But, as Norman Moore said of him, "the conduct of other men so rarely satisfied him that he was not a happy colleague and left both St Bartholomew's and the Hospital for Sick Children in a state of feud with other members of the staff". His remaining years were spent as is the way of such men, in brooding over medical education and in other discontents. So much for the man whose name we honour in these lectures.

The age he worked in needs little description. The mere mention of it raises pictures of self-confident men and women toiling earnestly in every field from poetry to politics. In many respects it was a great age, but it was an unfruitful time for this experiment of opening children's hospitals because the strongest interests were then flowing in other directions. In medicine they were towards sanitary reform. Elsewhere interests were centred on religious questions and on the self-discipline of character. In practical affairs the Puritan ethos was being harnessed to iron, coal, and railways in new industrial enterprises, in a prevailing atmosphere of excessively bad

taste which permitted even the dons of Oxford and Cambridge to erect architectural monstrosities. That Charles West and his colleagues achieved so much in circumstances so adverse was praiseworthy. They worked under difficulties. Their hospitals bore the impress of these difficulties, and we are still affected by them.

The chief of the adverse circumstances which beset the founding of the early children's hospital was the established authority of the adult hospitals already in existence for more than a hundred years. It inevitably followed that children's hospitals were built and arranged like the older hospitals. They inherited the same oblong wards and cheerless corridors. They imitated their methods of staffing and of nursing. They pursued their methods of research. This was a misfortune, because the needs and arrangement of children's hospitals differed then, as they differ now, from those of other hospitals. We have not yet escaped the influence of these false conceptions.

Another adverse circumstance that made the eighteenth-fifties an unfortunate period for the founding of children's hospitals was the prevailing sentimentality of the times. In this attitude of mind children's hospitals were regarded too much as refuge homes for slum children and too little as places for the scientific study of the diseases which might best be treated there and of the methods by which they might best be nursed. They suffered from an overdose of Shaftesbury and Dickens. The paramount need of the time, so far as it concerned the health of children, was a clear analysis of the facts about disease in childhood adduced by those methods of study which, from Swedenborg to Thomas Lewis, have revealed so much about the diseases of adult life. Another handicap to the scientific study of children's diseases in hospitals was the dread of admitting children because of the danger of death from cross-infection. The early children's hospitals avoided this difficulty by refusing to admit children under the age of 2, which, although a justifiable procedure at that time, was an ostrich-like policy towards study of disease in early infancy. Therein lies a partial explanation of our comparative ignorance in this most difficult and least understood branch of medicine. Charles Cameron's remark still holds true: "There is no branch of medicine in which experience is more necessary and yet more difficult to come by."

A discussion of these problems is not an academically exciting subject for a lecturer. It is difficult to raise it above the level of a pedestrian guide, but I choose it for three reasons. The first is its practical importance at a time like this, when the planning of new children's hospitals is in the air and when their special needs may again be subordinated as they were a hundred years ago. The second reason is that the problems involved are particular and technical, and I wish to suggest that they cannot

* The Charles West Lecture delivered at the Royal College of Physicians London on Nov. 19 1946

understood unless the facts are carefully analysed. The third reason is that during the past two years, as a member of the Curtis Committee, I have had the opportunity of examining many kinds of children's institutions, assessing their methods and comparing their results, and this experience has taught me that the care of children is as uneven in our hospitals as it is in other institutions—good in some and very bad in others, and where it is very bad the explanation lies usually in a failure to define personal responsibility, or in the imposition of a personal responsibility by a remote governing or administrative body on a staff who are unwilling to confess or complain about their difficulties.

Admission to Hospitals

The number of children's beds required in hospitals is influenced by many factors apart altogether from local variations in the incidence of disease. From my own observations I have estimated that in two children's hospitals or departments both doing the same kind of clinical work the number of beds required may vary by as much as 100%, according to the manner in which the hospital's work is carried out. A hospital with satisfactory working arrangements will deal with as many children in fifty beds as another hospital with unsatisfactory working arrangements will deal with in a hundred beds. The economics of these variations is important. Assuming that it costs £250 a year to maintain each hospital bed, which is now a modest estimate, the saving to the first hospital would be £12,500 a year, less the expenditure on the extra salaries and maintenance costs required to keep the work at a satisfactory level. If these extra costs to the first hospital be put as high as £5,000 a year it still enjoys a considerable saving. The crux of the matter is in the maintenance of satisfactory working arrangements. Therein lies true economy. I shall attempt to define these arrangements after I have examined what work is required of children's hospitals and departments.

A hospital's work is usually estimated in terms of its number of beds, its number of patients, and the average duration of their stay. The needs of a town or district are estimated by adding together these numbers from all the hospitals in the town or district. These somewhat colourless records do not take into account the variable local factors which govern hospital admissions or the standard of work within the hospitals.

We may arrive at a more precise estimate of the needs by studying figures collected by two of my colleagues, Dr Mary Taylor and Dr R. B. Thompson, who have recently made a detailed survey of all the Newcastle children who became patients within hospitals or nursing homes during the years 1943 and 1944. They undertook this research in order to find out which paediatric diseases throw the heaviest burden on the hospitals, by assessing their severity and determining their age incidence. Their detailed report will be published shortly, but I am allowed to quote some of the results which will illustrate my subject. During those two years there was little bombing in or around Newcastle, and the results can be taken as fairly representative of normal conditions. In order to assess the local variable factors and to provide comparison with results from other towns it needs to be explained that, apart from a shortage of beds in long-stay hospitals, the hospital accommodation for the city's own children was ample, and there were no waiting lists for children, that the standard of staffing was fairly satisfactory, that the citizens, considering their native caution, had a reasonable confidence in their hospitals that did not deter them from sending their children there. On the other hand, the threshold of admission was high because of a prevailing paediatric policy which

required that, whenever possible, sick children be treated in their own homes and not in hospitals, and that admission for "observation" be discouraged. An exception to this policy was the ready admission of children with scarlet fever to the fever hospital, and the low threshold of admission of children for tonsillectomy.

The inquiry covered all children in the ages between birth and the end of the twelfth year. The hospitals and nursing homes drew patients from a wide area, but only those children from the city itself are included. It was estimated that within these ages there were resident in the city 49,800 children in 1943 and 50,400 in 1944. The error of computation in these figures is such that 50,000 can be taken as average for the two years and used as a basis for calculation. The total population living within the city in these two years was estimated at 260,000. Of the 50,000 children, 3,782 were admitted to hospitals and nursing homes in 1943, and 3,704 in 1944. This is an average annual admission of 3,743 (7.48% of the 50,000 children). Of these, 890 were admitted for tonsillectomy. Excluding the tonsillectomy cases 2,853 were admitted (5.7% of the 50,000 children). Had the age groups of 13 and 14 been included, the percentage of the city's children admitted to hospitals would have been slightly lower, as the admission incidence of the older age groups is lower than in the younger age groups.

Tables I, II, and III illustrate the nature of the circumstances under which these children were admitted to hospital.

TABLE I—Types of Hospitals Admitting 3 743 Children

Children's hospitals and children's departments of general hospitals	2,163 patients
Fever hospitals	128
Children's wards in special hospitals	217
Children's sanatorium	80
Private nursing homes	95

TABLE II—Ages of Patients

Age	No of Patients	No of Patients Excluding Tonsillectomy
Under 1 year	419	418
1 year	256	252
2 years	345	312
3	338	249
4	354	235
5	372	261
6	365	237
7	310	197
8	249	166
9	227	163
10	188	136
11	176	127
12	144	100
Total	3 743	2,853

TABLE III—Admissions in Age Groups

	Total	Under Age 1	Under Age 6
Admissions including tonsillectomy	3 743	*419 (11.2%)	1 712 (45.7%)
Admissions excluding tonsillectomy	2 853	418 (14.6%)	1 466 (51.4%)

* 107 of these were treated in infectious disease hospitals

A perspective view of the various diseases for which children enter hospitals, and of the arrangements needed for their treatment, can be obtained only from a detailed analysis of many factors, including the age of the patients, the season of admission, and, in the case of trauma, the peak hours of the day when the accidents take place. I will quote only a few illustrative facts.

Table IV shows the chief categories of disease, excluding tonsillectomy patients. The distortion of statistics which comes from considering the records of one hospital only is revealed in the fact that, of 761 city children admitted to one children's hospital 552 (72.5%) were patients sent

for tonsillectomy, while of 962 children admitted to another hospital only 63 (6.5%) were sent for that purpose

TABLE IV—*Chief Categories of Disease*

	No of Patients	Remarks
Trauma	306	55 had serious burns and scalds 77 fractures and 56 head or other serious general injuries
Abscess cellulitis and skin sepsis	202	
Acute lung diseases	312	150 had pneumonia
Tuberculosis	129	3 had bone tuberculosis and 26 tuberculous meningitis miliary tuberculosis
Emergency surgery	79	31 were under the age of 3 and 42 had appendicitis
Planned surgery	115	60 were treated for hernia and 23 by orthopaedic operations
Specific infectious fevers	929	595 had scarlet fever and 190 diphtheria
Acute infective gastro-enteritis	122	
Dysentery	90	
	22	
	15	
	7	
Nephritis	11	
Coeliac disease	7	

The enumeration of patients and their diseases in Table IV reveals little of what goes on in children's hospitals. It gives no clue to the work of the staff or the arrangement of their duties. We may see the matter more clearly, however, if we examine their duties in three categories. The first is the *clinical responsibility* of doctors and nurses in the admission of each child, in its immediate diagnosis, and in its nursing care and treatment. The second is the *social responsibility*, for which I wish I could find a less tarnished phrase to describe duties which involve, amongst other cognate things, the explanation and advice given to parents at the various stages of their child's illness. The third is the *supervisory responsibility*, which devolves on one or more experienced members of the staff in controlling infections, in arranging and rearranging the right juxtaposition of patients on physical and psychological grounds, in adjusting the proportion of nurses to patients and patients to nurses, and in other duties which seem to be more important in children's hospitals than in those of adults. I shall attempt to illustrate these needs by examples, but we may get a clearer view of the picture if we attune ourselves to it by imagining in each case that the patient is our own child. I have yet to find that what is not good for our own children is likely to be good for other people's children—a useful rule of thumb in all matters concerning the care of children in hospitals.

A first example may show what is required in service and in time in the common event of a severely injured child being admitted to hospital. A severely burned child arrives in hospital within three or four hours of the accident. He will then be clad in emergency dressings and relatively comfortable. Except to those with training and experience in this branch of clinical paediatrics his condition at the time of admission will not reveal the series of sudden changes about to take place during the next twenty-four hours, each of which may need to be countered by decisive action. Within ten minutes of admission he should be seen by someone capable of assessing the injury and foreseeing the probable sequence of events. For about three hours afterwards the child will require the continuous attention of two doctors and a nurse, engaged in clinical studies of the patient's changing condition, in serial estimates of blood concentration, in intravenous plasma treatment, and in dressings under anaesthesia. For one or two days afterwards the child will require close examination at three-hourly intervals night and day to adjust the treatment to the needs of the moment. In the later stages considerable time will be spent in applying dressings under anaesthesia. Throughout all this activity the morale of

the child, on which so much will depend in the later stages of the illness, will require purposeful attention and support. The time spent in this care and treatment may be estimated in medical and nursing "man hours." During the first day of his stay in hospital a burned child may require as much as ten "medical man-hours" attention.

Other examples could be taken from children severely ill with infective enteritis or meningococcal meningitis, or peritonitis or soft-tissue injury, each of which may claim two or five medical man-hours immediately after admission to hospital. The urgency of these situations in paediatrics is due to the small margin of safety, by which delay for half an hour or a small error in treatment or nursing technique may kill the child. Only those who have worked under these conditions can appreciate the time, the concentration of effort, and the combination of clinical and laboratory skill required in the diagnosis and in the control of treatment in a busy children's department. It is easy to see how administrators, matrons, and medical men who lack that experience may fail to recognize the needs, and how dangerous it may be to leave the planning of children's hospitals in their hands. I do not wish to overpaint the picture, but from an experience spent equally in adults and children's wards it seems to me that there is no branch of medicine which requires more time, more care, more promptitude, and more experience than clinical paediatrics in hospitals.

In addition to these clinical duties the staff must find time for what I have described as their social and supervisory responsibilities. The first of these can be recognized by estimating the time spent in contacts which must be made with parents when their child is brought to hospital or taken from it. What these contacts are can best be realized if we put ourselves in the position of the parents and then see how much courtesy and explanation we would expect from someone whose judgment we trusted. The supervisory responsibility of the medical staff is exemplified in the steps which might be taken on discovering that a child's recovery had been complicated by an intercurrent infection. An examination of all the arrangements of the ward, from kitchen to napkin bins, from nurses' hands to cleaners' cupboards, might be carried out before a solution of the problem was found. The ward round comprises constant supervisory responsibilities of this kind, which claim considerable time and patience in all children's departments.

Children's Wards

It is easy to slip into satire in describing a children's ward, but the following is not far off the mark in many of our hospitals.

The room is vast. It contains twenty beds, spaced along walls tiled by Doulton or painted chocolate and yellow. The roof is remote—too remote for the cleaner's brush, and terrifyingly remote to the eyes of a child who lies many hours gazing at it. Some of the beds are three feet from the ground, to the pleasure of physicians and surgeons with ageing backs, but to the discomfort of the child who has not slept so far from the ground before. Many of these beds are protected by bars set close enough to prevent a child from lodging his head between and high enough to prevent him falling overboard. The beds stunk just a little. Near the bed is a contraption half-chair and half-locker, but it is beyond the reach of the child except by a contortion he cannot make so soon after his operation. He defeats this by concealing his personal treasures under his pillow until they are again put out of his reach. He solaces himself with comics or with paper and a scrubby pencil which he cannot sharpen.

He dislikes the pallid immobile child in the next bed because he is too young for companionship and too ill for talk, but, as is the way of children, he makes the best of it, and carries

on a conversation with a boy of his own age ten yards away over the heads of a whimpering baby and a plaintive 2 year-old standing behind the bars of his cot clad in a shapeless night-gown with a loose napkin sunk to his ankles below. This young child's plaint is not difficult to interpret. He draws the attention of a nurse busy with noughts and crosses on a temperature chart. She acts quickly, and then goes to other duties in the kitchen, where she floats mashed potatoes on plates of liquid mince. The children await their dinner but are distracted by strange events. A white coated young man arrives and descends upon the silent occupant of a bed who, knowing that her penicillin hour is at hand, breaks her silence in a four-hourly scream. There are other distractions at other times—the daily or twice-weekly promenade of an older man in black with a retinue of followers, the occasional quick incursion of a younger man more sprucely clad, who pronounces his decision with a 'put him on the list for next Tuesday,' the solemn visit of the matron, who passes from bed to bed with the same question on her lips at every bed, the arrival of an injured child at night, the piece of chocolate after dinner, the excitement of strange instruments which the doctors and nurses use but do not explain. Night comes on but there is no bedtime story, no last moment of intimacy, no friendly cuddle before sleep. The nurse is too busy for that, busy with the noughts and crosses. This daily rhythm of anxiety, wonder, apprehension and sleep is better than it sounds, because it is made tolerable by the extraordinary resilience and gaiety of the children at every opportunity. Their cheerfulness keeps on breaking through. But it is a deceptive cheerfulness.

In the hospital there are other wards like this with a kitchen, a side-room, a linen cupboard, and an entrance corridor beyond which parents shall not pass. They have no treatment room, no laboratory, no accommodation for parents, no interviewing room. Each ward is under one black-coated man of authority who, although devoted to his work, must delegate much of it to a white coated resident. He has little time for companionship with his colleagues except in committee rooms. His ward is his domain. If he is a surgeon it is a surgical ward. If he is a physician it is a medical ward.

Not all hospitals are like this. Some are better, but many others are worse, mainly because most of the clinical work is in the hands of people untrained in paediatrics or in the hospital-care of children. But I have drawn this picture in order to make concrete suggestions for its improvement.

Suggested Improvements

1 The clinical unit should be big enough to carry a trained staff sufficient in numbers for its varied duties, and working closely enough for the cross fertilization of each other's minds in daily contact over their patients. For this purpose the unit should contain not less than fifty and not more than a hundred beds, which will be subdivided into smaller nursing charges.

2 The unit should be constructed not as isolated medical and surgical wards but as a combined clinical unit carrying both medical and surgical patients, in which paediatric physicians, surgeons, and specialists combine in their clinical work. In this combined clinical unit the children are placed in rooms or wards on grounds of their age, their temperament and the nature of their illness not divided into "medical" or "surgical" cases according to their need for operations. I shall return to this theme and its many advantages to patients, to nurses, to residents, and to medical staff. Having worked under this arrangement for many years, I and my colleagues, who have had a full experience of it are convinced of its absolute value.

3 The unit should be arranged in rooms of five to eight beds, with at least one two-bedded room where, for special clinical reasons or for a companionship which is psychologically necessary, two children may be lodged. In addition, single rooms will be required for 5-10% of the total number of patients.

4 In each unit, or conveniently near to each unit there should be a suite of special rooms in which, when necessary, a mother may live with, nurse and care for her own child. She will do this under supervision of the trained staff. Five or more rooms of this sort will be required in a unit of fifty beds.

5 In each unit there should be a small self contained traumatic department into which the injured child may be immediately received and treated.

6 In each unit there should be a treatment room in which all dressings, lumbar punctures, and other painful manipulations can be carried out, and where anaesthesia will be frequently used particularly for the painful removal of dressings.

7 Each unit should contain its own laboratories in which the clinical staff can work and carry out such immediate laboratory examinations as are within their province. One skill enhances another skill. The clinician who has undergone a laboratory discipline and who himself continues so far as he can, to use precise laboratory methods in his wards is likely to be a more accurate observer and a closer student of disease than he otherwise would be.

8 Each whole-time worker in the unit, whether he be house-physician or senior member of the staff, should have in or near the unit "a room of his own" however small it may be.

Medical Staff

The care and treatment of children in hospital demands from the medical staff more time and more attention to detail than does the care of adults. Therefore the primary responsibility for the immediate clinical work in a children's unit should be placed fairly and squarely on the shoulders of one person. In my opinion this should be a resident paediatric physician who has been fully trained before taking up the post and who will hold it for two to four years. It is exacting work, and two to four years is long enough for that kind of responsibility. The resident paediatric physician will require the help of other residents, one of whom will be experienced enough to be his deputy. In a busy clinical unit of fifty beds there should be at least three residents. There should also be a senior paediatric physician and his deputy who visit regularly and who are readily available for consultation. They will be responsible for ultimate decisions, for the maintenance of standards in the nursing and treatment of the patients, and for the promotion of inquiries into all aspects of the clinical work, from the control of ward infections to the control of admissions. In a teaching hospital where there are associated consultation duties, at least one of the senior physicians should be a whole-time member of the staff. Other visiting physicians, surgeons, and specialists should be members of the staff and visit regularly or be called in consultation.

This method of staffing is designed for a combined clinical unit, the value of which I press, because it is in such a unit that surgeons and specialists can most confidently place their patients, in the knowledge that the post operative progress will be constantly supervised. In teaching hospitals and departments there are other compelling arguments for the combined clinical unit. It brings together in close consultation physicians, surgeons, and specialists over the large number of patients whose diagnoses are in doubt. It has the reciprocal action of enlisting the interest both of physicians and of surgeons in new subjects for research. It solves the problem of where to place the "no-man's-land" diseases such as general injuries and staphylococcal septicaemia with osteitis. It gives to the residents a wholesome clinical experience in differential diagnosis and the after-care of patients. No paediatric physician can practise successfully unless he be an authority on the diagnosis of appendicitis. No children's surgeon can confidently advise operation without considerable skill in the differential diagnosis of acute medical diseases or without a knowledge of the use and misuse of modern methods of resuscitation. They will best get this experience and skill in a combined clinical unit of not less than fifty beds.

This staffing of a children's clinical unit may sound extravagant. But is it so? Each town with a population of 250,000 will need a general children's hospital or department of 100 beds, an associated hospital for infectious disease of the same size, and a long-stay hospital of more than fifty beds. A town of that size will be spending not less than £500,000 a year on the public education of its children, and £40,000 or more a year on its child welfare services. Against these vast sums the amount which would be spent on paediatric physicians and surgeons is very small. But it must not be too small. We must escape the poverty-stricken attitude of a hundred years ago which still encumbers us.

Nursing

In children's wards the patients and medical staff are in the hands of their nurses to a precarious extent. Rarely in an adult ward does a patient die from a fault in nursing, whereas in children's wards it happens too often to allow us any composure of mind. The fault is not always obvious, nor is it always in the nurses. More often it is in the hospital itself or in the staff, who impose upon the nurses tasks beyond their capacity. The Paediatric Committee of this College in their recent report have shown where some of the faults lie, I need therefore say no more on that score, but leave it in the hope that the heavy hand of authority and precedent will be lifted by wise reform in nursing education. My purpose in discussing nursing is to draw attention to a more particular need, and one which is likely to increase in the future.

The most difficult and time-absorbing task in nursing is the care of the youngest children, who must be nursed, fed, and changed at frequent intervals of the night and day. If in addition there is much technical treatment the care of one infant becomes one woman's work. If there must be off-duty periods, it will be two women's work. If we introduce the three-shift system, it will be three women's work. While these infants are in hospital their mothers are at home suspended in anxiety. It would seem logical, therefore, that a solution of the problem should be found in admitting the mothers to the hospital to nurse their own children. This is no theoretical proposal. I have worked under this arrangement for many years, and I count it an indispensable part of nursing in a children's unit. Nor is it a revolutionary idea. By far the greater part of sick children's nursing is already done by mothers in their homes. Not all illnesses will be suited to this nursing, but the majority of all children under the age of 3 derive benefit from it. The mother lives in the same room with her child. She needs little or no off-duty time because the sleep requirements of a mother fall near to zero when her own child is acutely ill. She feeds the child, she tends the child, she keeps it in its most comfortable posture, whether on its pillow or on her knee. The sister and nurse are at hand to help and to administer technical treatment to the child.

The advantages of the system are fourfold. It is an advantage to the child. It is an advantage to the mother, for to have undergone this experience and to have felt that she has been responsible for her own child's recovery establishes a relationship with her child and confidence in herself which bodes well for the future. It is an advantage to the nurses who learn much by contact with the best of these women not only about the handling of a child but about life itself. It is an advantage to the other children in the ward for whose care more nursing time is liberated. In teaching hospitals it is of further advantage to the students who gain a practical experience of the form of nursing they will depend on in their practices and learn to recognize the anxieties and courage which bind the mothers

to their children during illness—a lesson which fosters the courtesy on which the practice of medicine depends. I advocate this method of nursing, not on sentimental grounds but on the practical grounds of efficiency and necessity. Apart from all other reasons the shortage of nurses will impose this method on us in the future.

Care of Children in Special Hospital

About a third of Newcastle's children admitted to hospitals enter the fever hospitals. In some towns the proportion is higher. A considerable number of these patients are infants and young children suffering from illnesses other than the acute specific fevers. Apart from diphtheria which may justify this specialization of a hospital, there appears to be little reason for the sharp division between the fever hospitals and the acute medical sections of the children's department. A family is stricken with streptococcal infection. One boy develops a quinsy and stays at home, his brother has a sore throat with a rash and is sent to a fever hospital, and his infant sister gets streptococcal septicaemia and meningitis and is admitted to a children's hospital. An infant with infective gastro-enteritis which yields a dysentery organism goes to a fever hospital, another infant with gastro-enteritis which is equally infective but yields no dysentery bacillus remains in the children's hospital. Both types of hospital make their contribution to the care of children and the study of their diseases, but as time goes on each approximates to the other in its techniques and in the scope of its work. The corollary of this is that the staffing and nursing of both types of hospital should approximate also. The staffs of the fever hospitals should be trained as paediatricians and be specially instructed in the hospital care of children, and by contact with paediatric hospitals they should keep in touch with advances in the subject. On the other hand the staffs of children's hospitals should know their fevers, and be *au fait* with all advances in their prevention and control.

So far I have been discussing institutions which are thoroughly familiar to us, institutions in which we live or work each day. If at times we tend to neglect the comfort and emotional welfare of the children in these institutions by leaving that responsibility to others, we are quickly brought back to reality by contact with questioning parents. I now pass on to another type of institution where the care of children is not so readily safeguarded. This is the long-stay hospital—the orthopaedic hospital, the children's sanatorium, and the like—where patients may remain for months or years, where the medical staff who dictate the length of stay may know little about the parents of the children, where the parents may never have the opportunity of discussing the effect of confinement on the future of the child with someone who has carefully considered that aspect of its welfare.

If Samuel Butler had extended his Erewhon to include this problem no doubt he would have said that a decision to restrain and confine a person for six months for a civil offence would be reached only after hours or days of careful consideration of the evidence by a judge and a number of other trained people, but that a child, on whom the effects of confinement are much greater than on an adult, could be committed to hospital for far longer periods with far less consideration of the evidence or the need. I have experimented in the domestic care and treatment of children with active abdominal tuberculosis of children immobilized by orthopaedic appliances, of children with chronic disease which requires frequent observation and examination, and from these experiments I am convinced that too often and too lightly is the decision made to confine children.

long-stay hospitals. Sometimes the primary diagnosis is at fault. A child with coeliac disease may lie for months in bed under the impression that he has tuberculosis. Sometimes the assessment is at fault. A child with rheumatic heart disease may lie for months when he would be better gently idling about in his own home and garden. The crux of the matter is the careful ascertainment before the child is admitted, of the clinical problem of parental attitude, of their domestic circumstances, and of the conditions of the hospital to which it is proposed to send the child. This ascertainment can be made only by people with considerable clinical experience and knowledge of society.

Some of the long-stay hospitals have attempted to set their house in order, with partial success. But a long-stay hospital can never be completely successful in providing the things of which the child is deprived, whatever the educational arrangements may be, or however many their books, toys, and cinemas. These may mitigate the deprivation, but do not give the sense of personal attachment, the relationship, the companionship, which are necessary exercises for the mind of the growing child. I have had to listen to a great deal of evidence from men and women who spent much of their childhood and adolescence in these institutions. The sensitive and intelligent witnesses recalled with nightmare memories the long hours of winter evenings which pressed upon them in their adolescence, the aimlessness of their existence, the uncertainty of their future. They had their lessons each day, and raffia work and entertainments, but there was no intimacy with anyone who could explain to them the purport of their illness or encourage them with plans for the future. The fault lies in the form and arrangement of most of these long-stay hospitals. They have been conceived too much as medical institutions and arranged too much as hospital wards. It would be better if the children lived in small groups under a house-mother, and from there went to their lessons in a school, to their treatment in a sick-bay, and to their entertainment in a central hall. There would be no disadvantage in the house-mother having had a nursing training, but that in itself is not the qualification for the work she will do. Her duty is to live with her group of children and attempt to provide the things of which they have been deprived.

I must consider one other type of hospital, which will bring me full circle to Charles West again. He left obstetrics to concern himself with children's hospitals. So it is not inappropriate that a children's physician should turn for a moment to maternity hospitals, for in these places one-third of the children of the country begin their lives.

So far I have been suggesting that many of the faults in our hospitals are due to poverty-stricken ideas, which took their origin a hundred years ago and to a formal method of construction and staffing which precedent has laid upon them. This is as true of maternity hospitals as of others. Some are now escaping from poverty and are much gayer than they were, with coloured oilcloths, stainless steel, and plate glass, but there has been little reform of essentials.

What are these essentials? I take it that the function of a maternity hospital is to deliver a woman safely of her child, and afterwards to care for them in such a manner as to ensure their health, to establish their intimate and interdependent relationship, and to leave the woman free from the fears of having another child. Our maternity hospitals are ensuring the safe delivery of a woman to a greater and greater degree, but are they fulfilling the other two functions?

I know maternity hospitals which are the hygienists' dream of perfection. The women lie for their ten days in immaculate beds placed equidistantly along sterile walls. Their ward is a picture of calm repose and passive immobility. You ask what has happened to create this atmosphere of silence and subdued conversation and fail to get an answer, but the truth is that the mothers are mystified by an arrangement under which their babies have been taken away from them at the time when, at the end of nine months' waiting, they had expected to possess them. The babies are in cots set in rows in a room along the corridor beyond their earshot, out of sight but not out of mind. At regular intervals of the day they are placed on a trolley, wheeled along the corridor, and with the ringing of a bell which announces that milking-time is at hand, they are delivered by a masked woman to another masked woman at the door of the ward in which the mothers wait. Milking-time over the babies are re-embartered for their nursery where they are solaced with sugar and water.

- This, surely, is physiologically wrong. I and many of my colleagues have the advantage of working in maternity hospitals where, throughout the puerperium night and day mothers and babies are kept within reach of each other where the mother may pick up her baby when she desires where everything that is done for the child is done within sight of the mother at her bedside, and experience shows that with simple precautions not only is the danger of neonatal infection less than it otherwise would be, but breast feeding and the relationship between mother and child are firmly and safely established in a physiologically natural manner.

Co-operation between obstetricians and paediatricians is now becoming close, but concerning this I have one piece of advice to offer. It is next to useless to enlist the services of a paediatrician in a maternity hospital only to visit occasionally and give advice on sickness. In a maternity hospital of any size there should be an experienced paediatric physician who lives there, or visits each day regularly and punctually. It is his or her duty to prevent and treat sickness in the children, and to apply a knowledge of human biology on which the relationship between mother and child is founded. The paediatric physician will have his own technique of ward rounds, of control of infections, of treatment of disease, all of which demand a special knowledge. In smaller hospitals which cannot find such an experienced person for their staff, at least one of the obstetric officers should have a training in this branch of clinical work and human biology which fits them to supervise that aspect of child-care.

Conclusion

Although I may have failed to make it clear the tenor of my discourse has been that the care of patients in hospitals is a subject which demands scientific study, and experience based on such study, and that the need for this is greatest of all in children's hospitals. A children's hospital is an instrument of medical treatment. It is a highly specialized instrument, and its arrangement must be constantly altered and adapted to meet changing needs. It is also a dangerous instrument in the hands of those who do not know how to use it.

These difficulties and dangers should be exposed in constant inquiry and discussion, and corrected by research. For this purpose some members of the profession, themselves experienced in the work of children's hospitals, must make themselves expert in the physical examination of institutions. No amount of administrative or clinical experience alone will fit them for that work.

CHANGES IN HAEMOGLOBIN CONCENTRATION IN THE ACUTE STAGE OF LOBAR PNEUMONIA

BY

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The frequent occurrence of delayed resolution in lobar pneumonia treated with sulphonamides has emphasized the need for the investigation of factors which might lead to further elucidation of the process of resolution. Ross (1945) demonstrated that those patients who subsequently developed delayed resolution had, on admission to hospital, a lower concentration of plasma protein than those whose consolidation resolved within the normal time. Although it seemed possible that such low plasma proteins might be due to a dietetic deficiency in protein, she also suggested that the onset of pneumonia might itself cause a fall in the plasma protein content. It seemed reasonable to argue that if a loss of plasma protein were initiated by the disease process, the presence of "oligaemic shock," with accompanying haemoconcentration, might be a factor in the severe case of pneumonia and might retard the process of resolution. It was therefore decided to repeat Ross's experiment, with the addition of a careful study of the course of the haemoglobin concentration.

Methods

The investigation was carried out concurrently with, and upon the same subjects as, an experiment comparing the respective therapeutic effect of sulphonamides and penicillin on the course of lobar pneumonia (Anderson and Ferguson, 1945). The patients were men of 35 years or more. They received either sulphonamide or penicillin therapy. Already it has been recorded that the results of treatment were similar. Further as a careful comparison of the haemoglobin changes in the two groups showed no difference between them they have been regarded for the purposes of the present investigation as a single series.

Heparinized venous blood, withdrawn from a superficial vein without stasis was used for all haemoglobin and plasma protein estimations. Plasma protein concentrations were estimated only on the blood sample obtained upon the patient's admission to hospital. The estimations were made by the refractometric method.

A photo-electric absorptiometer of the Spekker type was used to estimate haemoglobin concentration. Haemoglobin was converted to oxyhaemoglobin by blowing an accurately measured 0.1 ml. of heparinized blood into 10 ml. of a 0.4% solution of ammonia in distilled water. The readings obtained on the Spekker were converted to absolute values by means of a graph. This graph had been obtained previously by plotting serial dilutions of a blood of known oxygen capacity against their corresponding logarithmic values.

Each patient's haemoglobin concentration was estimated on admission and if possible, for the four succeeding days. Thereafter unless clinical findings indicated that more frequent investigation might be of interest haemoglobin estimations were repeated only at weekly intervals. The majority of estimations were duplicated and a difference greater than 0.2 g. was considered to be inaccurate.

Results of Investigation

(a) *Admission Plasma Protein Concentration*—The admission plasma protein concentrations were estimated on 84 patients whose recovery was uncomplicated either by

empyema or by sterile effusion. These cases were divided into two groups.

Group A contained those patients in whom, by the 28th day of illness, there remained no clinical or radiological evidence of a pneumonic consolidation. Such patients were considered to have shown "normal resolution."

Group B contained all those patients in whom the pneumonic consolidation persisted beyond 28 days. Such patients were considered to have delayed resolution.

The percentage frequency distribution of the plasma protein concentration in these two groups is shown in Fig. 1 and Table I. It is apparent that the majority of Group B

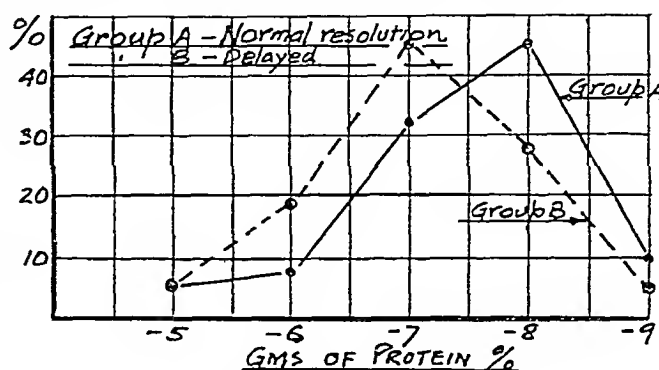


FIG. 1—Admission total plasma protein level

TABLE I—Admission Total Plasma Protein Level (Actual Figures)

	Protein Level in G.					Total No. of Cases
	4.1-5	5.1-6	6.1-7	7.1-8	8.1-9	
Cases resolving in 28 days	2	5	13	18	4	40
	5%	7.5%	32.5%	45%	10%	100
Cases resolving after 28 days	4.5	8	20	12	2	44
	4.5%	18.2%	45.5%	27.3%	4.5%	100%

cases on admission to hospital have a lower concentration of plasma proteins than have Group A cases, for in 55% of Group A cases a plasma protein concentration of between 7.1 and 9.0 g. % was obtained whereas only 31.8% of Group B cases attained this level. These figures confirm Ross's observation except that in the present series the differences are less marked. It may be noted that Ross's cases included all male patients from 20 years of age upwards, whereas the present series contains only patients over 35 years. Since this selection concentrates attention on the age group in which the disease is most severe it would be natural for the difference to be less obvious.

(b) *Admission Haemoglobin Concentration*—The distribution of admission haemoglobin concentration in all

TABLE II—Correlation Between Admission Haemoglobin Concentration, Duration of Illness and Subsequent Time of Resolution

	Hb Concentration (G. %)						% of Cases showing		Total No. of Cases
	19-17	17-15	15-13	13-11	11-9	Aver	Normal Resol	Delayed Resol	
All cases on admission	1	15	53	38	4	13.48			111
Cases admitted on 1st to 3rd day of illness	1	7	35	18	1	13.65	61.4	38.6	62
Cases admitted on 4th day of illness and over	—	8	18	20	3	13.26	33.3	66.7	49
Cases with Grade I consolidation	—	6	10	7	—	13.91	86	14	23
Cases with Grade II consolidation	1	5	22	17	—	13.56	41	59	45
Cases with Grade III consolidation	—	—	18	14	4	13.03	15	85	39

patients was grouped according to the duration of illness and density of consolidation. The frequency of delayed resolution in each group was also recorded (Table II). Study of this table suggests that cases admitted early in their illness tend to have an average admission haemoglobin concentration slightly higher than those admitted late and that delayed resolution is rather more common in the latter group. In an attempt to obtain some standard which might reflect the haemoglobin level before admission, nine healthy male relatives of the same age group were selected, since, living under the same conditions as the patients, they might be expected to show a similar blood picture.

The average haemoglobin concentration of these controls was 14.98 g %, a level within normal limits, and one which is in accord with that reported by Marshall (1946)—14.6 g per cent for male blood donors of this age group in Glasgow. A comparison of this figure with the average admission haemoglobin in pneumonic patients reveals that the latter is 1.5 g lower than the control figure. These figures suggested that the haemoglobin concentration was lowered by the onset of pneumonia and that as the duration of the illness increased the level might be further reduced.

It seemed possible that the effect of a longer duration of the disease might be to increase the extent of consolidation. If such were the case, then a correlation between the haemoglobin level present on admission to hospital and the density of consolidation as assessed from a radiograph might be expected. To test this, three arbitrary grades of radiographic density were chosen. These were defined as follows:

Grade I Consolidation—Those cases in which the lung markings could be seen clearly through the consolidation were allocated to this section.

Grade II Consolidation—Into this group were placed cases in which the lung markings could still be discerned through the consolidation but much less clearly than in Grade I.

Grade III Consolidation—Into this group were placed those in which the consolidation was so dense that no lung markings were apparent.

When a comparison is made of the admission haemoglobin values in these three groups (Table II) we find a slight trend downwards in the haemoglobin concentration as the density of the consolidation increases. As one might expect, there is a direct correlation between the density of the original consolidation and the speed of resolution. This is shown very clearly in that 85% of those patients with the densest consolidation (Grade III) developed delayed resolution, where-

as among those patients with the least dense consolidation (Grade I) only 14% showed this abnormality. Of more importance, however, the findings give no support to Ross's contention that "shock" might account for the low plasma protein levels in pneumonia, since the consequent haemococoncentration which should be present was not found.

Mean Daily Haemoglobin Levels during Course of Pneumonia

Since it appeared that haemoglobin concentration might be affected by the duration of illness prior to admission to hospital the

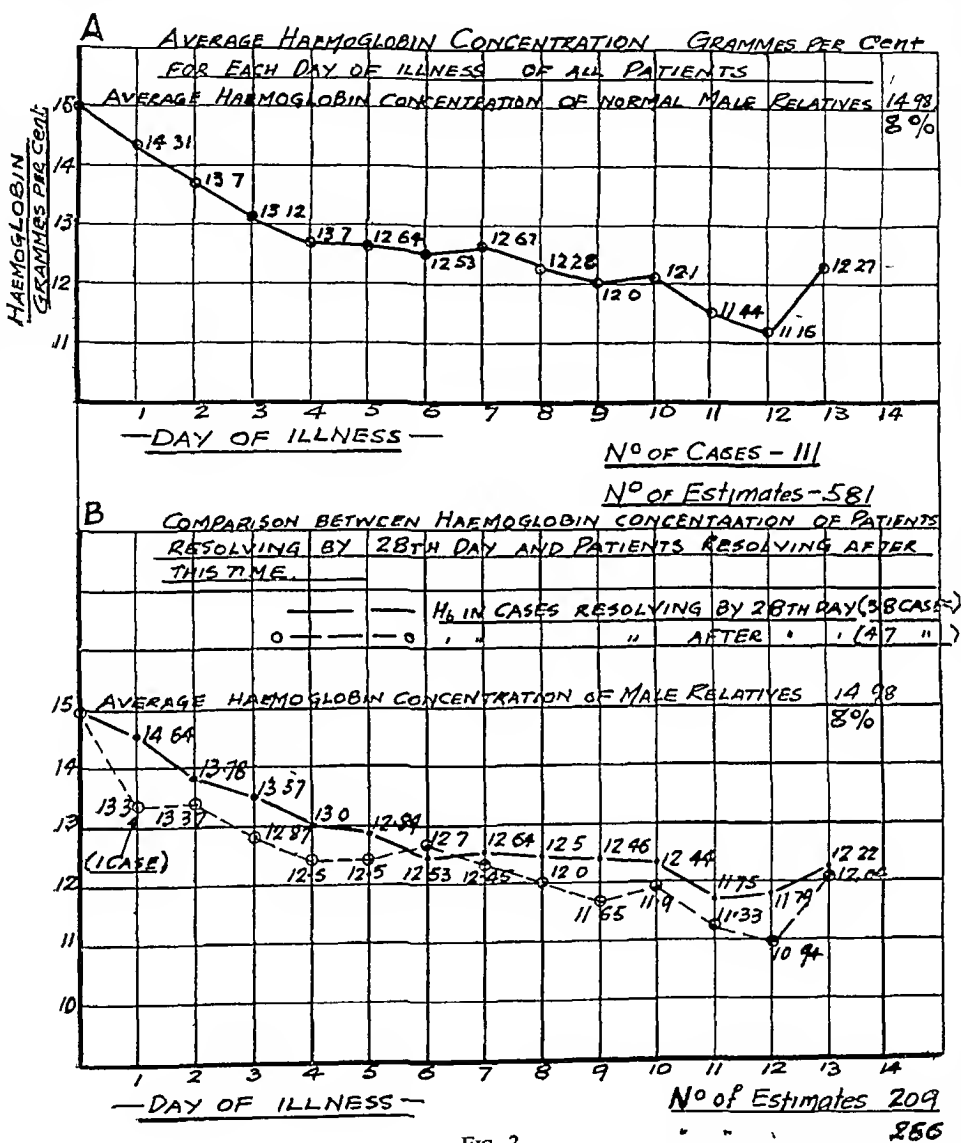


FIG 2

mean haemoglobin levels for each day of illness were calculated. The results of this analysis are depicted in Fig 2, A. It is evident that in pneumonia, during the first 12 days of illness there is a progressive fall in haemoglobin concentration which follows a steady curvilinear course. Further, a tentative suggestion may be made that, as the original haemoglobin concentration of the pneumonic patient was probably similar to that of his male relatives, a fall in haemoglobin value had already occurred before his admission to hospital.

When a comparison of the average daily haemoglobin values was made between patients whose consolidation resolved normally and those in whom resolution was delayed, the graphs shown in Fig 2, B were obtained. It can be seen that the curve for those patients who de-

delayed resolution shows a tendency to follow a rather lower level than that found in patients whose consolidation resolved within a normal period. It was now becoming manifest that haemoconcentration was not normally found in cases of pneumonia. Indeed, the haemoglobin value appeared to fall progressively below normal limits during the fastigium of the disease, this fall was most marked in cases which subsequently developed delayed resolution.

Discussion

The initiation of the pneumonic process must occasion a loss of plasma into the affected lung. It seems reasonable to assume that this depletion will be proportionate to the volume of lung affected. Loss of protein from the plasma would naturally cause a mechanical haemodilution, although in a normal healthy subject one would expect such a change to be transitory and a rapid return of plasma protein and haemoglobin to normal levels to occur within two or three days. Yet in pneumonia the haemoglobin concentration continued to fall.

Such a rapid fall in haemoglobin concentration does not seem to be in keeping with the onset of a simple hypochromic anaemia produced by a sudden cessation of iron absorption. A continuous loss of blood by haemolysis might easily produce such a result, but examination of the blood of six patients during the first five days showed no evidence of reticulocytosis. It seemed most likely, therefore, that the fall in haemoglobin concentration was caused by haemodilution, and, indeed, Rutstein and his co-workers (1945) have shown that in the acute stage of lobar pneumonia an increase does occur in both the plasma volume and the volume of the extracellular fluid.

Seaman and Ponder (1943) obtained rather similar findings in post-operative cases and showed that after operation the fall in haemoglobin concentration was greater than could be expected from the volume of blood lost. Findings so similar in two entirely different conditions might suggest that in each, the phenomenon may be a response to injury. It may be that the injury to tissue, no matter what the assaulting mechanism be, produces a depression of the haemopoietic system.

Madden and Whipple (1940) express the view that the liver produces all albumin and much of the globulin required by the body, and observe that there is some evidence to show that, in dogs, infection can limit protein formation. If the haemopoietic system were thus depressed the liver might not only be unable to restore the plasma protein lost initially into the lung but also might be inadequate in replacing the normal physiological daily loss. A similar continuous decrease in the number of circulating erythrocytes might also result. Such a loss of plasma protein might be expected to produce a fall in osmotic pressure and a resulting decrease in plasma volume with marked peripheral failure. Yet in pneumonia there is an increase in plasma volume.

It is interesting that in nephrosis, despite a very low plasma protein concentration a normal or almost normal plasma volume is found. Warren, Merrill, and Stead (1943) have suggested that the presence of an increased extracellular fluid volume may be the mechanism whereby the plasma volume is maintained in this disease. In experiments on dogs these workers have demonstrated that when the extracellular fluid was increased by continuous infusion until oedema occurred a normal plasma volume could be maintained despite a continuous loss of plasma protein.

It seems possible that in pneumonia retention of orally administered fluid produces a similar phenomenon and

that the extravascular fluid and plasma volume remain increased until such time as the factor which inhibits the production of new plasma protein and fresh erythrocytes is overcome.

These findings might be linked with the lowered blood chloride levels and chloride retention found in pneumonic patients. If an excessive quantity of vascular and extravascular fluid were present then it would not be surprising that a concurrent retention of chlorides should occur and that, despite this, the chloride concentration in the blood should be low.

It would thus appear that low plasma protein and low haemoglobin levels found in pneumonia are not in themselves causative factors in delaying the speed of resolution but that these findings indicate an extensive and dense consolidation which is itself a prime factor in the speed with which resolution is concluded. There would seem to be need for further study of the biological changes to which the onset of an infective process gives rise.

Summary

The haemoglobin concentration of patients suffering from pneumonia was studied by repeated examination over a period covering the acute stage of the disease. There was no evidence of haemoconcentration. The haemoglobin concentration fell progressively during the first 12 days in hospital. It is suggested that this reflects a haemodilution found most markedly in the severe case.

The presence of low plasma protein concentration and low haemoglobin in cases of pneumonia does not cause delayed resolution but merely parallels the density of the consolidation, which is itself important in deciding the time of resolution.

I wish to thank Dr Thomas Anderson for much helpful advice and criticism.

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ORDER OF ST JOHN OF JERUSALEM

The *London Gazette* has announced the following promotions in and appointments to the Venerable Order of the Hospital of St John of Jerusalem

As Knights Major Gen Sir R B Ainsworth, C B, O B E, D S O, K H P, Surg Vice-Admiral H St C Colson, C B E, Air Marshal Sir Andrew Grant K B E, C B, K H S, Dr E Llewellyn *As Commanders (Brothers)* Major-Gen P H Mitchiner C B, C B E, T D Col A R S Vickers, Drs R B MacGregor CMG, F W M Palmer *As Associate Commander (Brother)* Major S A Paymaster, I M S *As Commander (Sister)* Dr Frances C B MacKay *As Officers (Brothers)* Brigs C Scales M C, D G Cheyne C B E, M C Col R J Poston, T D, late R A M C, Cols C G L van Dyk, G G L Stening, Lieut-Col J C John O B E, I M S, Lieut-Col C M Forbes (since deceased), Major J H Plumridge, R A M C, Drs R Nelson, J C R Buchanan, R D Jones R J Walker, J J Mangion, M C Lavin, H B Pare, Chau Wai Cheung Tseung Fat In *As Associate Officers (Brothers)* Drs S J Hoffman, P K Chatterjee *As Serving Brothers* Drs J W Sandoe, J Orr, J R B Dearden, E E Parrett, J A G Wilson, R B Radcliffe, I Davies, I H Davies, I H Lloyd, T W White, N C Joel, A J J O Sullivan, H H Goodman W L Walker, R B Eadie, J Craw, J Morris, H A Robertson, A D D Broughton K M Rodger, A C Ternes, L S Woods, E R Beech B W Buttsworth L D Hodby, A N Jacobs, R B Knight, H H R Nash *As Associate Serving Brothers* Drs K Budeim, E Galgut, G C Roi, R K Bhandari *As Serving Sisters* Drs Winifred M Cole, Isobel C Allardice, Roberta H M Jull

FOOD UTENSIL BACTERIOLOGY

BY

R. IRENE HUTCHINSON, MB, DPH, DTM

Public Health Laboratory Service

Modern conditions compel many people to have meals in communal feeding-places, and much work has been done on outbreaks of enteritis following the consumption of meals contaminated by infected "food-handlers." Not so much attention has been given to the possibility of transfer of similar and other infections by food utensils.

To ascertain the general hygienic condition of the "messing equipment" in daily use by the public a survey was made in 25 kitchens. These included A A and R A C approved hotels, restaurants of multiple stores, works and school canteens, day nursery kitchens, cashops, snack-bars, and a civic restaurant. Visits were made between 12.30 and 1.30 p.m., so that conditions were observed at the peak hour when they were at their worst. The visits were not pre-announced, so that no special cleaning could be done. The kitchens were situated in a residential area of about 60,000 inhabitants—a London dormitory town where the food inspection was maintained at a very high level.

Samples of washing-up water in actual use were taken and swabs of spoons, cups, forks, glasses, and plates which had been used, washed, and were stacked ready for re-circulation. The swabs were moistened in nutrient broth, and for cups an area of 2 sq in (12.9 sq cm) to the left of the handle was rubbed over on the assumption that this area was most likely to contain organisms. For glasses the rims and inner and outer surfaces to a depth of 1/2 in (1.25 cm) were covered, and for forks the free ends of the prongs for a depth of 1 in (2.5 cm).

Organisms Isolated from Utensils

Spoons—Out of 164 examined, 8 grew a coagulase-positive *Staphylococcus aureus*, 2 a Group B haemolytic streptococcus, 1 a *Bact. dysenteriae* sonnei, 1 a paracolon bacillus, 2 *Bact. faecalis alkaligenes*, and 27 yielded coliform bacilli.

Cups—Out of 121 examined 9 grew a coagulase-positive *Staph. aureus*, four haemolytic streptococci (2 Group C, 1 Group B, and 1 Group G), 2 paracolon bacilli, 2 *Bact. faecalis alkaligenes*, and 30 yielded coliform bacilli.

Forks—Out of 219 examined 8 yielded a coagulase-positive *Staph. aureus*, 2 haemolytic streptococci (1 Group A, 1 Group G), 2 paracolon bacilli, 1 *Bact. faecalis alkaligenes*, 1 *Proteus* bacilli, and 43 yielded coliform bacilli.

Plates—Out of 53 examined 6 grew a coagulase-positive *Staph. aureus*, 2 haemolytic streptococci (1 Group B and 1 Group G), 2 *Bact. faecalis alkaligenes*, 1 *Proteus* bacilli, 3 *Pseudomonas pyocyanea*, and 23 yielded coliform bacilli.

Glasses—Out of 58 examined 3 grew a coagulase-positive *Staph. aureus*, 4 haemolytic streptococci (2 Group B and 2 Group G), 1 *Bact. faecalis alkaligenes*, 1 Morgan's bacilli, and 10 yielded coliform bacilli.

All these organisms except the coliform bacilli are possible pathogens and have been cited as causes of disease. The widespread occurrence of coliform bacilli would suggest a real possibility of contamination by intestinal pathogens. No attempt was made to classify these coliform bacilli, as high counts of the dish-washing waters grown at 37° C suggested that the majority were of animal origin. Faecal streptococci, *Streptococcus viridans*, and *Staph.*

albus were also grown from 588 of the utensils examined, only 27 yielded no growth of any kind. These organisms, although not pathogenic in themselves, are an indication of the degree of possibility of infection from mouth and bowel organisms.

Dish-washing Waters

Thirty-eight samples of dish-washing water were examined, 19 had counts of more than 1,000,000 organisms per ml at 37° C and 9 had counts of more than 1,000,000 organisms per ml at 22° C. Twenty of the 38 had considerably more organisms growing at 37° C than at 22° C—the approximate proportion being 120:1—suggesting the presence of a much higher number of organisms of animal than of soil or dust origin. As the average crude sewage in this country contains approximately 1,000,000 to 5,000,000 organisms per ml at 37° C (Topley and Wilson, 1946), it is seen that the majority of the dishes are being washed in water that bacteriologically is equivalent to sewage.

Twenty-three of the 38 waters had more than 1,800 coliform bacilli present per 100 ml. The Ministry of Health standard for a potable water varies according to the origin, but is ideally no coliform bacilli in 100 ml, and waters are "satisfactory" only if they have not more than 2 coliform organisms per 100 ml. Hence, these waters used for washing utensils, most of which are to be placed in the mouth would appear to be entirely unfit for such a purpose.

Owing to the difficulty of obtaining soaps and soda 11 of the 38 waters contained no detergent. In others soda had been generally added, but in varying proportions—a handful or so being thrown in at random. That the addition of soda is of value is shown by the following.

With pH range 7–10 67% waters had bacterial counts greater than 1,000,000 organisms per ml.

Over pH 10 only 35% waters had bacterial counts greater than 1,000,000 organisms per ml.

With pH range 7–10 67% waters had coliform bacilli greater than 1,800 per 100 ml.

Over pH 10 only 47% waters had coliform bacilli greater than 1,800 per 100 ml.

The temperatures of the waters were found to be exceptionally low—the average was 40° C—the maximum being 50° C and the minimum 30° C. These temperatures would of course be too low to have any destructive or inhibitory effect on any organisms.

Among the organisms isolated from these waters were *Streptococcus viridans*, faecal streptococci, *Staph. albus* and *aureus* (coagulase-positive), coliform bacilli, paracolon bacilli (8 times), *Bact. faecalis alkaligenes* (12 times), *Proteus* bacilli (once), *Pseudomonas pyocyanea* (8 times), and aerobic sporing bacilli (14 times).

Drying Cloths

In most cases, owing to the shortage of towels and the impossibility of a quick laundry service, cloths were used till wet, and then dried and re-used. Many were washed at night and sent to the laundry weekly. Seventeen of the 36 examined yielded only faecal streptococci, *Staph. albus*, *Str. viridans*, and aerobic sporing bacilli. From the others one or more of the following were grown: coliform bacilli, paracolon bacilli, coagulase-positive *Staph. aureus* and *Bact. faecalis alkaligenes*. On the whole the cloths did not seem too unsatisfactory.

The cleanest utensils came from a multiple store where a washing machine, with soda, was used and where there was no hand-drying of cups, plates, and glasses. They were placed in a drying oven with a temperature of

approximately 82° C, their length of stay varying from a few minutes to half an hour according to the demand for them. This temperature was high enough to kill many of the more delicate organisms, and indeed 10 out of the 20 swabs were sterile. This compares very favourably with the other 24 kitchens, where only 17 sterile results were obtained from among 595 swabs.

Though this investigation was not concerned with the bacteriological examination of the 'food-handlers' in the kitchens, advantage was taken of the visit to inspect the sanitary arrangements and washing facilities provided for them. In most cases these were unsatisfactory. In 14 places no washing facilities were available either within or immediately adjacent to the sanitary convenience, and hands had to be washed, if indeed they were washed at all, in the same kitchen sink as the crockery and cutlery. This provides a sure path of infection by intestinal pathogens.

Conclusion

It would seem from this brief survey that in communal feeding-centres the cleaning of eating utensils is very unsatisfactory, and that pathogenic organisms are likely to be spread among the users of different articles. The lack of modern equipment such as washing machines, the difficulty of obtaining soap and washing powders, and the scarcity of drying towels renders very difficult the important and necessary task of feeding people in a hygienic manner. The finding of dysentery bacilli on the cutlery in one out of only 25 kitchens is rather disquieting, and may suggest the origin of the sporadic case of "diarrhoea", and the finding of pathogenic streptococci 14 times and of pathogenic staphylococci 36 times may help to explain the high incidence of septic mouth lesions so common in the last few years. The prevalent method of washing and drying infected crockery and cutlery appears to do little in the way of destroying their pathogens.

Very great interest was shown by the proprietors of the premises visited and every help was given to facilitate the investigation. Results were keenly awaited, and they were eager to know what measures could be adopted to remedy defects. It would seem that public health propaganda for improvement in kitchen hygiene, together with suggestions as to the methods to be followed, would be welcomed, especially if accompanied by bacteriological evidence showing its necessity.

My grateful thanks are due to the Medical Officer of Health for approval and permission to work in his district, to the Chief Sanitary Inspector, without whose co-operation and active help this work could not have been done, and to my technicians Mr P G R Browne, Mrs R Udall and Mr H Gillies, for much willing help in the preparation of media.

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For the 1946-7 academic year 248 graduates and others of like status from overseas have been awarded British Council scholarships which enable them to take a wide range of postgraduate courses of study in this country. The scholarships are normally for one year but extensions are granted in suitable cases. In addition the British Council has helped to place many students who have come under the auspices of overseas authorities or privately. The Council during the year established a students welfare department to deal with the reception and non academic welfare of scholarship holders and to help them to gain a general knowledge of British life and institutions. To this end vacation courses, which enable those residing in London to visit the provinces and vice versa as well as term time talks, discussions, shows of documentary films, and other events are arranged. These facilities are available also to students sponsored by the Colonial Office, the Indian and Sudan Governments and to other overseas students. The year's British Council scholarship holders have come from some fifty Empire and foreign countries and include 26 taking medical subjects.

THE SURGICAL TREATMENT OF CHRONIC FRONTAL SINUSITIS

BY

V E NEGUS, MS

In my experience few complaints produce so much disability or suffering as chronic infection of the frontal sinus. In a great number of instances this suffering appears to be unnecessary, and I am therefore impelled to record my suggestions as to how unsatisfactory results may be avoided.

In the first place it is necessary not to exaggerate the incidence of frontal sinusitis, and to avoid operating under a mistaken diagnosis. The prominent symptom of frontal headache is attributable in many instances to neuralgia of various types or to migraine, but with no cause in the frontal sinus. The incidence of sinus headaches may, according to Proetz (1943), be no more than 5%, but when there is such a cause the case is difficult to cure. It is not my intention to enter into a discussion on the differential diagnosis of frontal headaches, but rather to suggest means of relief when the cause has been established.

Two Important Points

First, it is necessary to eliminate all contributory factors in the nasal fossae; this advice may seem obvious, but in a large number of unsuccessful cases referred to me this elementary detail has been overlooked. The treatment referred to is the care of infection in the maxillary and ethmoidal cells, the straightening of a high deviation of the septum, and the removal of an enlarged and obstructing middle turbinal body. Several patients I have seen have been submitted to more than one external operation while the septum has been so twisted as to make the nasal fossa on the affected side quite inadequate for ventilation and drainage.

The second recommendation concerns direct treatment of the infected frontal sinus after all preliminary measures have been taken to provide a satisfactory outlet to the fronto-nasal duct, as outlined above. I do not believe that internal operations on the frontal sinus are satisfactory; evidence is afforded by a number of patients so treated who have subsequently come under my care and have required an external operation for their cure.

The most skilled operator in this region that I have seen was Dr Max Halle, of Berlin, but even though I admired his dexterity in creating a free passage into the frontal sinus, the difficulty of clearing all infected ethmoidal cells by the intranasal route, together with the tendency of the exposed bony canal to reclose, has prejudiced me against this and other similar methods.

One comes therefore, to the final determination that in cases with chronic infection of the frontal sinus associated with the usual symptoms of headache, difficulty in concentration, depression, and so on, the correct treatment is an operation by the external route. It remains then to decide what method is desirable.

Method

Attempts at obliteration of the frontal sinus are, in my experience usually unnecessary, generally disfiguring and often ineffective. I have had to operate on several patients who had elsewhere been submitted to attempted obliteration of the sinus. The anatomical structure is such that unless a new and permanently enlarged fronto-nasal duct is created an inefficiently drained recess will be left in the lower part of the sinus, with continual suppuration and the continuance of the symptoms which the operation is intended to relieve.

If an adequate fronto-nasal duct is provided the frontal sinus is in the great majority of cases able to return to a normal state, provided the lining mucosa has not been disturbed. In four cases I have had to remove the anterior wall of a shallow sinus to obliterate outlying recesses. In these the mucosa failed to recover after reconstruction of the fronto-nasal duct, but such cases are rare, and even with them it is essential to provide a free communication between the remains of the sinus and the nasal fossa, so that the first operation is not wasted. In this connexion it is interesting to note that in five cases in which previously unsuccessful attempts at obliteration had been made I have secured a good result by establishing an adequate fronto-nasal duct while at the same time reconstructing the frontal sinus by means of a saccular skin-graft. Not only has suppuration been eliminated thereby, with cure of the previous symptoms, but a good cosmetic result has been attained by restoring the contour of the forehead.

Reviewing the records of over a hundred patients on whom I have operated, the conclusion has been arrived at that a cure can usually be obtained by re-establishing ventilation and drainage of the sinus, the lining being undisturbed and allowed to return to normal. I do not believe that curettage of the cavity is necessary or desirable. I have, in various instances, found pockets of infection in such cases and have had to reoperate, sometimes replacing the denuded lining of the sinus by the insertion of skin, as referred to above. A considerable number of the patients I have dealt with had had one or more previous operations on the frontal sinus, and one young man had undergone, according to his own account, a total of seventeen.

Leaving, therefore, the anterior wall and the lining of the sinus, one has to decide on the route to adopt. I am of the opinion that a short incision, curving round the inner margin of the orbit, well away from the inner canthus, gives the best approach. A clear view is provided for clearance of any remaining infected or obstructing ethmoidal cells, there is no danger of damage to the trochlea or lacrimal sac if the orbital periosteum is carefully detached. The base of the skull is visible and safety is attained in enlarging the opening between the sinus and the fossa. It is unnecessary to remove more than a small portion of the floor of the sinus, but it is essential to take away a considerable part of the nasal process of the maxilla, as advocated by Howarth. Approach by an incision lower down seems to me to be inconvenient and to make permanent restoration of the fronto-nasal duct difficult or impossible. The operation described above allows of the gentle removal of exuberant hyperplastic mucosa when necessary, but curettage is carefully avoided. Examination of the posterior wall of the sinus for possible caries is, in my opinion, unnecessary, for the reason that even if present it is better left alone, in the certainty of ultimate recovery. This applies, naturally, to the usual chronic case and not to those isolated instances where an extradural or a frontal-lobe abscess is suspected. In not one of over a hundred cases have I had reason to regret leaving the posterior wall and its covering mucosa intact.

Finally, one comes to the means of maintaining the integrity of the fronto-nasal duct, this is readily attained by insertion of a skin-graft, applied to the raw orbital periosteum and to the exposed margins of the bone at the entrance of the frontal sinus. The graft is tucked into position after the insertion of a large tube of rubber or plastic material, it is not wrapped round the tube, since no graft is required over the nasal septum or posterior wall of the frontal sinus. Details of the operation are given elsewhere (StClair Thomson and Negus, 1937). In ten days the tube is removed, and no subsequent dilatation or passage

of sounds should be necessary, as the new duct maintains its patency and provides adequate ventilation and drainage.

Conclusion

The operation requires care and meticulous attention to detail, but in the hands of my colleagues and myself it has proved most satisfactory in curing the symptoms without disfigurement. It is advisable, however, again to emphasize the signs and symptoms that require an external operation. Unilateral frontal headache, worse in the morning, either repeated daily over a prolonged period or recurring in acute or subacute attacks, clinical and radiological evidence of infection in the frontal sinus, evidence that maxillary sinusitis has been adequately treated and that freedom to the nasal orifice of the frontal sinus in the nasal fossa has been attained—these are the factors that indicate blockage of the fronto-nasal duct, either permanent or recurrent, and these are the reasons for which the external operation should be performed.

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A SIMPLE METHOD OF ESTIMATING PENICILLIN AND OTHER BACTERIOSTATICS

BY

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The methods in current use for the estimation of penicillin have been reviewed by Garrod and Heatley (1944). They include titration in broth, inhibition zones on solid media, turbidimetric methods, and the inhibition of haemolysis by a β -haemolytic streptococcus. Most of these methods require comparatively large volumes of test fluid, or are not easily applied in a routine clinical laboratory where many estimations of body fluids may be needed.

The method presented here utilizes the fermentation of glucose in a serum-water medium, with acid production and subsequent clotting of the serum as an indicator of growth. It combines the advantages of using small amounts of test fluids, easily available materials, a clear-cut end point, with few manipulations and sufficient accuracy for all clinical purposes.

Technique

The glucose-serum medium (see below) is inoculated with 10 c mm of a 24 hour broth culture of the Oxford strain of staphylococcus per ml of medium, and well mixed. Several 25 c mm volumes of the seeded medium are placed in a row on the paraffin waxed surface of a glass slide. An equal volume of the serum or other fluid to be estimated for penicillin content is mixed with the first 25 c mm volume of medium on the slide, and serial dilutions are then made along the row by transferring 25 c mm of the mixture to the next volume, and so on. The last volume is left unmixed, as a control. The 25 c mm mixtures and the control are then taken up into capillary tubes, the ends sealed in a flame, and the tubes incubated overnight. This gives 1, 2, 1, 4, 1, 8 etc., dilutions of the fluid under test and will correspond as end points to 0.04, 0.08, 0.16 etc., unit of penicillin per ml in the original fluid.

It will be found an advantage to use a Pasteur pipette graduated in four or five 25 c mm divisions. This is the only special piece of apparatus required, and may be used for all manipulations.

The capillary tubes should be about 1 mm bore, to give a fluid column 2 to 3 cm long. Too long a column reduces the rate of growth in its middle section.

Test Organism—Any organism which is penicillin sensitive which will grow readily in fluid serum media and ferment

glucose is suitable. In routine work the Oxford strain of staphylococcus serves very well and has the advantage that the reading is made direct in units per ml. Where it is required to estimate accurately penicillin concentrations of less than 0.04 unit per ml, a more sensitive strain of staphylococcus or streptococcus must be used. The 10 cmm inoculum per ml of medium, recommended above, has been found to produce the clearest results, but the same end point is given by a very wide range of inocula.

Medium—This has the following composition

Sterile horse serum, 1 part, distilled water, 3 parts glucose to give 1% solution, Andrade's indicator to give 1% solution. Tube into sterile containers and sterilize in steamer for 30 minutes.

It is in fact, the standard Hiss serum-water medium used in testing fermentation reactions, and is supplied in the LCC Pathological Service in 2- to 3-ml volumes in screw capped bijou bottles, which are both convenient and economical and widely available to many laboratories. The medium should be quite clear after sterilization. Some batches become turbid and should be rejected. This turbidity is apparently caused by heating a too acid medium, and is avoided by adjusting the serum to pH 8 before use (Mackie and McCartney, 1945). Here again the end point is the same over a wide range of serum concentrations. 1:2 and 1:4 dilutions of the medium given above produce similar results. It is difficult in any serial dilution technique to secure exactly the same medium and inoculum in each dilution under test without elaborating a method too complicated for routine use. The use of a 25% serum medium as diluent has the advantage of approximating to these conditions in estimations of blood serum levels.

End point of Titration—Where full growth of the staphylococcus has occurred the column of fluid in the capillary tube shows opaque clotted serum, coloured uniformly pink by the indicator, where no growth has occurred the fluid retains its original transparency. The end-point is sensitive enough to justify the use of concentrations intermediate to those obtained in a single serial dilution, by utilizing two or three series starting with, say, 1:2, 1:3, and 1:5 dilutions of the fluid under test. The Table shows the results of titrating saline or serum containing 1 unit of penicillin per ml against the Oxford staphylococcus.

Table Showing Results of Titrating Saline or Serum Containing 1 unit Penicillin per ml Against Oxford Staphylococcus H

Dil	Result	Dil	Result	Dil	Result	Dil	Result
1:2	—	1:3	—	1:5	—	1:7	—
1:4	—	1:6	—	1:10	—	1:14	—
1:8	—	1:12	—	1:20	—	1:28	—
1:16	—	1:24	—	1:40	—	1:56	—
1:32	—	1:48	—	1:80	—	1:112	—
1:64	—	1:96	—	1:160	—	1:224	—
1:128	—	1:192	—	1:320	—	1:448	+

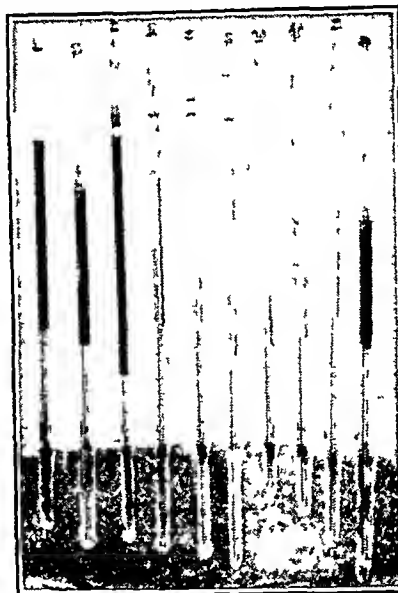
— no acid no clot — = acid only — — acid and clot

In routine work a single series is generally used and here the end point is quite sharp. One capillary-tube dilution contains clear fluid and the next completely clotted pink serum. The table shows that the dilution half-way between these tubes contains a single inhibition dose—that is 0.02 unit of penicillin per ml. Sometimes a single tube shows acid production only without clot formation and this is then taken as the end-point. The table indicates the range of error in this assumption. It compares well with other serial dilution methods, the illustration shows such a titration. Occasionally one tube is found to be clear while the next is acid with the beginning of clot formation showing as a turbidity. In this case the end point is nearer by one-third to the second of these tubes than to the first.

Comment

The above method has been used for the estimation of unknown penicillin solutions, blood serum, cerebrospinal fluid and urines with consistent results. Although it is described as a micro-estimation using the dilution technique of Fleming (1944), similar results are obtained with larger quantities of materials in test-tubes. In the case of

blood-serum titrations, haemolysis does not seriously interfere with the readings. Where test fluids are somewhat contaminated—for example urines—care must be taken to read the end-point correctly. A penicillin-insensitive contaminant may give an isolated colony in the fluid column.



Titration of a blood serum. Right-hand tube showing acid and clot is a control. From right to left serum dilutions are 1:2, 1:4, 1:8 etc. The fourth tube from the left shows acid without clot indicating a blood-serum level of 1:28 units of penicillin per ml.

surrounded by a small zone of acid and perhaps clot formation. Very little convection occurs in capillary tubes, and the effect is not distributed throughout the column.

The method may be adapted for comparing the sensitivities to penicillin of organisms which satisfy the cultural requirements given above—for example, streptococci, staphylococci, Klebs-Loeffler bacilli. The fermentable carbohydrate may of course be changed to suit the organism.

While the above description has mentioned penicillin alone, this method may be used in work with other antibacterial substances—for example, tellurite, sulphonamides, etc.

Summary

A method for the estimation of penicillin in body fluids suitable for the clinical laboratory, is described in which the fermentation of a carbohydrate in a serum-water medium is used as the indicator of growth.

This work was started at the Emergency Public Health Laboratory, St Mary's Hospital, W2, and I wish to express my thanks to Sir Alexander Fleming for the interest he has taken in it, and to Dr A. B. Rosher for his helpful criticism.

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R A F personnel admitted to hospital for inpatient treatment on final leave with (a) disabilities attributable to or aggravated by service or (b) psychotic disabilities may be retained on Service pay or given an allowance *in lieu* for a specified period. A Ministry of Health circular therefore requests hospitals to send names and particulars of personnel admitted on final leave as follows—(a) R A F Officers to Air Ministry (A R 4), Adastral House, Kingsway, W C 2. (b) W A A F Officers to Air Ministry (S II(C)), Adastral House, Kingsway, W C 2. (c) Members of Princess Mary's R A F Nursing Service to Air Ministry (N S B), Adastral House, Kingsway, W C 2. (d) Invalided airmen and airwomen to Air Officer-in-Charge of Records (B 4 M), Ruislip, Middlesex. (e) Released airmen and airwomen to Air Officer-in-Charge of Records (K I), Gloucester.

Medical Memoranda

Persistent Anaemia in a Breast-fed Infant with Erythroblastosis Foetalis

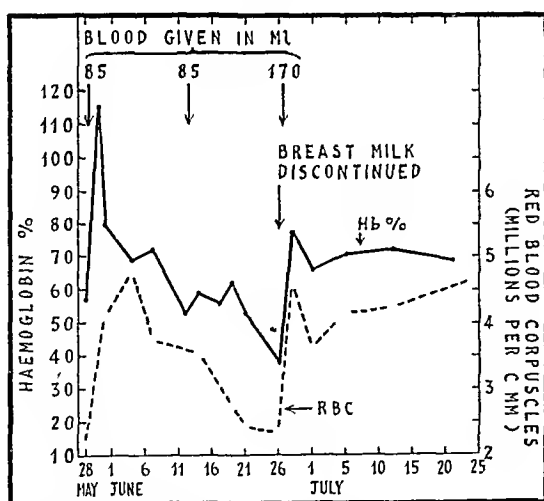
The fact that anti-Rh agglutinins may be excreted in the breast milk is becoming increasingly well recognized, but the danger of continued breast-feeding to infants suffering from erythroblastosis foetalis is not commonly realized. The following case may be of interest in view of the fact that the haemolytic process was probably maintained by the baby receiving anti Rh agglutinins via the mother's milk.

CASE REPORT

Female child, born May 24, 1946. Normal pregnancy and labour. Birth weight 8 lb (3.6 kg). Slightly jaundiced on day of birth, and this increased in intensity until she was admitted to hospital four days later. Her parents are healthy. They have one other child, aged 6½ years, who was quite normal as a baby. There was a still birth 2½ years ago, the cause of this is unknown. No miscarriages. No family history of jaundice.

On admission the baby was deeply jaundiced, the liver was just palpable, and the spleen was enlarged almost to the level of the umbilicus. No other abnormal physical signs. Blood Hb, 57%, RBC, 2,100,000 per cmm, CI, 1.3. The red cells exhibited anisocytosis and macrocytosis, and there were a few intermediate and late normoblasts. Blood group O (IV). The mother was found to be Rh-negative, and her blood to contain Rh agglutinins, the father, Rh positive. The baby was Rh positive.

A transfusion of 3 oz (85 ml) Group O (IV) Rh negative blood was given on the day of admission. The following day her Hb was 105%. During the next few days the jaundice faded gradually, and her general condition improved. She became progressively more anaemic, however, as can be seen from the accompanying chart, and on June 12 the Hb was 53%. She was again given a transfusion of 3 oz (85 ml) of Group O (IV) Rh negative blood. This transfusion gave only a slight improvement in the severity of the anaemia, and on June 21 the Hb was 53%, RBC 2,440,000 per cmm, and CI 1.1. Throughout this period the baby had been breast-fed and, in view of the prolonged anaemia, the possibility of Rh antibodies being secreted in the breast milk and absorbed by the baby was considered. An examination of the mother's milk showed it to contain weak anti Rh agglutinins. Breast-feeding



was therefore discontinued on June 24 and artificial feeds substituted. An examination of the blood two days later showed that the Hb had fallen to 38%, and a further transfusion of 6 oz (170 ml) Group O (IV) Rh negative blood was given. Three days later the Hb was 77% and since this date the Hb level has been maintained between 66% and 75%, with a corresponding rise in RBC. Throughout the period of treatment the baby has received one hog's stomach plastule twice daily.

COMMENT

It is a well-recognized fact that Rh antibodies may be secreted in the colostrum, and a case in which such antibodies were found in the milk up to the fourteenth day was described by

Langley and Stratton in 1944. In this case weak anti Rh agglutinins were demonstrated in the breast milk on the thirty-first day. Throughout the time that the baby was breast-fed the haemolytic process continued. There was a further fall in the haemoglobin level for a few days after breast feeding had been discontinued, probably due to the fact that antibodies absorbed from the milk remained active for a short period after artificial feeding had been started. The child responded well to a further transfusion, and has maintained a good haemoglobin level ever since.

My thanks are due to Dr Charles Pinckney and to Col Owen Pritchard, medical superintendent of this hospital, for permission to publish this case.

ROSEMARY DAVIES MB BS

Children's Unit, Old Windsor Emergency Hospital

Association of Erythema Multiforme with Herpes Simplex

Urbach (1933) was the first to draw attention to erythema multiforme occurring seven to ten days after an attack of herpes simplex. Forman and Whitwell (1934) were apparently unaware of Urbach's work when they reported 12 cases of erythema multiforme associated with herpes simplex. These authors tabulated the clinical similarities between the two conditions. Both are liable to recur, particularly in spring and autumn, both are provoked by infections, especially the common cold, and both may be caused by food sensitivity, by sunlight, and by menstruation. Urbach (1937) reported a further 20 cases and described some experimental work supporting his hypothesis that an allergic mechanism is involved. Anderson (1945) reported 10 cases, and claimed satisfactory results from treatment by scarifying vaccination with smallpox vaccine four or five times at intervals of two weeks—a procedure previously found effective in some 80% of cases of herpes simplex. Six of his cases of erythema multiforme were treated by this method, four of these remained free from recurrences for from two to five years after one or two courses of vaccination, while another showed a reduction in the severity and frequency of attacks. It is of interest that in one successful case there was no history of recent herpes, but the patient had suffered from it some years previously. A new case, which demonstrates clearly the association of the two conditions, is recorded here.

An aircraftman aged 20 had suffered from "cold sores" since the age of 10, the attacks occurring most frequently in the spring and autumn. In 1944 he had his first attack of erythema multiforme. His second attack occurred about six months later. Since then he has had recurrences of varying severity every two or three months. He was first seen on Aug 21, 1946. On examination herpetic scars were discovered round the mouth, and the hands and forearms presented lesions of erythema multiforme of iris type. He said that this attack was an unusually mild one. A full blood count was within normal limits. Clinical and radiological investigations revealed no dental or nasopharyngeal infection. He is certain that every attack occurs about ten days after an attack of herpes. He has in fact come to recognize the herpes as a warning signal of a probable attack of erythema multiforme. He never has erythema multiforme without the herpes, but occasionally a mild attack of herpes is followed some ten days later by a sensation of warmth and generalized skin irritation, lasting about one day, without the development of skin lesions. He is being treated by multiple vaccination.

I would like to thank Wing Cmdr H E Bellinger for the interest he has taken in this case and for the assistance he has given me.

ARTHUR ROOK, MB BCh
Lieut Squadron Ldr RAFVR

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— (1943) *Allergy* p 901 New York

A Cancer Board for the counties of Lancashire, Westmoreland, Derbyshire and Cheshire, but excluding Liverpool and Warrington has been set up under the Cancer Act, 1939 to arrange facilities for diagnosis and treatment of cancer in the working area of the Christie Hospital and the Holt Radium Institute. The Board will bear the cost of maintaining and treating patients.

Reviews

BUCHANAN'S ANATOMY

Buchanan's Manual of Anatomy. Edited by F Wood Jones, M Sc, FRS, FRCS, assisted by E L Patterson, M.D., S Mottershead, M.D., FRCS, T E Barlow, M.D., F R Wilde, FRCS, and Jessie Dobson, M Sc, BA. Seventh edition (Pp 1616, 847 figures, 48 plates 45s) London: Baillière, Tindall and Cox 1946

The seventh edition of *Buchanan's Anatomy* is edited by Prof F Wood Jones, with the assistance of five former colleagues in the University of Manchester. Very considerable changes have been introduced and some deletions made, but its original character of a book on topographical or regional anatomy has been retained. The first edition appeared in 1906, and at once became popular not only in the Scottish universities but elsewhere in Great Britain. In 1925 a fifth edition was brought out in London by Professors E Barclay Smith, J E Frazer, I G Parsons, and W Wright, which was characterized by the introduction of a section on general embryology, with descriptions of later development in the human subject of special organs, which were inserted in appropriate places throughout the book. These included much of Prof Frazer's original work, supplemented by illuminating references to comparative anatomy and morphology.

From the present edition—probably owing to post war restrictions and the desirability of limiting the size of the book—certain omissions had to be made, the introductory section on embryology and the use of colours to distinguish origins and insertions of muscles, arteries, veins, and nerves, and afferent from efferent nerve tracts, have been abandoned, and it was thought best to replace the original description of general embryology and some of the later stages of development of individual organs by an introductory section dealing with general growth and development. This section, undertaken by Prof Wood Jones, contains valuable personal observations and schematic illustrations by himself of developmental changes which occur in late foetal life and those periods of postnatal development which he defines as the phases of infancy, neonatal stage, early and late childhood, puberty, adolescence, and young and full adult life. Like all Wood Jones's previously published works it bears the stamp of a keen appreciation of the interrelationship of cause and effect and in the present instance he also clearly demonstrates the need of preparation during development for future requirements—e.g., adaptations in the structure of the skull and of the respiratory and circulatory systems for the important events of childbirth, independent respiration and the ability of the new born infant to obtain nourishment by sucking, along with the powers of digestion, absorption, and excretion. Two important features in this edition are the inclusion of 48 excellent and well-chosen colour plates and the biographical notes of anatomists whose names have been associated with anatomical parts. Moreover the glossary, which was a useful feature of previous editions has been retained.

There are a few minor defects in the book which might be rectified in future editions. (1) Paginal cross references are desirable in a book on regional anatomy in which certain parts or organs are necessarily described in more than one section of the book. (2) More references to applied anatomy would greatly increase the interest and general usefulness of the work. (3) Fuller descriptions are needed with good illustrations, of the microscopic anatomy of such organs as the salivary glands, pancreas and suprarenal and genital glands. (4) In the glossary derivations and definitions are in a few instances too short or misleading—e.g. thymus G Thyme. The Greek word *thymos* has more than one meaning besides (a) thyme the plant it was employed to denote (b) the soul or spirit and (c) the glandular substance in the chest of young animals (sweet bread of Galen). The book as a whole however is remarkably free from errors and the new matter which has been introduced including recent work on the articulations and C.N.S. supplemented by numerous explanatory illustrations by the editor and the beautiful series of new plates will ensure its continued popularity.

RESEARCHES ON COLOUR VISION

Researches on Normal and Defective Colour Vision. By W D Wright, D Sc (Pp 383, 233 illustrations 36s) London: Henry Kimpton 1946

A book written by a specialist is almost always a valuable addition to the literature of the subject. This is certainly the case with the work on colour vision now under review, clearly written, with good diagrams, it is a book which can be strongly recommended. So that other prospective readers may judge for themselves, a brief survey of the contents of the book may now be given. Chapters I and II. The physiology of vision, and visual perception. Chapters III and IV. The colorimeter and its modification for different purposes. Chapters V to VII. The determination of the luminosity curve for the fovea and parafovea. Chapters VIII to XII. The results of mixing red, green and blue monochromatic colours. Chapters XIII to XVII. The discrimination of the eye for differences of hue. Chapters XVIII to XXIII. The effects of adaptation, both to white light and to several coloured lights. Chapters XXIV to XXIX. The measurement of colour vision in colour-defective persons. Chapter XXX. The interpretation of colour vision phenomena in terms of the fundamental response curves.

As indicated above, the reviewer is already finding the book an extremely useful one, because there are ready to hand many papers written by the author to which one wants to refer, and which, but for this book, would mean going to a library, with a considerable consumption of time. It is to be hoped, now that the war is over, that publishers will find it possible to produce many more books like this.

A STUDY OF MALNUTRITION

Etude des troubles causes par la denutrition dans un asile d'aliénés. By Maurice Bachelot (Pp 269 No price given) Paris: Librairie Louis Arnette

At the present time, when attempts are being made to maintain that human beings can subsist without serious damage on diets far below the minima that have been accepted in the past studies of the effects of carefully measured diets on health are particularly valuable. Dr Bachelot's book gives the results of combined investigations made at an asylum, la Maison Nationale de Charenton, and at the Institut de Recherches d'Hygiène (Section Parisienne). The patients at the asylum had been well fed up to July, 1940, from that time bread was reduced to 300 g per day, meat to 20–30 g and visible fats to 5–7 g. The death rate rose after March, 1941, diarrhoea became frequent, deaths from tuberculosis mounted from 4 to 43 per year by the end of March, 1942, some 100 cases of nutritional oedema had been detected. The amounts of nutrients supplied per day by the diet were measured on five occasions between April and December, 1941: calories and fats were at their lowest (1436 and 22.57 g) in April 1941, animal protein fell to 10.9 g in December, 1941. On the other four occasions calories were over 1,700 and animal protein was over 15.9 g per day. Some factors, particularly the frequency of intestinal infections, make patients in asylums an easier prey than normal people to the effects of such scanty food, but on the other hand they were less hard worked and were better warmed than were the general population.

The author made a special study of the relation of nutritional oedema to the concentration of albumin in the serum. As a general rule when the albumin was below 3.5 g per 100 ml oedema was extensive. Oedema occurred when the concentration was higher, but it was moderate or slight and localized, when supplementary food led to decrease of oedema the albumin rose. When oedema got worse the albumin almost always fell. But in some cases oedema disappeared when the patients were put on a salt-free diet, without any rise of the serum protein. Oedema, even if only moderate, did occur without reduction of serum albumin and might persist after the serum albumin had risen to normal. Reduction of the serum albumin appears to be the chief but not the only factor that causes oedema. It has been claimed that nutritional oedema as seen on the Continent during the war, was cured by treatment with large doses of vitamin B₁, but Dr Bachelot found that doses of as much as 75 mg per day had no effect. Supplements of foodstuffs that supplied about

calories per day caused a slow improvement, the oedema disappeared in from 6 to 10 weeks

Some of the patients developed a pellagrous dermatitis, and diarrhoea was extremely common. Doses of nicotinamide cured most cases of diarrhoea but had no effect on the dermatitis. The amount of nicotinic acid in the diet (159 mg per day) was not low, the appearance of signs of pellagra on such a diet is interesting in view of the new theories of the relation of pellagra to inadequacy of protein in the diet. The authors consider less fully the other manifestations of pellagra, the course of tuberculosis, and the terminal stage and morbid anatomy of malnutrition.

PRACTICAL ANAESTHETICS

A Short Handbook of Practical Anaesthetics By Noel Parry Price, M.R.C.S., L.R.C.P. D.A. (Pp 127 illustrated 12s 6d) Bristol John Wright and Sons 1946

The author of this chatty little book is obviously an anaesthetist of experience. He writes not as an instructor but as a friend telling the reader in a confidential manner such things as the secrets of successful technique and how to avoid the innocent-looking pitfalls which all too often cost a patient his life. The friendly communion between author and reader is effected by a pleasant, easy style of writing which will make the book acceptable for armchair reading after a busy day.

Rightly, in a small volume of this sort Dr Parry-Price has not confined himself to a formal framework of subject matter, but has rather let his thoughts wander, he includes topics not often found in books on anaesthesia. There is one chapter, perhaps a little ambitious for any but the keenest nurse entitled 'Instructions on Anaesthetics for the Nursing Staff' another discusses the variations between Service and civilian anaesthetics. In such a small and inevitably dogmatic book there is bound to be much that will not meet with general approval but the reader will be indulgent in face of the author's pleasant literary manner and the publisher's praiseworthy production.

RECREATIONAL ACTIVITY

Recreation and the Total Personality By S. R. Shavson (Pp 205 53 00) New York Association Press 347 Madison Avenue N.Y. 17

The trend of the machine age is to increase leisure. With the increase of scientific achievement less and less manpower is required to produce the consumer goods necessary or convenient to civilized man. Unless there is to be wholesale unemployment each man must work shorter hours—and how is he to fill his spare time? Leisure activities must fulfil a felt want or compulsion in the individual but must also conform to the rules and dictates of society. By his recreation man must fulfil or find an outlet for instincts and impulses not otherwise satisfied, and he must so far as possible train himself in skills which will be useful to himself and to the community. Recreation to be effective must be fitted to the age, intelligence and social status of the leisured person. To this end there should be some intelligent planning of recreation, not so much with the idea of forcing any individual to adopt this or that recreational activity as to provide facilities so that every individual may have the opportunity to choose the amusement, game or hobby which appeals to him. Planning of this kind is a more serious matter in America than it is in this country and the present volume is a textbook for the planners of recreation. Clubs, recreational centres, and kindred organizations take themselves very seriously in the United States, and those concerned will find in this book how they may apply the lessons of physiology and social democracy and especially of mental hygiene in their programmes. To some it may appear that a great business is being made of play, but the reader will find here many fruitful suggestions and much sound advice not only for those who arrange for others to play but for the players themselves.

The Church Missionary Society has issued from 6, Salisbury Square, London, E.C.4, at the price of 1s 6d, a pamphlet entitled *Dynamics of Mercy*. This is an interpretation of recent CMS medical work by an anonymous author. There are reproductions of photographs and maps, and at the end a list of CMS medical missions in different parts of the world.

BOOKS RECEIVED

[Review is not precluded by notice here of books recently received]

The 1946 Year Book of General Medicine Edited by G. F. Dick, M.D., et al. (Pp 772 21s) Chicago The Year Book Publishers, London H. K. Lewis 1946

A summary of recent advances in medical science with many references to the literature.

Modern Clinical Psychology By T. W. Richards, Ph.D. (Pp 331 17s 6d) New York and London McGraw Hill Book Company 1946

An approach to psychological understanding of the personality from the point of view particularly of the psychoanalytic and derived schools. Intended for the intelligent layman as well as for psychologists.

Deep Analysis By Charles Berg, M.D. (Pp 261 12s 6d) London Allen and Unwin 1946

An account of the Freudian analysis of a single case. Intended for both doctors and laymen.

The Bacterial Cell By Prof. René J. Dubos (Pp 460 28s) Cambridge, Mass. Harvard University Press London Geoffrey Cumberlege 1946

Describes the physiology and structure of the bacterial cell and interprets the phenomena of virulence, immunity, and chemotherapy in terms of cellular organization.

Adolescent Sterility By M. F. Ashley Montagu (Pp 148 53 50) Springfield (U.S.A.) Charles C. Thomas 1946

An investigation into the period of infertility that normally follows the onset of puberty in man and other mammals.

Principles in Roentgen Study of the Chest By W. Snow, M.D. (Pp 414 51 0) Springfield (U.S.A.) Charles C. Thomas 1946

Correlates x-ray interpretation with the physical signs, symptoms and course of the disease. Profusely illustrated.

Our Inner Conflicts By Karen Horney, M.D. (Pp 250 10s 6d) London Kegan Paul, Trench, Trubner and Co 1946

This book is intended for the non-specialist as well as for psychoanalysts. It is divided into two parts: (1) Neurotic conflicts and attempts at solution, and (2) Consequences of unresolved conflicts. The author develops a theory of neurosis whose basic conflict is between the attitudes of 'moving toward', 'moving against' and 'moving away from' people.

An Approach to Social Medicine By John D. Kershaw, M.D., D.P.H. (Pp 329 15s) London Baillière, Tindall and Cox 1946

An examination of the structure of society and its bearings on human health and welfare, including wider issues such as the problems of genetics, sex, leisure, education, and food.

Clinical Hematology By Maxwell M. Wintrobe, M.D., Ph.D. Second Edition (Pp 862 55s) London Henry Kimpton 1946

Covers the whole field of haematology. Recent work considered includes the use of folic acid in pernicious anaemia, the Rh factor, the nitrogen mustard in the treatment of Hodgkin's disease, and the role of various vitamins in haematopoiesis. Many diagrams and illustrations, some in colour.

Penicillin in the Treatment of Infections By C. S. Keefer, B.S., M.S., M.D., and D. G. Anderson, A.B., M.D. (Pp 50 8s 6d) London Oxford University Press (Geoffrey Cumberlege) 1945

An outline of the uses of penicillin in medicine and surgery, with an account of its chemical characteristics and pharmacology.

Principles of Hematology By Russell L. Haden, M.A., M.D. Third edition (Pp 366 25s) London Henry Kimpton 1946

Intended for the student and physician. Blood disorders are regarded as disturbances in the normal physiology of the constituents of the blood rather than as true diseases. Bone marrow and the study of bone marrow films are described.

Diseases of the Heart and Circulation By A. A. Fitzgerald, M.A., D.M. (Pp 398 35s) London Oxford University Press (Geoffrey Cumberlege) 1947

An introduction to the study of cardiovascular disease for students and practitioners. Many illustrations.

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THE COUNCIL'S RECOMMENDATION

The Council of the B.M.A. held a special meeting last week to receive the final plebiscite figures and in particular to consider the correspondence between the Presidents of the three Royal Colleges and the Minister of Health. The Presidents of the Royal Colleges have been criticized for intervening. Those critics who are strong individualists may on reflection consider their position is somewhat paradoxical in questioning the right of three prominent medical men to take an active part in seeking a solution of one of the most serious problems the medical profession as a whole has had to face. It would however serve little purpose to ignore the fact that the action of the Presidents has caused disquiet. Perhaps the chief reason for this is a general feeling that medico-political action is best taken by the organization whose job it is—namely the British Medical Association. The Royal Colleges are primarily academic institutions and the Presidents are elected to them because of their qualities as heads of such institutions. For them to enter the medico-political fray except as individuals is thought by many to place their colleges in a false position. Whether these objections will be sustained in calmer moments it is difficult to say, and however fiercely the Presidents may be assailed their professional colleagues must give them the credit for acting with the best of intentions and must at least admit that the intervention has drawn from the Minister of Health a statement which, while not offering much in substance is at least conciliatory in tone. The critics have their right to be heard and space has been given to them in the correspondence columns for this purpose. To put it at its lowest it would however be a tactical mistake if this episode were to be allowed to create a disunity in the profession, the Minister being a shrewd politician would wish for nothing better. Collectively doctors must recognize that there are sharp differences of opinion in their ranks but with that toleration which is supposed to be a British characteristic they must surely accommodate these differences within the framework of agreement on some fundamental issues. The first of these and one which at the moment there is a tendency to lose sight of is the need for a reorganization of the medical services in this country so as to provide the people with the best possible Health Service. The second—and this is a point on which there is only a small minority of disagreement—is opposition to the nationalization of medicine in the form of a State service.

The essence of the Minister's letter is his invitation to the profession to discuss the Regulations. Public opinion is expressed in newspapers of varying political colour considers the Minister has made a conciliatory gesture. For the medical profession to ignore this would put it

at odds with the rest of the community, even though the public shows little understanding of the doctor's case. The Minister's letter has, in fact, changed the situation which existed when the Council last met and made its recommendation to the Representative Body not to discuss with the Minister the Regulations under the National Health Service Act. We should be clear what this change is. It is one of atmosphere rather than of fact. The Council was fully aware that there was not much of substance in the Minister's letter other than a different attitude on the part of Mr. Bevan to the question of basic salary and his official recognition of the right of the profession to hold a further plebiscite which may end in a refusal to work under an Act complete with its Regulations and Orders. The Council's discussion of the Minister's proposal is printed in this week's *Supplement*. The view of the Council is best summed up in the words of the Chairman Dr. H. Guy Dain, as reported: "The Minister's offer was, in effect, an invitation to discuss with him on his terms within the structure of the Act the arrangements for carrying it out. His own view was that there could be no agreement to negotiate unless the discussions carried with them the understanding that if it were found necessary there would be further legislation to establish the principles to which the profession adhered but they were not willing to allow the Minister, having tied up his own projects in an Act, to talk with them only within that framework." Dr. Dain further remarked that the Education Act of 1944 had been quickly modified by an Amending Act. The attitude of Council was summed up finally, and with no dissent, by the following recommendation to the Representative Body which replaces the previous recommendation:

That the Association, having considered the final results of the plebiscite and the Minister's letter of Jan. 6 to the Presidents of the Royal Colleges and desiring to secure for the people the best possible Health Service, is willing that discussions be entered into with the Minister to that end provided that such discussions are comprehensive in their scope and that the possibility that they may lead to further legislation is not excluded that after the conclusion of these discussions a second plebiscite of the profession be taken on the issue of entering the Service.

The Council of the B.M.A. is therefore recommending the Representative Body to respond to the Minister's gesture of conciliation with a similar gesture. This is neither appeasement nor weakness. The recommendation is worded in plain language and means that the profession is willing to meet the Minister half way if he himself will meet them half way. The Council was not impressed with the Minister's attempt in his letter to suggest that he had negotiated the terms of his Act. It now asks him for a discussion which will include those features of the Act which the majority of doctors hold to be incompatible with a Health Service which would secure their willing co-operation. Mr. Bevan has the reputation of being an able politician with a remarkable gift of persuasive utterance. We hope he may seize the opportunity to show himself a statesman by responding to the profession's earnest desire to discuss clauses of the Act as well as the Regulations.

PAEDIATRIC PLANNING

The management and care of children in hospital is a subject which demands much more study than it has yet received. What work should be required of a children's hospital? What staff should it have? Is it possible to define, and fully to co-ordinate, the clinical, social, and supervisory responsibilities of doctors and nurses working in paediatric units? These are some of the questions posed, and answered, by Prof J C Spence in his Charles West Lecture, which appears in this issue at page 125. He stresses the need for the closest day-to-day co-operation between paediatric physicians and paediatric surgeons, between obstetricians and paediatricians, and between doctors and nurses and the mothers whom for many years he has been admitting to his own unit to assist in the care and nursing of their children. Recently J Tudor Lewis¹ asked for closer liaison between maternity units, hospital and home services, and public health departments as a means of preventing infant deaths following early discharge from a good maternity unit to a perhaps adverse home environment. For older children the risks of such an environment may be mitigated by attendance at a day nursery. The type of work undertaken at such a nursery is described in this issue (p 147) by Dr F M J Forsyth. On the other hand recent work² has shown an unduly high incidence of respiratory infection in children attending such nurseries.

Children present problems to their parents and their doctors from the moment of conception onwards. There are the social problems which range from those so vividly illuminated by the Curtis Report,³ which Prof Spence helped to compile, to those of the unstable adolescent girl.⁴ There are problems more purely medical, such as that of preventing cross-infection in children's wards, wards which may date back to Charles West or which may be E.M.S. huts specially adapted.⁵ Prof Spence has considered one problem, that of the proper care and management of children of all ages in hospital for long or short periods. His contribution should be read in the light of the report⁶ issued recently by the Paediatric Committee of the Royal College of Physicians of London. This report, to which much thought and care has been devoted over the past few years, outlines what is in effect a paediatric service for the nation.

Though paediatrics usually appears among the special subjects in medical curricula, there is no branch of medicine with wider associations and obligations, for it concerns itself with every aspect of health and disease during a particular age-period. It embraces, therefore, aspects of life which are not strictly or solely medical in the professional sense. Such influences as the educational status and economic circumstances of parents, housing conditions, opportunities for sound sleep and for recreation in suitable surroundings, conditions of school life, and many other environmental, social and economic factors take an important place in

paediatrics and must receive consideration and recognition in the child health service. There is, in fact, a real danger that the multiplicity of interests may result in a state of chaos. A co-ordinating and advisory authority is therefore needed, and this function will be best performed by men and women who hold a medical qualification, provided that their training has been planned to give them a sound understanding of both preventive and curative paediatrics. In the past these two aspects of the work have been separated by a gulf, which must now be bridged. The report deals at some length with this subject and expresses the view that the family general practitioner, armed with postgraduate training in the basic principles of public health as well as in prevention and treatment of illness in childhood, should continue in his role as the first line of defence. Working alongside him will be the hospital paediatricians and the "child health officers"—i.e., whole-time medical officers employed by local authorities. Now that institutes and departments of child health are springing up in many centres it should not be difficult to arrange for child health officers to maintain contact with curative paediatrics, and for hospital paediatricians to have opportunities for fuller experience in the prophylactic field. The Society of Medical Officers of Health has outlined a course of training suitable for child health officers; these recommendations are far-seeing and should be put into practice, with the addition of some experience in child psychiatry. All these proposals to broaden the experience and increase the interest of paediatric workers can be put into effect only if administrative medical officers and their committees are convinced that the general policy is a sound one.

The Committee's observations on hospital accommodation for children will be of special interest to the medical profession. It seems likely that England and Wales require some 23,000 beds for children suffering from acute illnesses excluding fevers, most of these beds will be in the cities or larger towns, but some should be in the long-term hospitals outside the cities and therefore available for acute cases in the surrounding districts. Every children's hospital should have an infectious diseases section, and every fever hospital should, so far as possible, be linked with a general children's hospital. Clinics and long-term hospitals for special categories of patients have an important place in the scheme, and units for the training of mothers would serve a useful purpose.

The quality of the training given to the available doctors and nurses is of fundamental importance, and the report rightly devotes some space to this subject. The institute and departments of child health are faced with heavy responsibilities and great opportunities which they will not be slow to accept, for their university status is assured. The necessary financial support is not likely to be withheld. Their influence upon the paediatric service will be measured not only by their contribution to teaching and research but by the service which their staffs will be able to render in an advisory capacity, granted the necessary provisions are made. The report suggests that in each region there should be a joint committee consisting of members of the university department of child health and the regional officers and local authority officers engaged in child health work, and that this committee should assist the Regional

¹ *British Medical Journal* 1946, 2: 893

² *Ibid.* 1946, 2: 217

³ *Ibid.* 1946, 2: 697

⁴ *Ibid.* 1946, 2: 904, 909

⁵ *Ibid.* 1946, 1: 674

⁶ *Ibid.* 1946, 2: 867

^{*} Final Report of the Paediatric Committee, Royal College of Physicians of London, October 1946

Board by acting in an advisory capacity on all matters concerned with the health of children

The report is well balanced and maintains a proper sense of proportion and values. As evidence of this it should be noted, especially by those who are critical of any encroachments by the State upon the liberty and obligations of individuals, that the following sentence appears on page 1

Primary responsibility for the health of their children must continue to rest with parents, and they should regard members of the health services as agents helping them to carry out their duties and not as authorities taking the responsibilities off their shoulders

DOCTORS ON TRIAL

Twenty-three German doctors are now being tried in Nuremberg for crimes committed during the war. A photograph of the accused men appears above the first article by Dr Kenneth Mellanby on this subject at page 148 of this week's *Journal*. Dr Mellanby has been to Germany to collect first-hand information on this matter which is of profound significance in the history of medicine. It is a commonplace to say that medicine knows no frontiers, but behind this statement lies the recognition that medicine as it is practised in the civilized world is a product of Western civilization and therefore inspired by Christian ethics and Greek thought. The code of the civilized doctor is the Hippocratic oath. When therefore any group of medical men in a country claiming to be civilized offends against the spirit and tradition of Western medicine the offence becomes the concern of all doctors who follow the same tradition and try to live up to the same spirit. To ignore the infamy of those German doctors who have betrayed their trust and their profession would in part be to condone it. For this reason alone, therefore, we consider that the facts being disclosed at Nuremberg should go on record in the pages of a medical journal.

It was, we believe, Goering who said that Hitler was the keeper of his conscience. A glance at the diagrams in Dr Mellanby's article showing how medicine was controlled in Nazi Germany suggests how it was possible for some medical men to make the same error and fatal surrender—the surrender, in fact, of the individual conscience to the mass mind of the totalitarian State. It is probably impossible for the British doctor to understand the mentality of the German doctors accused of brutal experimentation on fellow human beings because he has not been submitted to a systematic degradation of human values over a period of 10 or more years. The question whether valuable information secured by such experiments should be used for the benefit of others has been discussed in the correspondence columns of our contemporary, the *Lancet*, in letters which show how difficult it is to look at such a problem in a dispassionate and objective manner. Dr S. M. Hilton¹ points out that 'valuable information has already been obtained by observation of victims systematically starved by their Nazi oppressors, yet no objection has been raised on moral, ethical, or political grounds.' Mr Denis Herbert² writes: "If their results are capable of being put to useful purposes and we destroy them we are ensuring that they have produced nothing but evil. If we publish and use them then at least some good will have followed." The situation might be summed up by posing this question: If in their experiments German doctors had discovered a cure for cancer would the rest

of the world say that this information must be destroyed because of the manner in which it was obtained? To say that such information should be used would surely not be interpreted as condoning the method or as encouraging others to pursue similar methods.

HIGH UP IN THE KITCHEN

Communal feeding for all grades of society has probably come to stay in our country as it has in America. Food rationing, shortage of domestic help and difficulties in travel have led to an increasing proportion of 'meals out' while works and school canteens have multiplied a thousandfold during recent years. This communal feeding must increase the risks of food borne infection unless the highest hygienic standards are maintained in the kitchen and the steady rise in the number of reported outbreaks of food poisoning during the war years,¹ from 47 in 1940 to 550 in 1944 reflects in some measure the present dangers from the communal meal. While a fair number of these outbreaks have been due to contamination of food with intestinal pathogens of the *Salmonella* and dysentery groups, a large proportion have been clinically and epidemiologically, examples of toxic food poisoning such as is caused by the enterotoxigenic *Staphylococcus* but may also be due to other less well differentiated bacteria. Indeed there is bacteriological evidence that any gross bacterial contamination of food may result in an outbreak of gastro-enteritis.

The main sources of bacterial contamination are the hands of the kitchen staff and the utensils used for handling and holding food. Food that has been cooked and is properly stored overnight—and cold storage is often lacking or inadequate—is a particular danger since such food acts as a culture medium for bacteria from hands or utensils. The danger from the latter source is well exemplified by the bacteriological examinations of crockery and cutlery in a variety of restaurants recorded in our present issue by Dr Irene Hutchinson. Of a large selection of spoons, cups, forks, plates and glasses swabbed after they had been washed and stacked she recovered *Staphylococcus* from 3-12%, haemolytic streptococci from 1-4% and coliform organisms from 20-40% of the utensils while *Str. faecalis* and *Str. viridans* indicators of faecal and salivary contamination respectively were present in a high proportion of the examinations. The Sonne dysentery bacillus was once isolated from a spoon. No mention is made about bacteriological examinations of larger cooking utensils or containers but the fact that 50% of 38 dish-washing waters that were examined gave counts of one million or more bacteria per ml. growing at 27°C suggests that kitchenware generally would be heavily contaminated. The consequent risk to improperly stored food is obvious. Whether crockery and cutlery carrying respiratory pathogens such as *Staph. aureus* and haemolytic streptococci are likely vehicles for the spread of infection by these organisms would be difficult to prove, perhaps the risk is greater with certain respiratory viruses which can infect in very small dosage. But the thought that the crockery and cutlery served with a meal may still harbour the bacterial flora of a previous user must be repugnant to all, and for both hygienic and aesthetic reasons measures are urgently needed to improve kitchen hygiene.

The greatest need is for education of the food handler. Much progress has been made along this line in America where health authorities have found restaurant proprietors and staff very willing to be educated in methods for avoiding or minimizing food contamination. In this country

¹ *Lancet* 1947 1 31
² *Ibid.* 1947 1 84

³ See the Report of the Chief Medical Officer, Ministry of Health, *Control of the Public Health Duties of the Food Service*, 1947.

courses of instruction on food hygiene for food handlers are about to be begun on a large scale under the auspices of the Central Council for Health Education.² The present plan is to give a course of three lecture-demonstrations to key personnel in catering establishments and to follow up this intensive course with simpler instruction to kitchen staff, waitresses, and the like. Too often, however, the menial work of washing up in the kitchen is done by staff of low educability, and here the need is for better conditions and wages to attract more intelligent workers. The educational programme should be supplemented by increased powers of supervision by the Medical Officer of Health and his sanitary inspector, who at present have no right of entry into catering establishments except to inspect the premises where food is prepared and sold and to ensure that washing facilities are available. Indeed, the existence of most factory canteens comes to the knowledge of the Medical Officer of Health only indirectly, for local authorities are not compelled to register them.

Facilities for dish-washing and for cold storage of food, particularly prepared food, need to be greatly improved. If crockery and cutlery are to be properly cleaned and freed of bacterial pollution they must, after removal of food residues, be washed in water at 120–140° F with a suitable detergent, of which there are now many on the market. They should then be transferred to a separate sink and rinsed, preferably in wire-mesh containers or racks, at a temperature of 170° F for two minutes. They could then be drained, allowed to dry without wiping, and stored in a covered cupboard. The wash water must of course be changed frequently, and if cloths are used for wiping they should be boiled daily. Mechanical dish-washers with separate washing and rinsing compartments do the job much more efficiently than the human hand and at a considerable saving of labour. Such dish-washers are being made in this country, and no doubt large catering firms who have had experience of them can help manufacturers to improve design and also advise smaller firms about their availability and uses. The kitchen itself should be large, with plenty of cupboards and cold storage, well lighted and ventilated, with walls and floors that can be easily washed, and preferably in full view of the customers, so that everyone may know that the food they eat is being prepared and served under the best hygienic conditions.

GYNAECOMASTIA

Many who served as medical officers in the Armed Forces will have encountered cases of enlarged or painful breasts in males. This relatively mild disability attains a greater importance in Service life, for the sufferer is liable to be exposed to the ridicule of his fellows and to become ashamed of his abnormality, and webbing equipment may rub on the swollen breast causing discomfort or even considerable pain, a point which, it is interesting to recall, was observed as long ago as 1868. A full review of the condition as it was encountered in the United States Army, where the frequency was about 16 per 100,000 men, has recently been published by Karsner,³ who had access to the records of 284 cases.

By true gynaecomastia is meant a swelling due to hyperplasia of breast tissues occurring in the male, and it has to be distinguished from a mere deposit of fat in the breast region. The hyperplastic mammary tissue can be felt as a firm button or plate-like mass under the nipple. It does not usually adhere either to the nipple or to the deep structures. In the great majority of cases the condition is

unilateral, both breasts being involved in only twelve of Karsner's cases. The two sides are affected with about equal frequency. The weight of the abnormal tissues when excised varies from 25 to nearly 400 grammes, the mass consisting of a proliferation of connective tissue together with an increase and often a proliferation of duct tissue. The secretion that sometimes distends the ducts is probably a mucinous substance and not strictly comparable to colostrum. Acini and lobules are not formed. Some inflammation is usual in these tissues, but it is not closely related to the degree of tenderness complained of. No tendency to neoplasia was seen in any of Karsner's series.

The cause of the condition is still a matter for speculation. The majority of the cases are probably primary in the sense that the abnormality originates in the breast tissue itself. The fact that most cases are unilateral does not exclude an endocrine factor (exophthalmos may be unilateral in hyperthyroidism), but in only a small proportion of the cases was there any evidence of endocrine abnormality. Occasionally a testicular neoplasm was present. Karsner found seven such tumours—two embryonal carcinomas, four malignant teratomas, and one chorio-carcinoma. In such cases there is a large production of chorionic gonadotrophin, which may well be an aetiological factor, though satisfactory proof is lacking. The rare adrenal cortical tumours may cause gynaecomastia and it has also been observed after treatment with adrenal cortical extract and with desoxycorticosterone acetate. Oestradiol and stilboestrol may cause it in man. In most cases, however, there is no evidence of disturbed production of any of these hormones, and the gynaecomastia may be attributed to an unusual sensitivity of the breast tissues to hormones circulating in almost normal quantity.

The treatment of the condition is surgical removal of the breast tissue if pain or anxiety is being produced by it. Endocrine therapy has no consistent beneficial influence on the swelling.

PROGNOSIS OF HYPERTENSION

When queues begin to form for the surgical treatment of hypertension the moment is propitious for reviewing the natural history of the disease. The publication of Bechgaard's extensive monograph¹ dealing with a detailed eleven-year follow-up study of more than 1,000 cases of hypertension is therefore timely. The material is well handled and presented and the literature conveniently reviewed (there are 269 references). The cases were taken from the out-patient polyclinic of the Rigshospitalet in Copenhagen, and of the total number of 1,038 hypertensives as many as 1,002 were successfully traced. By hypertension was meant a blood pressure of not less than 169/90, the average was 190/110 taken after 15 minutes' rest. The majority were cases of essential hypertension, only 13% being malignant and not more than 20%, and probably far less, being renal. There were 325 men and 713 women, but the overall ratio at the clinic was 3/2 in favour of women. They were mostly of the working classes. Of the malignant group none were due to a unilateral "surgical kidney."

The sex incidence for malignant cases was 3/1 in favour of men (cf. Volhard 5/1, Ehrstrom 3/1, and Page 2/1—all cited). The importance of heredity as a aetiological factor was shown by the calculation that the incidence of hypertension among the parents must have been about 75% (cf. Ayman² and Hines³).

² *Health Education Journal* Jan. 1947 p. 11.
³ *Amer. J. Pathol.* 1946 22 235.

¹ *Acta med. scand. Suppl.* 1946 172 269.
² *Arch. intern. Med.* 1934 53 792.
³ *Proc. Mayo Clin.* 1940 15 145.

The mortality rate was twice as high in men as in women for all age groups if cases of renal hypertension were excluded. It was not adversely influenced by obesity—rather the reverse—nor by the height of the blood pressure, provided that it was below 200/130 in men and 220/130 in women, but it was doubled if there was evidence of hypertensive heart disease. The death rate for all cases of high blood pressure expressed as a ratio of that of the general population of Denmark was 2.88:1 for men and 1.43:1 for women, the death rate in renal hypertension expressed in the same way was 18:1. Over the 4-11-year period 41% of the men and 22.4% of the women died. The cause of death was cardiac in 45%, cerebral in 16%, and renal in 10%. The group is comparable to those studied by Janeway⁴ and Blackford, Bowers, and Baker,⁵ and on the whole the conclusions are similar. Statistics taken from hospital in-patients with hypertension are less favourable.

In the follow-up examination 13% of the men and 2% of the women had regained normal blood pressures. Of 78 women who might have been diagnosed as cases of menopausal hypertension at the first examination, none regained normal pressures, nor did the graph of age incidence show the least tendency to a peak at the climacteric. During the period specified 0.2% of those with essential hypertension and 8% of those with chronic pyelonephritis entered the malignant phase.

These various facts suggest that lumbo-dorsal sympathectomy might be reserved with advantage for males with blood pressures of 200/130 or above, and for females with blood pressures of 220/130 or above, but the males should not be expected to do more than half as well as the females. The tendency to deny operation to obese females on technical grounds is supported now on a prognostic basis. Hypertensive heart disease far from being a contraindication to surgery, would appear to be an added inducement especially as it may be reversible (Paul White 1946).

L ORGANISMS IN GENITAL TRACT

Organisms of the pleuropneumonia group, conveniently called L organisms, are comparatively widely distributed, and many of the species are pathogenic for animals, especially cattle and rodents. Their presence in the genital tracts of men and women has been reported by Dienes,⁶ Dienes and Smith,⁷ Beveridge,⁸ Klieneberger-Nobel,⁹ and by Salaman.¹⁰ Beveridge, Campbell and Lind¹¹ isolated these organisms from 20% of male patients with non-specific urethritis, and complement-fixation tests were positive in over two-thirds of sera tested, they also found them in 17% of women attending a gynaecological clinic and state their belief that non-specific urethritis, which was relatively common in the Australian Forces, was in the majority of cases due to them.

Salaman¹² has carried out an investigation in a British military hospital and cultured L organisms in males from twelve out of thirty-five cases of gonorrhoea, three out of forty-five cases of non-specific urethritis, two out of thirty-four cases of residual non-specific urethritis after gonorrhoea, and from three out of twenty-four cases without signs of genito-urinary disease, and in females from eleven out of eighteen cases of gonorrhoea, thirty-nine out of sixty-three cases of trichomonial vaginitis, eight out of

eighteen cases of non-specific cervicitis, twenty out of twenty cases of gonorrhoea and trichomonial vaginitis, six out of eight cases of non-specific cervicitis and trichomonial vaginitis, but from only one out of seventeen clinically normal women. These results are not very conclusive but what is remarkable is that he was able to detect L organisms by means of penicillin, which inhibited gonococci but not L organisms, in each of eighty strains of gonococci that he examined.

These organisms were found to grow well on 10% chocolate agar in an atmosphere of carbon dioxide, they were demonstrated by cutting out pieces of the medium placing them face downwards on a slide and fixing and staining by a special process. They are intermediate between bacteria and viruses and under the microscope appear as a framework of very fine filaments in the meshes of which are clusters of vesicles 2-10 microns in diameter containing tiny granules. Salaman offers four possible explanations. L organisms (1) may be degenerative forms of gonococci, (2) may invariably contaminate strains of gonococci, (3) may live in symbiosis with gonococci or (4) may be stages in the life cycle of gonococci. The last possibility is very attractive especially in view of the difficulty of demonstrating gonococci in chronic and complicated gonorrhoea. Nevertheless much more work needs to be done before any definite conclusions can be drawn.

EPIDEMIC KERATO-CONJUNCTIVITIS

The concept of epidemic kerato conjunctivitis has clarified ideas on various obscure conjunctival and corneal lesions. Different aspects of this protean affection have been recognized in the past as the designations superficial punctate keratitis, macular keratitis, nummular keratitis, keratitis subepithelialis, and many others testify. That trauma is probably a factor is suggested by the name of shipyard keratitis and the localities of epidemic outbreaks seem to implicate the sea-coast in the chain of causation. Clinically the significant features of the disease are its great infectivity, the involvement of the pre-parotid lymph nodes, the prolonged course, the serous nature of the conjunctival reaction with disproportionately heavy symptoms, the absence of bacteria in the conjunctival secretion, and the variegated corneal lesions. Pathologically there is much to support the work of Sinders who isolated a filter-passing virus. The condition has proved resistant to treatment.

Epidemics of kerato conjunctivitis have been noted in recent years in widely scattered parts of the world. Apart from the severe epidemic on the Pacific coast of the United States and subsequently on its Atlantic coast there was an epidemic in 1937 in the Middle East persisting for several years, and apparently one in Germany in 1940. The German epidemic seems to have been sufficiently severe and protracted for the Swiss authorities to promulgate special measures for the protection of their armed forces in June, 1945—a measure regarded as panicky by Rintelen.¹ Of the epidemic in the Middle East Feigenbaum, Michaelson, and Kornblith² have contributed a valuable study based on material observed in Palestine. Like other observers they stress the roles of trauma and ill defined climatic factors, like them, too, they failed to find inclusion bodies in epithelial scrapings. Though they do not go as far as Wright in speaking of keratitis diversiformis, they stress the great variety of corneal reactions, which consist mainly of ill defined subepithelial dots. There are, however, also definite subepithelial infiltrates, or superficial epithelial infiltrates, and more rarely disciform keratitis.

⁴ Arch Intern Med 1913 12 755

⁵ J Amer med Ass 1930 94 328

⁶ Proc Soc exp Biol N.Y. 1940 44 468

⁷ Ibid 1942 50 99

⁸ Med J Austral 1943 2, 479

⁹ Lancet 1945 2 46

¹⁰ J Path Bact 1946 58, 31

¹¹ Med J Austral 1946 1 179

¹² Brit J ven Dis 1946 22 47

¹ Ophthalmologica 1946 111, 109

² Brit J Ophthalmol 1945 29 789

The conjunctival reaction they observed was also variable and must be regarded as the primary lesion, though corneal involvement existed in well over half the cases, there may be a non-specific congestion, velvety reaction, or follicular hypertrophy simulating trachoma. Histological examination of human conjunctiva showed flattening of the epithelium, marked capillary dilatation, oedema in the subepithelial tissue, and subepithelial infiltrates with lymphocytes and large mononuclear cells. They could confirm the specific infective nature of the disease by rabbit experiment, while by tissue culture and filtration experiments they, like Sanders, found the infective agent was a filterable virus. In contrast to the immunity seen in patients and shown by immune tests none is developed by the rabbit.

A further contribution on epidemic kerato-conjunctivitis, as seen in the Middle East, has been made by O'Donovan and Michaelson³ on cases in Egypt. Here a striking aspect was an associated skin lesion—mainly seborrhoeic dermatitis involving the scalp and face. To what extent this association is parallel to that found in herpes simplex and zoster they leave an open question.

RELIEF OF ITCHING AND URTICARIA

In 1937 Bovet and Staub⁴ detected anti-histamine activity in certain aromatic derivatives of amino-ethyl and ethylenediamine, and since then much progress has been made. The obvious field of application is in allergic conditions in which histamine—or H substance—probably plays an essential part. Efficient anti-histamine substances should relieve allergic manifestations and may lead eventually to a better understanding of allergy. According to Mayer the mechanism of action of these substances is unknown, and the idea generally accepted at present is of a competition with histamine analogous to the displacement of *p*-aminobenzoic acid by the sulphonamides.

Over eighteen months Brack⁵ tested upon over a hundred skin cases an anti-histamine substance 2(*n*-phenyl-*n*-benzylaminomethyl) imidazolin, marketed as "antistin". He has found it is possible with suitable dosage to diminish or abolish the irritation in all cases of urticaria, eczema, neurodermatitis, prurigo, lichen ruber planus, psoriasis, nervous pruritus without cutaneous changes, and post-scabietic itching. In urticaria the rash can be relieved or suppressed, but in the other skin conditions mentioned no direct effect on the disease is obtainable, though relief of the itching helps considerably. In some cases, perhaps by breaking a vicious circle, complete cure results, but as a rule and where the underlying cause is still operating, the duration of the action of "antistin" is essentially temporary. That it acts peripherally on the vasomotor system is shown by the effects of local application in scratch tests with histamine, diethylmorphine, and simple trauma, when suppression of itching and reduction in the weal size always obtain.

"Antistin" can be given orally (0.1 g tabs), intramuscularly, or intravenously (0.1 g in 2 ml). Success in treatment depends largely on finding the suitable dose. The initial dose should be small and intravenously 0.1 g should be given very slowly over five minutes. The only common unpleasant side-effect is transitory faintness or giddiness, which requires a reduction in oral dosage or of speed of injection. Brack points out that the patients themselves often limit the dosage after getting such attacks. Some patients ask if they have been given a strong hypnotic, and this action of "antistin" is attributed to the effect of the

relief of itching in an exhausted patient, though a central effect is not yet disproved.

This observation is of special interest in view of the drowsiness which often occurs with "benadryl" (β dimethylamino ethyl benzhydryl ether hydrochloride), another new anti-histamine substance recently synthesized. Curtis and Owens⁶ have tested this drug in eighteen patients suffering from chronic urticaria which was completely controlled, in all but four cases, so long as the patient continued treatment, but it recurred immediately the drug was withdrawn. Doses of 50 mg, given three times a day, produced relief within two hours in most cases, but many complained of a feeling of drowsiness, and in one case there were severe weakness and vertigo, which passed off on stopping the "benadryl". Shaffer, Carrick, and Zackheim⁷ have also used the drug in ordinary urticaria, in papular urticaria of children, and in eczema. Their findings in urticaria are similar to those of Curtis and Owens. Only a few cases of strophulus and eczema were treated, but the drug did not appear to be of great value in these conditions. They noted that the maximum response to the drug occurred twenty to sixty minutes after oral administration and lasted for five to eight hours. "Benadryl" controls the pruritus and temporarily clears the eruption in urticaria, and it is suggested that it may be usefully administered in chronic cases while appropriate investigations are being conducted.

SCOTTISH DOCTORS RESIST

The movement for a closed shop for doctors has spread to Scotland. On Jan 7 the Motherwell Town Council passed this resolution:

That as from and after Feb 1, 1947, it shall be a condition of employment or continued employment in the Departments of the Town Council, or any of them, that every employee shall be or shall have become a member of the Trade Union appropriate in his case.

A minority of the Council was opposed to coercion or applying the condition to existing employees who are non-unionists. Baillie Welch moved the above motion on behalf of the Labour Group of the Council and in face of a communication from the Department of Health for Scotland which ended thus, "while the Secretary of State is anxious that doctors, nurses, and members of similar professions should join a trade union or appropriate professional association he considers that this matter should not be determined by the unilateral action of local authorities." The Scottish Secretary of the B.M.A. immediately drew the attention of the Town Clerk of Motherwell to the opposition of the B.M.A. to the imposing of such condition of employment on members of the medical profession. At the same time he was assured by the Secretary of the Scottish Branch of the Royal College of Nursing of the co-operation of the Scottish nurses in any action they might take. Eight medical men holding part-time appointments with the Motherwell and Wishaw Town Council immediately tendered their resignations, stating in a resolution that they had no intention of joining a trade union or professional association at the dictation of the Town Council. These Scottish doctors also observed that the Town Council had broken their contracts by introducing a new condition of service without giving the necessary three months' notice.

Medical men in England will applaud the prompt action of protest on the part of their Scottish colleagues. It is only by such action that the present epidemic of dictators will be brought to an end.

³ Brit. J. Ophthalm. 1946 30 193
⁴ C. r. Soc. Biol. Paris 1937 124 547
⁵ J. Allergy 1946 17 153
⁶ Schweiz. med. Wschr. 1946 76 316

⁷ J. Allergy 1946 17 145
⁸ Arch. Derm. Syph. Chicago 1945 52 239
⁹ Ibid. 1945 52 243

WORK AT A DAY NURSERY

BY

F M V FORSYTH, M.B., Ch.B.

This is a report of the work done at a day nursery (Battersea Central Mission) from September, 1944, to December, 1945, during which time 60 children between the ages of 2 and 5 years attended. The nursery is situated in a poor district in South London, and suffered a fair amount from 'buzz-bombs' and rocket bombs. The work can be classified under three headings: (1) preventive medicine, (2) social and psychological medicine, and (3) treatment of minor ailments and injuries.

Preventive Medicine

Our lines of attack in prevention are the three usual ones: maintenance of general health, early isolation, and immunization or similar active measures. The record for infectious diseases over the period under review is as follows:

Complaint	No. of Cases	Time of Occurrence
Measles	10	Feb. 1945 3 cases; March and April 1945 7 cases
Mumps	1	June 1945
Chicken pox	7	July 1945 1 case; Sept. 1945 6 cases
Whooping-cough	3	Oct. 1945
Scabies	3	Sept. 1945—two of these were brother and sister
Impetigo	1	
Scarlet fever	(secondary to scabies)	
Diphtheria	None	
Gastro-enteritis		

Maintenance of General Health—(1) All children have to present a doctor's certificate recommending their admission to the nursery and also after being away sick with any infectious condition. (2) New entrants are medically examined on admission. (3) Routine medical examinations are made at frequent intervals, with weighing. (4) The diet is balanced with an adequate vitamin intake (Ultra violet light and carbon arc and mercury-vapour lamps are available in the physiotherapy department). (5) A rest period is arranged, and there is a regular routine. It cannot be sufficiently emphasized that our children would not have a regular routine, discipline, or proper meals in their own homes. The usual diet would be bread and jam, chips, or ice-cream, taken when hunger or fancy dictated, and eaten in the street in all probability. Their priority oranges and eggs are often sold to adults or given away to sick friends. Even toddlers play in the streets on their own until late at night—without any rest during the day. A fair number, through absence of training, wet themselves during the day up to 4 or 5 years, and at night up to 7 years.

Early Isolation—The matron has had much experience in fever hospitals and quickly notices any child that is 'off colour', it is put in the isolation room at once. All children's hands are inspected for lice on arrival and 'spots' are also looked for. The fact that we have had only 3 cases of scabies in 60 children over a period of 15 months is proof of her efficiency.

Active Measures—(1) No child is accepted now for the nursery unless it has been immunized against diphtheria within two years, or its parents agree to our carrying out immunization or reimmunization at once. The children were Schick tested before reimmunization in November, 1944, but this year owing to the occurrence of a few cases of diphtheria in the district, all those nearing the end of the two years were promptly reimmunized. So far we have not Schick-tested the children following immunization. (2) We recommend vaccination when it has not been done, but do not insist as in the case of diphtheria immunization. (3) Patch tuberculin tests are carried out on any child that is not doing well. Nine children tested were all negative and gained well after a course of ultra-violet ray treatment. We hope to make a routine patch test on new admissions in the future. (4) Through the courtesy of the L.C.C. Southern Group Laboratory we were able to give 10 ml. of adult measles serum to each of 13 children during the measles epidemic of January-April, 1945. We had no

reactions. The children selected were the youngest and most delicate of those who had not already had measles. Only one child of the 13 contracted measles. This was a mild attack, occurring 9 weeks after injection in a delicate only child subject to bronchitis. The medical officer of health for Battersea informs me that 1,029 cases were reported for the district from Jan. 1 to March 31, 1945. We had eight cases amongst our 60 children in the same period—38 of the children had not had measles before. (5) In October, 1945, following two cases of whooping-cough in the nursery, I carried out a series of whooping-cough inoculations. Four children had the combined whooping-cough vaccine and APT in the usual dosages at weekly intervals except for the fourth dose which was given one month after the third. Nineteen children had slightly increased doses of the standard A' whooping-cough vaccine (Parke Davis 4,000 million Bordet's per ml.). In view of the much larger doses used in America the doses given were 0.75, 1, 1.25, and 1.5 ml. In four of these 19 local swelling and redness followed the second dose and in each case the child was 3 years old. In these four cases the remaining doses were kept at 1 ml., and there have been no reactions. Up to date only one case of whooping-cough has developed and that in a child who had a cough at the time of inoculation. The case was severe, one complicated by bronchopneumonia. The interval between the first three doses was three days. The fourth dose was given three weeks after the third.

Social Medicine

From September 1944 until August 1945 we had in the nursery two mentally defective children—brother and sister. The boy, aged 5 years, had been unable to speak, and his mother had been advised to send him to the Fountain Hospital as a hopeless case. The little boy was of an affectionate disposition, and became able after some months in the nursery among normal children younger than himself to say one or two sentences and to make very good efforts to get himself understood. During the war we could find no speech clinics which could take him and we did not have sufficient staff to give him individual training or exercise lessons. The matron, however, trained him to put out the cups and plates for tea and to collect the dirty things after a meal. His star sentence became, 'Can I collect up the cups?' but it needed a little skill to understand him. The teacher also discovered that he had an excellent sense of rhythm and could beat in time to music. He is of course now attending a special school under the new Act. The sister, aged 3 years, also mentally defective, could speak, but we could not establish as much contact with her. Her twin was normal.

Conclusion

Day nurseries are of supreme importance in improving the health of the coming generation and form a link between the infant welfare clinic and the school clinic during the important years between the ages of 2 and 5 years. Those who are the only child and mild mentally defective cases benefit greatly from contact with other children and from expert handling by a trained staff.

The *Year Book of Radiology* is now so well established that the 1945 edition needs no introduction to the radiological world. As before, it has as editors C. A. Waters and W. B. Farrow in diagnosis and I. I. Kaplan in therapy. Each subject occupies about half the book. The diagnostic half contains references to many articles of importance. In the section on bones and joints articles of note are those on stress fractures of the 1st rib by Alverson and others; Significant Skeletal Changes in the Hand by Holt and Hodges; and one by Holmstrom of Sweden on free fat in the knee joint after injury. From the Mayo Clinic comes a report on six cases of Albright's disease. Lloyd Rusby's important review of 246 cases of dermoids and teratomas of the mediastinum receives due prominence as does O. A. Nelson's interesting work on angiography of the abdominal aorta. In the same section is Baker and Miller's account of 100 consecutive cases of angiography of the lower limbs. The section on radiotherapy again gives a comprehensive account of recent work in the various branches of this subject, including radiobiology. The 1945 yearbook (H. K. Lewis and Co. '6s.) well maintains the high standard set by its predecessors, and will be valued by all who are fortunate enough to obtain a copy.



FIG 1—The Accused Men

MEDICAL EXPERIMENTS ON HUMAN BEINGS IN CONCENTRATION CAMPS IN NAZI GERMANY

BY

KENNETH MELLANBY, OBE, ScD

Reader in Medical Entomology London School of Hygiene and Tropical Medicine

The present trials of many German doctors and medical administrators before Military Tribunal I of the United States of America at Nuremberg has drawn public attention to the vast number of human experiments, many of which proved fatal to the victims, which were carried out on prisoners in concentration camps. This trial is not yet over and many more trials of a similar nature are likely to take place in the near future, it would therefore be improper at this time to discuss in any detail the personal responsibility or guilt of any of the defendants since the matter is still *sub judice*. However, many points have already been clearly established, and a picture of the organization and conditions which made these actions possible can be given.

Some people in this country have suggested that the accounts which they have read of these experiments, and of conditions in concentration camps generally have been wilfully distorted as propaganda in order to intensify hatred against Germany. It has even been suggested that few or even no experiments of an objectionable nature ever took place. The fact of the experiments was clearly proved by the International Military Tribunal which tried Goering and his colleagues. The judgment of the IMT states:

'The inmates [of concentration camps] were subjected to cruel experiments victims were immersed in cold water until their body temperature was reduced to 28° C, when they died immediately. Other experiments included high altitude experiments in pressure chambers experiments to determine how long human beings could survive in freezing water experiments with poison bullets experiments with contagious diseases, and experiments dealing with sterilization of men and women by x rays and other methods'. There are many references to these and other experiments in the judgment and to the responsibility of the various Nazi leaders and organizations. There is no doubt that thousands of individuals were the involuntary victims of medical experiments and that a high proportion died. Many more died as a result of medical neglect or improper treatment. Finally, thousands of prisoners were put to death by methods

devised and executed by physicians engaged in 'research' into the problem of killing as rapidly and expeditiously as possible.

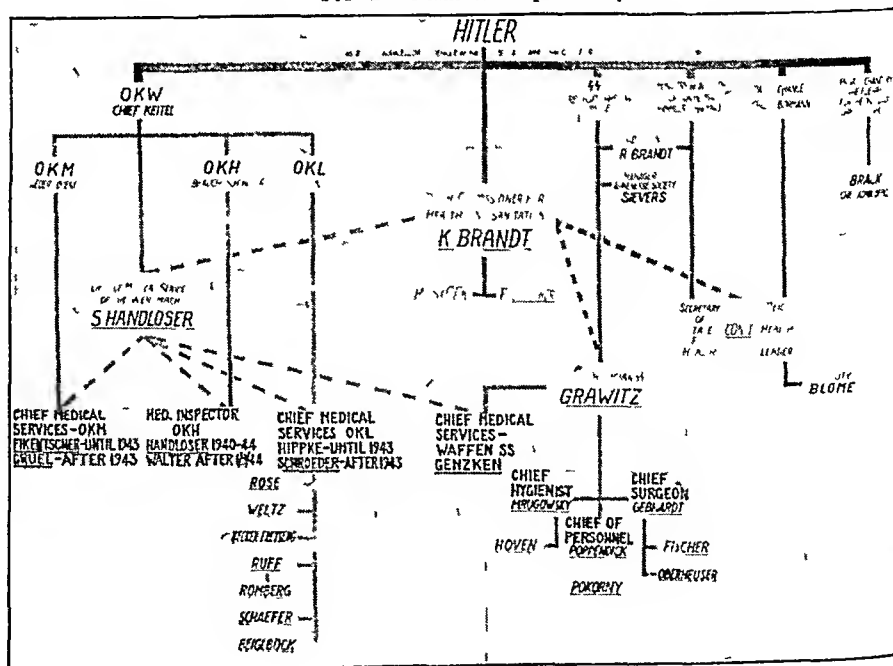
The Punishment of War Crimes

Before the end of the war the Allies resolved that after victory those members of the Axis Powers who had been guilty of war crimes should be made to pay the penalty and they established an elaborate mechanism to ensure this. In Germany the International Military Tribunal representing Britain, France, Russia, and the United States was set up to try the

leaders of Nazi Germany who were deemed to have the major responsibility for the crimes which caused the war and which accompanied hostilities. While this tribunal was still sitting each of the four occupying powers set up its own military tribunals to try the 'lesser fry'. Long before the IMT had reached its decision the other tribunals had completed numerous cases, acquitting some defendants, convicting others and sentencing them to death or imprisonment. It is intended that a uniform standard of justice should be maintained by all powers.

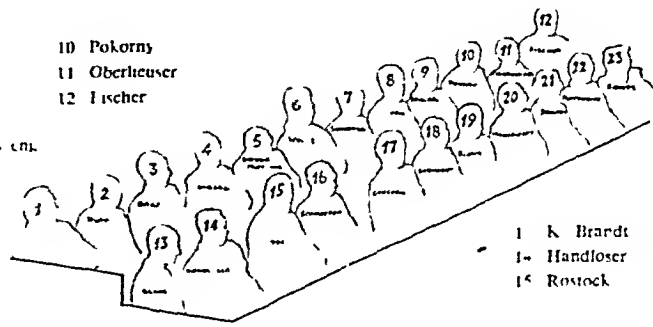
Defendants have already been convicted and executed for carrying out medical experiments. Thus at Dachau early in 1946 Dr Klaus Karl Schilling, the eminent malarialogist was hanged for his part in experiments in which some 1200 prisoners were infected with malaria. He had a greater claim than most of the experimenters to the title of scientist. He went to Dachau on the invitation of Himmler to carry out experiments in malaria on which subject he was a well known authority (he had been a member of the League of Nations Malaria Commission). He was over 70 when these experiments were carried out. Believing that the experiments would provide an unequalled opportunity for the advancement of malarialogy he used a mild strain of benign tertian malaria which would be unlikely to prove fatal in healthy individuals, and he himself appears always to have administered drugs carefully and scientifically. He is said usually to have obtained the consent of the prisoners before he infected them, but at Dachau this could not amount to very much. He was accused at a trial held by the U.S. authorities of having caused many deaths. The Court took the view that although Dr Schilling's motive may have been sincere and purely a scientific one his activities exemplified the Nazi schema which existed at Dachau. The

FIG 2—Chain of Responsibility



part he played in that schema is clear. Quite a number of other medical research workers, some of whose names have been mentioned in evidence at the present Nuremberg trial are under detention awaiting examination before American, British, French or Russian tribunals. It is a pity that the existence of these other tribunals is so little known. They are doing a difficult and thankless job often revealing facts of great interest and importance about medical experiments and other activities.

- | | |
|---------------|---------------|
| 1 Rose | 10 Pokorny |
| 2 Ruff | 11 Oberheuser |
| 3 Brück | 12 Fischer |
| 4 Romberg | |
| 5 Becker Frey | |
| 6 Weltz | |
| 7 Schaefer | |
| 8 Hoyer | |
| 9 Benzbach | |



- | |
|---------------|
| 16 Schroeder |
| 17 Genzken |
| 18 Gebhardt |
| 19 Blome |
| 20 Mruzow |
| 21 R. Brandt |
| 22 Poppenberg |
| 23 Sievers |

Key to Fig. 1

It is a little difficult to give briefly a clear statement of the legal basis on which these various tribunals operate, and some eminent jurists feel that the situation is unsatisfactory and may lead to serious abuses. The tribunals do not work strictly according to the legal code of any country. They follow the laws as set forth by the Allied Control Council in 1945 and they attempt also to abide by decisions and resolutions of various international conventions such as that signed at The Hague in 1907. The laws of evidence are as a rule rather liberally interpreted and as a result much time is spent in wrangling between the opposing counsel as to the admissibility or otherwise of affidavits and other documents. My own impression is that the various tribunals do in fact preserve a proper judicial impartiality and make every effort to give all the defendants a just hearing.

The Indictment

The twenty-three defendants at present on trial at Nuremberg are all charged on three specific counts, and ten of them face a fourth charge. The charges are as follows: I. The common design or conspiracy. II. War Crimes. III. Crimes against humanity. IV. Membership of a criminal organization (this applies to the ten members of the SS).

To the non legal mind the first three charges are very confusing, for they all refer to various aspects of the same activities. It is under Charge II War crimes, that the various medical experiments are given in detail and the particular responsibilities of the different defendants are listed. The experiments which will be dealt with in more detail in a later article, concern toleration of high altitudes, resistance to freezing, malaria infection, mustard gas, treatment with sulphonamides and other substances of artificially inflicted wounds, the regeneration of tissues in artificially inflicted wounds, the potability of sea water, epidemic jaundice, methods of sterilization, epidemic typhus, effects of poison, the treatment of burns by incendiary bombs. Further crimes consist of the murder of 112 Jews to

produce a skeleton collection and the various euthanasia programmes for removing scores of thousands of Poles with tuberculosis and millions of 'useless eaters'.

Brigadier General Telford Taylor, of the U.S. Army, chief counsel for the prosecution made the various issues clear in his opening speech. He stated that 'the defendants are charged with murders, tortures and other atrocities committed in the name of medical science. The victims of these crimes are numbered in hundreds of thousands'. He then stated that the prosecution did not merely wish to punish the guilty for their part in these atrocities, but that 'it is far more important that these incredible events be established by clear and public proof, so that no one can ever doubt that they were fact and not fable, and that this court, as the agent of the United States and as the voice of humanity, stamp the ideas which engendered them as barbarous and criminal'. The essential point was to show how 'the poison of Nazi doctrine' had so corrupted men 'exceptionally qualified to form a moral and professional judgment' that they were capable of these acts. It was necessary to demonstrate clearly that it was not a few sadistic criminals who were responsible but that the whole body of organized medicine in Nazi Germany was behind the policy.

The Defendants

There are at present twenty three defendants in the dock at Nuremberg (see photograph on p. 148). Of these twenty are medical men of one kind or another and three were concerned with the administration. These defendants are, however, by no means the only Germans who might have been indicted. The IMT made it clear that these medical crimes were part of the general policy of the Nazi leaders. Hitler knew about them and gave his approval and encouragement. But of the better known leaders it is Heinrich Himmler, *Reichsführer* of the SS and later also Minister of the Interior, who was particularly concerned. Himmler climbed the gallows by committing suicide, but his obsessional character made him retain every letter

memorandum, and report even including scraps of paper with rough notes on them. These documents clearly established his paramount role. He was not himself a scientist, but he took a considerable, though quite uninformed interest in research. In medical investigations he was constantly urging others on to produce immediate practical results irrespective of the brutalities which might be inflicted. This constant urging from above that 'practical results must be forthcoming together with the general unscientific temper of the environment' did much to ensure that the experiments were of the minimum scientific value.

Few of the defendants are accused of actually carrying out the experiments themselves, they are mostly the responsible organizers alleged to have planned the

FIG 3—Karl Brandt's Web

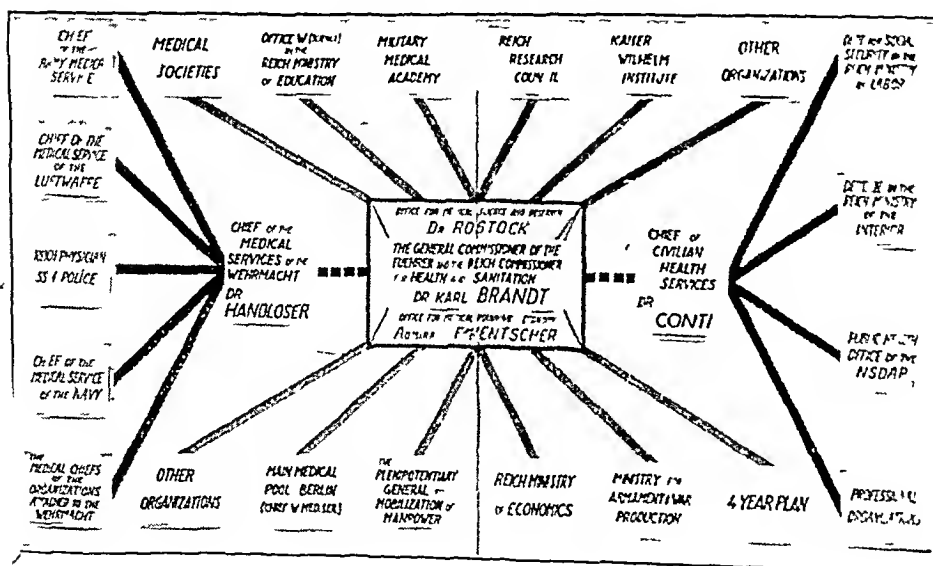




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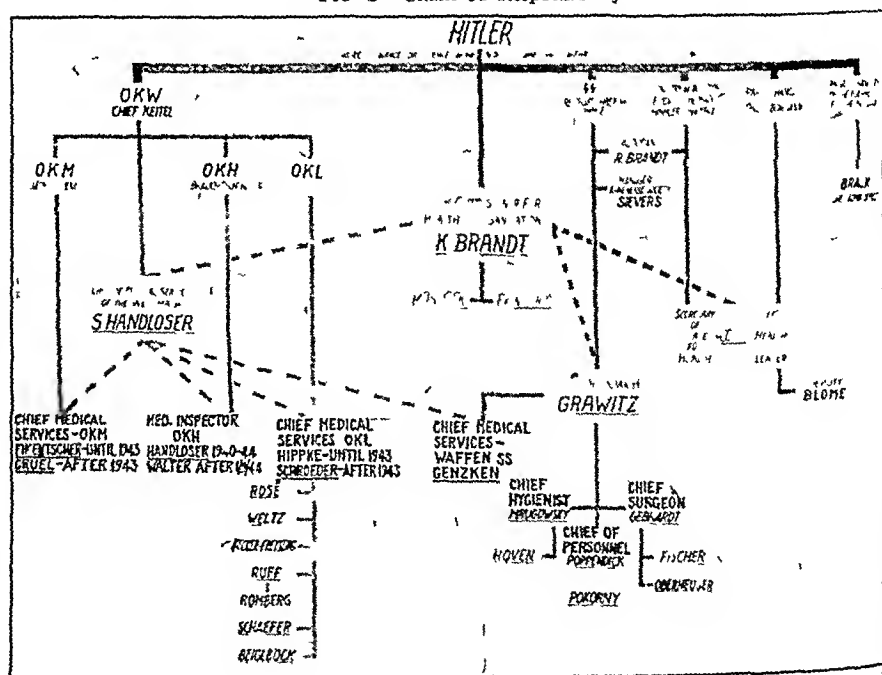
devised and executed by physicians engaged in research into the problem of killing as rapidly and expeditiously as possible.

The Punishment of War Crimes

Before the end of the war the Allies resolved that after victory those members of the Axis Powers who had been guilty of war crimes should be made to pay the penalty and they established an elaborate mechanism to ensure this. In Germany the International Military Tribunal representing Britain, France, Russia, and the United States was set up to try the leaders of Nazi Germany who were deemed to have the major responsibility for the crimes which caused the war and which accompanied hostilities. While this tribunal was still sitting each of the four occupying powers set up its own military tribunals to try the 'lesser fry'. Long before the IMT had reached its decision the other tribunals had completed numerous cases acquitting some defendants, convicting others and sentencing them to death or imprisonment. It is intended that a uniform standard of justice should be maintained by all powers.

Defendants have already been convicted and executed for carrying out medical experiments. Thus at Dachau early in 1946 Dr Klaus Karl Schilling, the eminent malarialogist was hanged for his part in experiments in which some 1200 prisoners were infected with malaria. He had a greater claim than most of the experimenters to the title of scientist. He went to Dachau on the invitation of Himmler to carry out experiments in malaria, on which subject he was a well known authority (he had been a member of the League of Nations Malaria Commission). He was over 70 when these experiments were carried out. Believing that the experiments would provide an unequalled opportunity for the advancement of malarialogy he used a mild strain of benign tertian malaria which would be unlikely to prove fatal in healthy individuals, and he himself appears always to have administered drugs carefully and scientifically. He is said usually to have obtained the consent of the prisoners before he infected them, but at Dachau this could not amount to very much. He was accused at a trial held by the U.S. authorities of having caused many deaths. The Court took the view that 'although Dr Schilling's motive may have been sincere and purely a scientific one, his activities exemplified the Nazi schema which existed at Dachau. The

FIG 2—Chain of Responsibility



investigations. Listening in court one sometimes felt that the prosecution was equally aimed at people who were absent. Thus a, Dr Rascher, who, it appears, was finally shot at Himmler's own order, was concerned with the more revolting experiments on cold and high altitude. The typhus work was carried out by Dr Ding, who committed suicide after his capture. A Prof Hirt, of Strasbourg, who has so far avoided capture, was concerned in the Jewish skeleton collection and the poison-gas experiments.

Fig 2 which is based on a diagram produced by the prosecution shows the relative positions of the various defendants in the Nazi medical hierarchy. To complete the picture various 'absent defendants' are included. The diagram illustrates the curious double pattern of control so characteristic of the regime. The head of every medical department will be seen to be responsible to his own lay chief and also to a medical *fuhrer* who is independent of the administrative head of the department but is himself responsible to some higher authority. The authority of Hitler will be seen to pass down through several channels which divide and then become knit together again in an intricate and all-pervading pattern.

Hitler himself had three main functions—*Reichskanzler*, leader of the Nazi party, and Commander-in-Chief of the *Wehrmacht*. He was therefore the complete dictator, with overall control of every activity in the country. Under him there were the various departmental heads—Keitel over the armed forces, Himmler as *Reichsfuhrer SS* and Minister of the Interior, and others less concerned with this trial.

In German medicine the defendant Karl Brandt occupied the paramount position. At the age of 38 he was appointed *Reichskommissar* for Health and Sanitation, directly responsible to Hitler alone. He had direct and complete control over every medical activity (see Fig 3), and could deal with any department without reference to the administrative head. The defendant Rostock worked directly under him and was responsible for the control of medical research.

The two main branches of the medical services were (a) those of the armed forces under Handloser, responsible to Keitel on the one hand and to Karl Brandt on the other, and (b) the civilian services under Conti (who committed suicide), responsible to the Minister of the Interior and again to the ubiquitous Brandt. In addition the SS, which formed virtually a privileged state of its own, had a separate medical service under Grawitz, another 'absent defendant,' but he again was subject to Karl Brandt's supervision. The navy, army, and air force each had its own medical service, and the chief officer of each was responsible to his own C-in-C as well as to Handloser, who combined his function of chief of the medical services of the *Wehrmacht* with his supervisory capacity over the medical service of the *Waffen SS* (the armed part of the SS which eventually had some thirty divisions in the field).

"Thanatology"

The prosecution has used the word 'thanatology, which they define as "the science of producing death," to describe the experiments. They allege that the object of the majority of the experimenters was not to advance medical science but to produce methods of speedy extermination. This seems to be true of some investigations, in which intravenous injections of phenol and other substances produced death in a few seconds. The work on the effects of poison gas would seem to have been so mixed with the programme of extermination of Jews and others deemed "undesirable" that it is difficult to distinguish experimentation from wholesale killing.

The prosecution has further urged that practically no results of any value were obtained in any of the work. This is a point which needs further study. From what we already know of the typhus work it is clear that a useful evaluation of the various vaccines was obtained, some of these results have already been published.¹ Preliminary studies suggest that the other work may not advance medical science a great deal, for two reasons: first some of the results, particularly those obtained by workers like Rascher, are so inaccurate that they cannot be relied on; secondly, few of the original records are available, because they were destroyed to prevent their capture by the Allies in order to try to conceal the fact that the experiments took place.

Generally speaking there is no doubt that most of the work was badly planned and carried out under conditions where scientific thinking was difficult. The SS was responsible for supplying the human subjects, and Himmler was only interested in quick practical results. This constant political pressure must have had a bad effect. Then the victims of the experiments were not the willing co-operators who have taken part as volunteers in so many experiments in this country, in Australia, and in America. They were prisoners, compelled to take part in work which they knew would quite probably mean their death, and if sabotage was possible they looked upon it as their duty.

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ANAESTHETIC APPARATUS

NEW SAFETY CODE

The Medical Defence Union has records of many of the fatal accidents that have followed the administration of anaesthetic gases. Recently the Union arranged a conference of interested parties in an attempt to minimize human errors in the use and assembly of anaesthetic apparatus. Ultimately a committee was set up consisting of representatives of the Medical Defence Union, the Association of Anaesthetists, and the manufacturers of anaesthetic apparatus and gases. This committee has put forward a short-term policy which can be effected immediately and which includes proposals for the distinctive marking of cylinders and pipes, for planned storage, and for the selection and instruction of personnel. Its long-term policy calls for a complete system of non interchangeable connexions for gas apparatus. This will make wrongful coupling impossible, but can be fully achieved only by the introduction and universal use of a new type of cylinder valve, with consequent changes of the apparatus attached to the cylinders. Until such time as this "fool-proofing" can be brought about the risk of a wrong connexion must remain, but a code of practice has now been formulated which should reduce this risk to a minimum.

A British Standard Code of Practice (BS 1319 1946, price 2s net) has been prepared under the authority of the Chemical Engineering Divisional Council in response to the joint representations of the Medical Defence Union and the Association of Anaesthetists. The code relates to gases contained in cylinders for use in anaesthesia, oxygen therapy, and for other medical purposes, to certain features of anaesthetic and gas therapy apparatus, and to gas distribution systems by pipe lines in hospitals. The suggested colour scheme for cylinder identification is as follows.

Table of Identification Colours for Medical Gas Cylinders

Name of Gas	Symbol	Colour of Cylinder Body	Colour of Shoulder, where Different from Body
Carbon dioxide for inhalation	CO ₂	Upper $\frac{1}{2}$ Sea green (BS Colour No 17) Lower $\frac{1}{2}$ Black	—
Carbon dioxide with internal tube (for making snow)	CO ₂	Sea green (BS Colour No 17)	—
Cyclopropane	C ₃ H ₆	Aluminium	Red (BS Colour No 37)
Ethylene	C ₂ H ₄	Mauve	Red (BS Colour No 37)
Helium	He	Brown (BS Colour No 11)	—
Helium and oxygen mixture	He + O ₂	Brown (BS Colour No 11)	White
Nitrous oxide	N ₂ O	Black	—
Oxygen	O ₂	Black	White
Oxygen and carbon dioxide mixture	O ₂ + CO	Black	Sea green (BS Colour No 17) with white neck

The figures in brackets are references to the colours established in British Standard 381—British Standard Colours for Ready mixed Paints.

It is also recommended that no cylinder should be encased in any covering, that the label encircling a gas cylinder should be printed in characteristic colours with the name of the gas.

contained—e.g., in the case of carbon dioxide for inhalation a green label with black lettering—and that the name or the chemical symbol should be stencilled in paint on the shoulder of the cylinder. The same name or chemical symbol should be clearly and indelibly printed on the cylinder valve.

For the visible connecting tubing of anaesthetic apparatus the identification colours should be: oxygen—white, carbon dioxide—sea green, nitrous oxide—black, and cyclopropane—aluminium-coloured tubing with a spiral red line. Pipe-lines where visible should be similarly coloured and in addition, the compressed air-line should be light grey, the vacuum line primrose and the spare line "natural (varnished)".

Finally, the code suggests a type of cylinder storage rack which would differentiate the sizes and colours of cylinders. The shelves are slightly inclined so that cylinders removed for service can always be taken from the one side. The remaining cylinders roll down the incline leaving a space on the other side for the insertion of fresh cylinders.

This code of practice marks an important step forward in co-operation between manufacturers and anaesthetists. Its recommendations should be studied carefully by all who have to do with the handling of gas cylinders. Production difficulties are such that the long-term proposals are not likely to be achieved for some time. Till then, the recommendations of this code, if conscientiously followed, will ensure the reduction to a minimum of the present risks.

RESETTLEMENT OF THE DISABLED PROGRESS REPORT

Up to the late summer the number of disabled persons registered at the local offices of the Ministry of Labour and National Service was 628,000—a surgical group of 289,000, a medical group of 196,000, a psychiatric group of 34,000, and the remainder miscellaneous chiefly eye and ear defects. The resettlement into gainful occupation of a mass of disabled persons equal to the whole population of Lincolnshire calls for long-continued and enterprising planning. About 100,000 of these people are ex-Service of the 1914–18 war, and therefore veterans, some 5,000 are juveniles, and of the remainder about equal numbers are ex-Service of the recent war and non-Service. Women number about 6% of the adult disabled. All these people are eligible for various resettlement and employment schemes, including the scheme whereby every employer of twenty or more workers must take a quota of disabled persons (at present 3% of his labour force), the scheme whereby certain employments are by order designated suitable for disabled persons, the schemes of local authorities, mostly embracing blind persons, and the home workers' schemes under which those whose disablement prevents them from taking advantage of workshop facilities may carry on work at home.

On the recommendation of the Tomlinson Report now four years old, a standing interdepartmental committee was set up in 1943 representing all the Government departments concerned, ten in number, including the Government of Northern Ireland, to watch and assist the development of schemes for rehabilitation and resettlement, and it has just issued a progress report.¹ In England and Wales 333 hospitals, or very nearly two thirds of the larger general and special hospitals, now have active rehabilitation facilities, although in a considerable minority the facilities are only partial—for example, they have remedial exercises but not occupational therapy. In Scotland rehabilitation departments have been developed in the emergency hospitals.

Provisions for Special Cases

Provision for cardiac cases, of which 30,000 have been registered, has been deferred owing to various difficulties, and at the time of compiling the report it had not been possible to set up a special centre. For tuberculosis—pulmonary tuberculosis is given as the disability of 22,000 of those registered

—arrangements have been made for close co-operation between tuberculosis authorities and the local offices of the Ministry in finding employment under suitably adjusted conditions for the individual when he is fit to undertake it. More success seems to have been reached in obtaining part-time employment for tuberculous persons than in providing rehabilitation measures. For the deaf—and 19,000 of the disabled suffer from ear defects short of total deafness—the Government is providing a new electrical aid. Under the new National Health Service there will be provided the necessary treatment of deafness, a scientific assessment of the need for a hearing aid and the aid itself and its servicing. Over 32,000 men and 1,500 women are registered in the psychiatric group and these people will be dealt with by assessment centres—one experimental centre is being set up for England and Wales and another for Scotland—with immediate facilities for employment in the less serious cases and facilities under sheltered conditions for the more serious.

The interdepartmental committee has also surveyed various local or regional schemes. One of these provides special facilities for Scottish miners at the fitness centre in Glencalgies, another is the scheme at the Manchester Ship Canal Docks whereby labourers suffering from minor physical ailments receive medical advice and such reference for treatment as may be necessary. Yet another is the Scottish Supplementary Medical Service, originally confined to the Clyde Basin and to persons up to 25, but now extended to cover the whole of industrial Scotland and persons of all ages. The main object of this scheme is to assist general practitioners in dealing with cases of industrial fatigue by providing consultant and diagnostic services for actual or probable early cases of organic disease. There is no similar organization in England and Wales but it is considered that existing medical services provide largely for proper diagnosis and early treatment. The time is not considered ripe for the institution of a postgraduate diploma in rehabilitation, but special courses for doctors have been held, training facilities for physiotherapists and occupational therapists have been secured, and a hospital almoner service developed. Under the wartime scheme operated by the Ministry of Pensions Limb-fitting Service about 3,900 civilians have been supplied with artificial limbs. The cases of amputation of one arm or one leg in the register of disabled persons number 41,000 of both arms 370, and both legs 1,277.

Vocational Training

About 67 Government training centres are now functioning in which the training of disabled persons is carried out side by side with the training of the able-bodied. This is considered the best arrangement for the disabled. A wide range of manual or quasimanual occupations, all of them requiring some degree of skill is listed, and the course of training is rarely less than six months and sometimes nine or twelve. These courses must now have been completed by about 25,000 disabled persons and a further three thousand have had training for professional, technical, or executive positions.

One important class is the paraplegics, in view of their special limitations and their need for medical supervision. It is stated that the modern methods of treatment and rehabilitation in practice at the Ministry of Pensions Hospital at Stoke Mandeville have shown that the majority of paraplegics are able to undertake remunerative employment under suitable conditions. Further experience is likely to be acquired at two new hospitals which are projected one in the London and the other in the Glasgow area.

The variety of the disablements themselves, of the occupations into which the people can resettle, and of the schemes for enabling them to do so makes it most desirable that some permanent body should be in existence to secure co-ordination and promote the exchange of information. This interdepartmental committee well fills the role, and we hope it will report upon the subject annually or as occasion requires.

¹ Ministry of Labour and National Service. *Report of the Standing Committee on the Rehabilitation and Resettlement of Disabled Persons*. London: H.M. Stationery Office. 4d net.

Lieut. Col. Ashton Street, I.M.S., of Crowborough, Sussex, formerly Professor of Surgery, Grant Medical College, Bombay, who died on Sept. 8, 1946, left £28,184. Dr. John Forbes C.A. of Totton, Southampton, who died on Aug. 14, 1946, left £11

Reports of Societies

ANAESTHESIA FOR ABDOMINO PERINEAL OPERATIONS

At a meeting of the Section of Anaesthetics of the Royal Society of Medicine on Jan 3, with Dr STANLEY ROWBOTHAM in the chair, a discussion took place on anaesthesia for abdomino-perineal operations. Dr RONALD JARMAN said that it was now forty years since Mr Ernest Miles had first performed abdomino-perineal excision of the rectum. Notwithstanding the hesitation with which the operation was formerly regarded by many surgeons, it had proved successful thanks not a little, as Mr Miles would acknowledge, to team-work. In considering the operation from the anaesthetist's point of view he laid stress on the careful preliminary examination of the patient. The patient was taken into the hospital at least fourteen days before the operation, during which time he had high colon wash-outs. The anaesthetist could at the same time make his own examinations and estimates. In an experience during the last fourteen years of over 1,000 cases of this kind, the speaker had taken a dislike to ether, and preferred for his own use pentothal and gas-oxygen with premedication by omnopon and scopolamine. The patients were put to sleep in their beds with pentothal, taken to the theatre, given 'light' percaïne, followed by gas and oxygen. Curare could be used with success.

Dr FRANKIS EVANS said that at St Mark's Hospital several hundreds of cases had been treated by means of the synchronous combined excision, which permitted the removal of a rectal growth inoperable by the abdomino-perineal technique. In the light of experience the anaesthesia for these operations became largely standardized and his own preference was for a spinal analgesic in combination with a dilute pentothal intravenous drip to maintain unconsciousness. The patient came to the theatre with an intravenous drip in position. The pentothal administration was started and when the patient was unconscious the spinal puncture was performed. When the blood pressure fell unduly low it was an indication for dosage with adrenalin.

A sample of some sixty cases from St Mark's, twenty treated by the abdomino-perineal and forty by the synchronous combined excision, showed there was very little difference in post-operative complications whether a spinal anaesthetic with gas oxygen or a spinal with pentothal drip was used. The mortality in this series with the abdomino-perineal operation was about 9.8%, and with the synchronous combined 8.1%, but it must be borne in mind that the cases were very bad risks. Curare had been tried in one or two cases, but these had been found to bleed considerably and appeared to be more shocked than patients who had had a spinal anaesthetic.

REHABILITATION FOLLOWING CHEST SURGERY

At a meeting of the Section of Physical Medicine of the Royal Society of Medicine held on Jan 8, Mr HOLMES SELLORS said that the circumstances favouring rehabilitation were better in chest surgery than in general surgery if only because the treatment of chest cases was carried out in institutions where the general tempo of life was more like that of a sanatorium than of a busy city hospital. In chest work the aim was to keep the patients in hospital until they were ready to return practically to a normal life, thus the hospital was likely to be more spacious and of the "green belt" type. The cases were long-term, there were some which stayed only four or five weeks in hospital, but the difficult ones with chronic empyemata and those which developed complications, might be kept in for months, or perhaps up to a year. Some of the investigations such as those for tuberculosis took a long time and during this period a great deal could be done by teaching breathing exercises to prepare for the post-operative course of treatment.

Diet had to be considered, as in the suppurating case the loss of protein over a term of weeks might be quite considerable. The most difficult problem was the psychological one

of the patient in hospital, for as he improved he became restless and later apathetic. The importance of the economic side had been recognized in tuberculosis by the system of allowances, but not to the same extent in chronic chest cases. Occupational therapy was still at its beginning and had not received enough attention.

The medical aspect of rehabilitation resolved itself as a question of chest function. The best example of the long term case was the chronic empyema in which there was usually deposited a mass of fibrin over the pleural surfaces, surrounded by an unyielding contracted chest wall. Secondary scoliotic change, often including wedging of the vertebrae, was the appalling deformity seen too often as a result of mal-treatment of the acute phase of the empyema.

Chest Exercises

The underlying lung worked more or less *pari passu* with the chest wall. It was almost an aphorism that with an actively moving chest wall there was reasonable lung function. The basis of treatment was to get the chest wall moving and to prevent any structural deformity from developing. The type of breathing exercise required was thus based on inspiration and not expiration. These inspiratory exercises were new but physiotherapists who had developed them had demonstrated that they were of inestimable value. The first secret was the teaching of concentration. It was of no use to have breathing exercises for just ten minutes every morning. The patient should be told that of the twenty four hours of the day eight were sufficient for sleep, eight for meals and play and the remainder should be devoted to sedulous training in breathing. He should be taught localized inspiratory exercises, working against some form of resistance which enabled him to concentrate his mind and activity on the area of the chest it was desired to move. The chest might be divided into its various functional parts in relation to movement. In empyema it was generally the basal expansion which was an important movement to regain and such control must be established by the patient. By careful concentration it was possible to move one area and one area only by voluntary effort. The other movements concerned were lateral movements, an attempt to get posterior expansion, and, finally, a ripple almost along the antero-posterior line.

After the general exercises it was very important to see that the stance of the patient and his position in bed were correctly maintained. Subjects had a tendency to avoid discomfort in bed by cramping-in on the bad side of their chests, which actually made them worse and tended to exaggerate all the defects which it was sought to remedy. Unless there were contraindications the patient should be got out of bed as soon as practicable, as by his moving about his general recovery was encouraged. Effective coughing for the clearance of noxious secretions from the lung was desirable, as otherwise the patient was liable to atelectasis and further inflammatory changes.

Occupational Therapy

So far as occupations other than breathing exercises were concerned leather work and toy making had proved their value perhaps more in the case of women, as men were less inclined to take to these simple occupations. These activities must not be allowed to become an obsession though occasionally, as in a great many military cases, they might open out a new permanent occupation for a patient whose disability did not permit his return to his ordinary means of livelihood. In the late stages those attending the patient must avoid any tendency to let the posture become set, as they needed to walk comfortably. It was not easy to achieve a really high degree of functional recovery with satisfactory vital capacity in these patients and it was necessary to make liberal use of the services of the physiotherapist.

At the annual general meeting of the Harveian Society of London held on Jan 15, the following officers were elected for 1947:
 President Macdonald Critchley, MD, FRCP Vice Presidents
 A. Wallis Kendall, MS, FRCS, J. H. Peel, FRCS, John
 Hunter, CBE, MC, FRCS W. Eldon Tucker, FRCS
 Honorary Treasurer Sir Cecil Wakeley, KBE, CB, DSc
 FRCS Honorary Secretaries Peter Turtle, MB Rodney Smith
 MS, FRCS

Correspondence

The Presidents and the Minister

SIR—The letters between the Presidents of the Royal Colleges and the Minister (Jan 11, p 66) get us nowhere. The Act in its present form is anathema to the bulk of us by reason of certain of its provisions which enslave the patient and insult the profession. It was forced through Parliament in this form by Mr Aneurin Bevan. It gives him more absolute authority than any man in peace has had since Cromwell. He can, on the plea of national health, prohibit beards or make cremation compulsory and is answerable to nobody but Parliament. He can dodge that by saying that it is not in the national interest to say why he so acted.

His answer that the salary basis is to help the profession is just soft soap and eyewash. The Lord Chancellor stated emphatically that it was to control medical certification—I am etc.

Newton Ferrers Devon

W F BENSTED SMITH

SIR—It is with misgivings that one reads of conversations between the Presidents of the Royal Colleges and the Minister of Health. An impasse is to be deplored but is not of our making. The one thing above all others upon which the Minister insists is the one thing above all others which makes it fundamentally impossible for the profession to negotiate with him—i.e., his power of dictatorship to issue edicts and make rulings from which there is no right of appeal to the courts of justice.

It is utterly futile to attempt to negotiate with a dictator because any apparent "concessions" he may make can be rescinded at his own sweet will. This determination to bypass the judiciary and render impotent the Common Law of England is apparent not only in the N.H.S. but in all the new laws being passed. In the farmers' sphere our 'Willesden affair' has its even more glaring counterparts in the *Odlum* versus *Stratton* and *Miller* versus *Essex War Agricultural Executive Committee* cases, which provide us with samples of what we may expect under bureaucratic dictatorship. The medical profession is in the forefront of the defence of British freedom against the onslaught of the National Socialist State, and we have a moral duty to the public in general as well as to our patients in particular to stand firm—I am, etc.,

St Germans Cornwall

W H SPOOR

SIR—The letter (Jan 11 p 66) to Mr Bevan in which three distinguished consultants have expressed the hope that negotiations about the Health Act between the doctors and himself will be continued appears to be written without recognition of three vices inherent in the Act. The writers seem to have turned the blind spot of their vision upon them.

The G.P.s have declined to negotiate. One does not negotiate about vices. I wish to refer to one of them. It is the payment by salary. Why does Mr Bevan stipulate this? It is a feature which vitiates the age-old relation of patient and doctor. In Mr Lloyd George's Act he skilfully avoided such a desecration, the panel system preserved the individual freedom of both parties, patient and doctor, but payment by salary destroys the ethic which two thousand four hundred years have built up. The doctor is to be paid by his master, who will be the State not by his patient. *Ipso facto* despite denials, he becomes a state servant. A private doctor, under the Hippocratic tradition owes his duty to the patient alone.

Why does Mr Bevan wish for this change? It was not in the first instance his suggestion but it arose from the Beveridge report. Sir William Beveridge (as he then was) disclaimed interest in the medical services of the scheme except in this, that the doctors must be so paid that in a system affording the large benefits proposed the certification must be safeguarded by the method of their payment. Safeguarded? That is the toad ugly and venomous, which lurks in the leaves of the Beveridge report. Its reappearance in the Act is one of the three vices which render that statute unacceptable to the G.P.s.

Their tradition is that they certify their patients' illnesses upon their conscience and their professional knowledge, uninfluenced by any extrinsic considerations. They see in this salary an unblushing inducement to deviate from their duty which begins and ends with the certification of the truth. No single action of the legislature could more effectively shatter the mutual confidence of doctor and patient. Safeguarding the State's finances is not the doctors' concern. Doubtless consultants will seldom be called on to confront such a problem, as is the G.P. many times a day. That may explain the blind spot in the vision of Mr Bevan's three correspondents—I am etc.,

Holmes Chapel Cheshire

LIONEL JAS PICTON

SIR—The recent unilateral action of the Presidents of the Royal Colleges in approaching the Minister of Health without consulting the profession is to be most seriously deplored. We regret to have to describe their action as autocratic, unrepresentative, and, in effect an abuse of Office.

The Royal Colleges are not democratic bodies. Their constitution is that of autocratic corporate bodies. Nevertheless in a democratic age the Colleges should adopt democratic methods thereby enabling Fellows and Members to voice their opinions through properly elected representatives. Presidents of corporate bodies are not necessarily chosen because they share the majority opinion on medico-political matters but rather for their personal popularity and prestige. In the present crisis between the Government and the medical profession it is not unreasonable to suggest that these three distinguished men are representing themselves and possibly their Councils, consisting of a total of about 100 general practitioners. Moreover this step has apparently been taken without consultation with the B.M.A., which represents 52,000 medical practitioners including a large number of Fellows and Members of the Royal Colleges.

Medical practitioners are naturally astonished that this undemocratic step should have been taken by three responsible men who have duty to the profession and public. Perhaps one may be permitted to ask whether the Presidents have been lured by the politically inspired call for 'statesmanship' by *The Times* (a newspaper which seems to have developed into a Government organ travelling under a Tory label). Should this be the case then we have an impending Medical Munich.

This unprecedented action taken by the Presidents, which is liable to sabotage the results of the plebiscite has filled practitioners with alarm and created a serious lack of confidence in the Royal Colleges in their assumed role as leaders of medical policy.

It is hoped that the B.M.A., as the representative and recognized negotiating body of the profession, will adhere unwaveringly to the clear mandate given by the majority of private medical practitioners—We are etc.,

W B Smellie	P C Alexander,	Mary Turnbull
W C D Muir,	K J L Scott,	N K Stott
W D Henderson,	Stuart Haycs,	J M S Evers,
F J Beilby,	J B Carlin	J W C Symonds
L G Higgins	Isobel Mitchell	Tudor Miles

SIR—The President of the Royal College of Surgeons asks for the forgiveness of the Minister of Health for his intervention. Surely the trespass has been committed not against the Minister but against that special meeting of Fellows gathered in that crowded hall on Nov 29, and to whom he pledged that the Royal College of Surgeons would take no action that was not in accord with the wishes of the main body of the profession. Indeed, he may not have acted contrary to the "word" of this resolution, but it would seem that the intervention is contrary to its "spirit" and to the wishes of that meeting and that majority which has said "No".

Let us hope that this action will not render the result of the plebiscite worthless, as some would wish, and that the B.M.A. Council and those who give the mandate to the Representative Body will have no difficulty in washing away the dust which may have got into their eyes, so that they can see that Mr Bevan is still only prepared to negotiate "within the Act" and will only endeavour to meet any views of the profession which do not conflict with the principles of the Act. It is because of

these differences in principles that the majority of the profession has said "No"

Let us then unite and support to the full the Council of the B.M.A. in the decisive action it took on Dec 11—We are, etc,

London W 1

CYRIL E BEARE
ANTHONY GREEN

The Principles of the Act

SIR—A good deal of interest and curiosity must have been aroused throughout the profession by the publication (Jan 11, p 66) of a letter addressed to the Minister of Health by the Presidents of the three Royal Colleges. However this may be, the Minister's reply does not alter the situation one iota. "If discussions take place, I shall endeavour to meet any views of the profession which do not conflict with the principles of the Act." So says the Minister, discussions are like cobwebs—to catch flies, but the power is in the law, and there's no disputing with it but upon the sword's point.

What are the principles of the Act? The Government is set on nationalization. In order to establish its policy it is bound to bring medical practice under its control. The final arbiter on all matters medical, surgical, gynaecological, or otherwise is to be the Minister of Health. The medical man is no longer to be his own master, on the other hand he is to have a master. Those are the principles of the Act. The spectre of State dictatorship faces us, our freedom is threatened. It falls to our lot, therefore, to oppose with all the energy at our disposal the evil forces which confront us. If the liberty which is ours is seized by those with greater zeal, greater unity of purpose, whether based on ignorance, class prejudice, or mere political ambition, then woe betide us. The character of our profession as a corporate body is on trial. We have said "No." It remains to show that we mean it, whatever the cost. Let it be understood that the struggle we are entering is not confined to the defence of our own liberty but is part of a much wider struggle in defence of the liberty and individualism of the whole British race—I am, etc,

Kilgley, Yorks

H. M. HOLT
Medical Officer of Health

Democratic Choice

SIR—The other evening I listened-in to the broadcast on the 'Vesting Day' for mines. I notice how anxious the powers that be were to emphasize that the miners would be consulted via their democratically elected representatives. I should like to know why the medicos who are expected to work the Health Act are not to be consulted, and their representatives are appointed by the Ministry, not elected.

As regards the "closed shop" I remember that in the early days of trade unionism some employers would not allow their men to join trade unions. This was described as tyrannical and narrowminded. Is not the "closed shop" movement exactly the same thing from the other point of view? Let us be free men and masters in our own home—I am, etc,

Wolverhampton

E. HAYLING COLEMAN

Women Doctors in the Health Service

SIR—Dr Enid A. Hughes, in her letter (Jan 11, p 71), writes that provided her living is secured and her professional integrity assured she is not going to stand upon the question of salary and selling of practices. She voted "No" in the recent plebiscite as an expression of no confidence in the present committee to represent the present generation of doctors.

I would ask her and all medical women who hold her views to consider very seriously what the future of women in medicine is likely to be in a National Health Service under the present Act. We know that a recent committee was set up to go into the question of equal pay for equal work as regards men and women, and we know its findings. Once the shortage of doctors is overcome what guarantee have we that women doctors will not be asked to accept lower fees than men? Then we will be servants of the State and no longer free. *Vestigia nulla retrorsum* (no footprints backward at the lion's den).

It is not to any Government nor to local authorities (a thousand times no) that we owe the recognition of equal status

with men in medicine, but to the British Medical Association, which (once it saw the light) has stood firmly and consistently for equal pay for equal work. And it is to those members of the Association—men and women—over 65 to whom we owe most. They sowed the seeds of the harvest we now reap. Have we the right to scorch the earth for those who come after? I would venture to remind Dr Hughes that she would have had no vote at the recent plebiscite and no future in medicine were it not for these older members of the Association whom she derides—I am, etc,

Marden Kent,

FREDA NEWMAN

National Health Service Act

SIR—It is abundantly clear that the National Health Service Act gives the Minister of Health complete personal power over the whole health service of the nation—that is to say over the hospitals, their management committees, and regional boards, and, most important of all, over the personnel of the Service. What power!

Will the members of the medical profession agree to work in a Service in which they are under the autocratic control of a Minister? They can hardly do so, and if they do they will lose their independence and become subservient creatures. By this deterioration and degradation of their doctors the people will suffer.

The blight of prospective Ministerial control is already affecting the attitude of us doctors. We begin to feel like lambs brought to the slaughter. Some of us are beginning to be afraid to say much lest we should earn a bad mark. The recent letter from the Presidents of the three Royal Colleges addressed to the Minister of Health illustrates this attitude. It deals with details rather than principles, and it ends with the obsequious phrase, "We hope you will forgive us for intervening." And so we doctors are being gently led by our leaders into a completely humiliating position. The Presidents of the Royal Colleges are simply selling the birthright of the medical profession, and the people will suffer.

At the meeting of the Marylebone Division of the B.M.A. held on Jan 14, the following motion, originally resolved by the Council of the B.M.A., was carried by 143 votes to 9.

"That the Negotiating Committee be advised that in view of the results of the plebiscite the Minister be informed that because of the divergence between the principles of the profession and the provisions of the National Health Service Act, the Committee is unable to enter into discussions with the Minister on the Regulations to be made under the Act."

In a subsequent resolution, which was carried with only five dissentients, the meeting expressed willingness to co-operate with the Government and anticipated that this co-operation would require new statutory action by the Government.

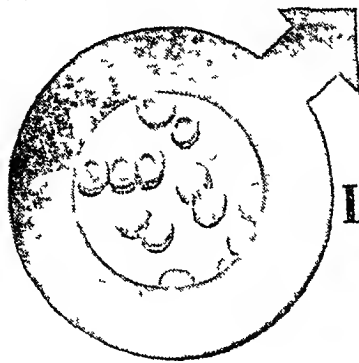
This matter of Ministerial control, this "terrific centralization of power in one man" as Lord Horder said when the Bill was debated (second reading) in the House of Lords, is a matter of principle and one on which the whole profession should be asked to vote. It is a simple issue, and it is maintained that the Act must be modified at least in this respect if good doctors are to work in the new Service—I am, etc,

London, W 1

GEOFFREY EVANS

SIR—I believe that Mr Reginald Payne (Jan 18, p 102) has performed great service in writing and you, Sir, in publishing his dispassionate survey of the National Health Service Act against its background of present-day legislation by the State. Those who read this, whether within or without the profession if their integrity be accepted, can have few doubts as to the future.

One must set aside those whose political views render them incapable of unbiased judgment, but there remains that surprisingly large section of the community who indulge either in muddled or wishful thinking or whose power of reasoning is distorted by misapplied sentiment. It would seem well nigh inconceivable that these individuals can blind themselves to the futility of negotiation with the Minister over details within the framework of the Act, which can be only trivial in the light of the grave injustice which has become law. To do so will shift the responsibility for its overwhelming defects squarely upon the shoulders of the profession, and those who allow



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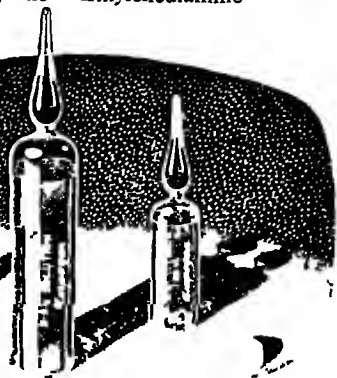
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themselves to be gulled by the honeyed words of the Minister are doing a disservice both to the profession and the public, and must lay themselves open to the charge of seeking self aggrandizement

The alternatives before us now are clearly defined to uphold freedom of the individual against tyranny or to acquiesce in the serfdom of a totalitarian state. If any other warnings need be sought other than those expressed by Mr Reginald Payne, let the unconvinced seek out his edition of Plato's *Republic* and read what that great philosopher wrote of his time—I am, etc.,

Windsor

CHARLES TAIT

SIR—May I express my admiration for Mr R T Payne's article (Jan 18, p 102) and my gratitude to him for his lucid and factual presentation of his case. It is inconceivable to me how any intelligent person can read this article and have any doubt left as to the essentially authoritarian basis of the National Health Service Act.

Like Mr Payne, I have read with care Dr C K Allen's book, *Law and Orders* and like him I have no pronounced political views, and I am as anxious as anyone to see a democratic health service established. Mr Payne has expressed my own views, and the views of many of my colleagues with whom I have spoken, with a clarity and a felicity of expression which I could never hope to equal. In my ignorance I do not know what high office he holds in the counsels of the profession, but obviously he is a leader we would do well to follow, as he knows his facts, is quite without prejudice, and has the ability to convince the wavering and instruct the uninformed—I am, etc.,

Southport Lancs

R R M PORTER

SIR—There appears to be a great deal of loose thinking in the matter of whether opposition to the Health Act is or should be political. Surely the answer is clear enough. The question is political, nor can it be otherwise, as it deals with objections to a method of government by a political party. The sneer that opponents are actuated by political motives can only be justified if we are voting against our consciences to further political aims. I venture to say that the profession does not in general act in this manner.

May I refer for a moment to my own attitude as an illustration, I think, of an average reaction. I hold that a sincere political belief is largely ethical—i.e., it must be in support of the party which is most likely to carry out what we believe to be best for the people of our country. I am cynic enough to believe that most MPs of all parties are not living up to their expressed utterances or even in fact to the ordinary standards which we expect of those whom we meet in everyday life and would make our personal friends. So I vote for the party which I consider more likely to carry out my own personal wishes in legislation, and that usually happens to be the Conservative Party. I was not in the least pleased with Mr Churchill's action in launching a Health Service Bill while the war was still on and the profession far too busy with war work to give any time to serious consideration of the shaping of such a Bill, and I doubt whether we could have been sure of getting our minimum requirements for our patients and for ourselves from the Coalition Government, but we were at least invited to discuss and negotiate in the preliminary stages. The Labour Government has refused to consult us before the passing of the Act so we are fighting a political battle willy-nilly, and fighting it as anti-Socialists in this respect.

When I read the last paragraph of Dr Cardew's letter in your issue of Jan 4 (p 29) I realized that we are even in your columns being treated to the typical oratory of the soap box. The unctuous assumption that he possesses all the virtues and that we, poor inhuman wretches, have been grinding the faces of the poor for years is just such typical nonsense and might so easily have emanated from Transport House. Surely Dr Cardew has something more intelligent to say than this. Perhaps he will come down to brass tacks and tell us frankly what he thinks of Willesden and of the "absent treatment" by medical men in the Ministries of Dr Foxell's Birmingham patients. These are the vital things we are up against and must settle before it is too late. After all, quite a proportion of our profession still does put the patient first and resents only Socialist advice on how to be kind to humanity.

So may we not clear the air a bit by acknowledging frankly that this is a political struggle and that we are rather hypocritical when we emphasize that the other man is holding honourable and sincere views etc., etc. It sounds nice and broad minded, but we just don't think it's honourable to deprive a dying person of what is necessary for his comfort and existence at the behest of stupid people in Whitehall. We don't think it's just a naughty, mischievous action to try to discharge the staff of a hospital (desperately badly needed) to please the trade unionists who are running this Government and we are fighting the Act because we see, if we have any intelligence, that these things are just those that can occur much more easily under the Act and undoubtedly will—I am, etc.,

Maidenhead Berks

A DANGERFIELD

SIR—I have just seen the pamphlet issued by the British Medical Association entitled *Your Doctor or the State's Doctor Which Do You Want?* As an ex-member of the Indian Medical Service I wish to protest at the travesty of the facts contained in the pamphlet regarding medical officers of the Forces and the medical treatment of Service cases. The first duty of Service medical officers is to prevent disease, and secondly to provide treatment for sick and wounded. The object of the latter is to return their patients to duty as soon as possible compatible with the interests of the patient. They are definitely responsible for and also to the patient. They certainly are responsible to their superior officer in the same way that a house-surgeon or registrar is responsible to his chief.

Regarding promotion and pay increases length of service is the main factor where the medical officer is in every way suitable but annual confidential reports are the main basis on which accelerated promotion and specialist appointments are made. These confidential reports must be seen and initialled by the officer reported on immediately after initiation and again when higher authority has made any remarks. The medical officer has the right to query any remarks on his report which he may consider adverse.

I take particular exception to the remark in the pamphlet "but for minor complaints and worries the prescription of a No 9 pill and the command Dismiss!" This is a libel on Service doctors as it would be on private practitioners from whom Service doctors are drawn. I wonder if the writer of these remarks dates back to the South African war, when, I understand, there was a ditty sung to the tune of "Clementine" as follows: "Every ailment from a velvet sore to a dislocated spine can be cured, in a moment, by a dose of No 9." I also consider the remarks, "The task of the Forces doctor is to make all ranks fit for duty and to protect the Pensions Fund" as most unjust. The medical officer's duty is to keep all ranks fit as far as possible and, in questions involving pensions to give his true opinion, based on medical grounds—I am, etc.

Newmarket Suffolk

W L WATSON,
Colonel I.M.S. (retired)

SIR—Modern methods of propaganda especially when they are used in conjunction with what Douglas Reid calls "infiltration" [sic] can accomplish almost anything. The rape of Czechoslovakia, which was Munich, was greeted with widespread rejoicings in the House of Commons: there were few dissentient voices. It was not until Hitler had completed the dirty work that public opinion was profoundly shocked.

History repeats itself. Our profession has been divided and inexorably lured to the very brink of the Gadarene slopes, and now the final softening-up process is in full swing. There is a glut in red herrings, and many of those who voted No and intended to stand firm are being swept off their feet as yet another minority attempts to impose its will. The recent action of the Presidents of the Royal Colleges is hailed by the *Yorkshire Post* as "statesmanlike" (though other names have been given to it), *The Times* nods her venerable head in approval and even the *Daily Mail* says that "the doctors will make a great mistake if they do not accept the Minister's invitation to

negotiate concerning their objections *within the framework of the Act*

If our objections could have been met within the framework of the Act, why the plebiscite? Surely those of us who voted 'No' did so because we believed that the Act itself required amendment in certain vital aspects. That situation has not changed at all though there seems to be a conspiracy to make everyone believe that it has. The future well-being of our profession and of those we serve is at stake, it lies most assuredly in our own hands if we will but stand by our principles—I am, etc.,

Hessel E Yorks

R HFRMON

National Service for Health

SIR,—Dr H B O Cardew (Jan 4, p 29) refers to the Labour Party publication called *National Service for Health* and states that the Act in no way conflicts with this announced statement of policy. This is a matter of opinion, since different people anticipate the results of the Act in different ways.

There can be no doubt, however, that in one important respect the statement of policy in that publication is directly at variance with a statement made on behalf of the Government in the House of Lords during the debate on the Bill. The booklet states on p 18. In the Labour Party's opinion, therefore, it is necessary that the medical profession should be organized as a national, full time, salaried, pensionable Service. In the House of Lords the Earl of Listowel the Postmaster-General used these words. It was not and never had been the policy of the Government to institute a full time, salaried medical service, or indeed to do anything else that would wreck the whole health scheme from the outset. Perhaps Dr Cardew would like to try and explain these diametrically opposed statements, which he has apparently preferred to overlook—I am, etc.,

Hungerford Berks

D H STUART BOYD

The Act and Freedom

SIR,—We have, thank God, won the first battle for freedom but many of our profession still seem to think that the new 'Health Act' is a measure about health. This is a fundamental mistake. The title is entirely misleading. The real object of the Act is complete political and economic power over the profession, hospitals, and patients. It is a major part of a vast scheme for planned control of the nation and of every individual in it. Already our liberty is immensely curtailed compared to what we had ten years ago and month by month our freedom in all directions is being diminished.

We the medical profession, are now the strongest and biggest obstacle to State domination and State control. We must stand firm. We must insist on every one of the objectionable clauses in the Act being dropped completely before we will work under the Act or insist on a new Act without any such clauses being brought forward.

The B M A has done well but only at the last. Much more publicity and information should be given at public meetings in the towns and in the Press. 'Only be strong and very courageous.' We must act with persevering courage and confidence. We have the power, and if we use it now to throw out this infamous and un-English Act we shall have struck a major blow for freedom. We shall have begun to win back liberty not only for ourselves but for every man woman, and child in England—I am, etc.

Winchester

SYBIL TREMELLEN

Medicine and the Ministry of Food

SIR,—As a pathologist I was very interested to read in the *Journal* of Jan 11 (p 69) that the advisers of the Ministry of Food had furnished Dr H Foxell with the following information. Our advisers are of the opinion on the pernicious anaemia is completely controllable by modern therapy. It would seem therefore in view of this information that I have discovered a new disease rare enough I agree, which consists of a macrocytic anaemia associated with gastro intestinal disturbance subacute combined degeneration of the spinal cord, and the bone marrow of an Addisonian type of pernicious anaemia, which gives little or no response to liver or any other form of modern therapy.

During the past few weeks I have spent some time reading the current English, American, and Russian literature dealing with the relationship between protein deficiency, in particular deficiency in amino acids, and macrocytic anaemias in general. Perhaps I have been wasting my time and should await further bulletins from the Ministry of Food—I am, etc.,

Southport Lancs

JOHN H HANNAN

The Plebiscite

SIR,—At a meeting of the West Sussex Division of the B M A on Jan 12, I was amazed at the confusion, which exists among doctors about the plebiscite. Many, like myself, had voted 'Yes' and were not at all clear whether this implied approval of the Act as it stands or approval of negotiation. To my mind the plebiscite has tended rather to confuse the issue and has divided the profession into three, and not two, groups: (a) those in favour of the Act as it stands, (b) those against the Act as it stands, but in favour of negotiation, (c) those against the Act and against negotiation on it. There is no means of telling what proportion of those voting 'Yes' fall into group (b), and my impression from this meeting was that this proportion was high. It is important for the Minister and the profession to know this proportion as it will profoundly influence what action each should take.

The Minister and the profession are each endeavouring to create a comprehensive medical service which will be in the best interests of the public. It does seem a great pity that all negotiation between them should cease. What the profession has expressed is not a refusal to negotiate but a refusal to negotiate on the Minister's closed terms—the Act as it stands. In his latest letter Mr Bevan has adopted a more conciliatory tone, but can still only negotiate within the terms of the Act. The percentages in the plebiscite show that it is the general practitioners who need to be conciliated. May I suggest to the Minister that the most thorny point remaining would appear to be the goodwill of their practices. If the Minister is sincere about the points he has raised in his letter, including appeal from the decision of the tribunal, then it should be possible to reach a compromise—I am, etc.,

Chichester Sussex

JOHN D WHITESIDE

SIR,—The voting in the recent plebiscite indicates that the majority of doctors under 40 are in favour of negotiations, while a majority of those over 40 are against. It would be interesting to know what proportion of delegates at the forthcoming Special Representative Meeting belong to each of those age groups. The discrepancy between the result of this vote with its narrow majority in favour of suspending negotiations and the overwhelming majority vote against the main principles of the Act at the last Representative Meeting needs some explaining. I believe that the older age group is in a large majority at those local meetings where the representatives are elected. I cannot think of any other explanation.

Recent experience has shown that to get us anywhere we need a 90% backing of our members. We have not got this backing in this matter, and I believe that this small majority vote does not warrant the suggested action of Council, which will only succeed in splitting the profession and will get us nowhere—I am, etc.,

Nelson Lancs

T D CULBERT

SIR,—Most of my medical service has been performed abroad where I have learnt to appreciate virtues other than British, but such racial pride as I possess is founded on my kinship with the millions of sturdy men and women who have made us what we are, with the 'village Hampdens' as well as with the Cranmers and Cromwells, Miltons and Bunyans, Wesleys and Wilberforces of British history. Can we not then consider the subject of the plebiscite purely from its ethical aspect? Is this Act such as our fathers would have laid down their lives for? Surely it hasn't come to this that we must ask how others will vote or act before we decide to stand by or reject principles? What has the crowd to do with our conscience?

Let us have unity by all means if we can win men to our self and serve only the best. Men may accuse us as like, but as many of us see it we face a crisis in our nation.

life If freedom to treat the sick in the time-honoured personal way, regardless of time and strength and cost, is to be sacrificed to soulless regimentation, then a big step will have been taken away from the freedom of the personality for which thousands have suffered and died A national Service, yes! Equality of treatment, yes! But not at the price of becoming robots

There seem to be three main streams of thought represented in the correspondence, the political, the selfish and the altruistic Can we not all seek to join the last, or at least keep the plane of discussion above selfish or party levels?—I am etc,

Liverpool

FRED R CRADDOCK

A Realist Considers the Plebiscite

SIR—Whatever the plebiscite may or may not have done it has at least shown that most of us are in medicine to get the best living we can out of it The majority of the consultants vote "Yes" because they see private practice remaining *in statu quo* and a chance of getting paid in the future for doing what they do now for nothing Those employed in public health work and municipal hospitals vote "Yes" because they don't see how they can be any worse off, and they might possibly gain something The G.P., seeing before him the swings of decreased income and control increased to potential tyranny—but no compensatory roundabouts—votes No Then he shrugs his shoulders, grabs his bag, and trots off to his branch surgery

Now that the pietistic twaddle recently so freely spewed about the Press has been debunked, let the Minister realize that we are a body of craftsmen ready and anxious to do a decent job for decent pay and decent conditions of service Let him now put forth some definite and positive offer in respect of (a) remuneration, (b) compensation, (c) working hours, instead of the hideous blackmail of "If you don't sign on the dotted line on the proper day you get nothing" Failing this let him huff and puff and threaten to blow our house down as much as he likes, while we will continue our work as in the past, fortified by the knowledge that no service can be implemented without the co-operation of the poor G.P.—I am, etc,

West Wickham Kent

F M SANDFORD

Amending the Act

SIR—Acts are made by Parliament, but the regulations are made by the Ministers concerned To alter an Act needs the assent of Parliament, whereas the Minister can alter his regulations at will The three Presidents in their letter to Mr Bevan (Jan 11, p 66) state that "the implications of some of the proposals for the new Service are not clear to the profession" The specialists may be confused but the majority of G.P.s are not, although both need very definite reassurance from the Minister Mr Bevan's answer is crystallized in one sentence of his reply "I shall endeavour to meet any views of the profession which do not conflict with the principles of the Act" Put clearly this means that he is eager to negotiate about the regulations—i.e., the details, furnishing, and trappings of the measure—but is not prepared to take any steps whatever to remove the bars and padlocks on the structure of the Act which make it a potential prison for the freedom of patient and doctor alike

If the B.M.A. therefore decides that it would be futile to enter into discussions on regulations and details while the majority of doctors are opposed to the very structure of the Act then the Association has three courses open to it (one of negative inertia and two of positive action)

(1) Let the Council of the Association state (a) whether it proposes to let matters slide in the belief that the ballot results indicate that the profession will not work the Act or (b) whether it realizes that matters have gone too far (particularly with regard to hospitals) to regain the *status quo*

(2) In the latter event the Council should take action by obtaining the detailed opinion of the profession on the seven principles at stake then in consultation with the best legal advice work out such amendments to the structure of the Act as would enable the profession as a majority to co-operate wholeheartedly in working such an amended Act

(3) Having mapped out such amendments as are essential to satisfy the majority of the profession both from the doctors and the patients viewpoint, the Council should then employ the ablest journalists and publicists to put the profession's view before the public and thus pave the way for an amending Act

It would be far better to make a voluntary levy of 10s per member in the immediate future to provide some £20 000 for a fighting fund to finance the above projects and ensure a successful Health Act, rather than wait for the enforcement of the present Act as it stands and then make a levy of £25 per member for a 'failure fund' to assist those who will be hard hit if they stay outside a bad service on questions of principle—I am etc,

Dorchester Norfolk

E IVIMY PUDDY

Disunity in the Profession

SIR—The medical profession is at present wasting a great deal of breath, temper, and time in discussing whether or not it should negotiate with the Minister of Health Anyone who is familiar with the present trend of opinion among Service doctors and—more important—students knows that, as with the Lloyd George scheme of 1911, the Government, determined to bring in the system, will find or create doctors who will work it, no matter if the B.M.A. negotiates, refuses to negotiate, or stands on its head The medical profession is—let us face it—woefully disunited, and this disunity is at the root of our troubles, for while other groups of working men have been for the past few decades, steadily improving their pay and conditions by corporate action and collective bargaining the medical profession has secured scarcely any improvement at all Indeed, having regard to the increased taxation and cost of living one may say our material prosperity has probably declined

If the doctors were to unite in a single, universal trade union (based at any rate upon the B.M.A.), they could enormously improve their pay and conditions within a few years Think of it six weeks' holiday with pay every year, a 40 hour week, a secretary for every practitioner, retirement with pension at 55 or 60 We might even force local authorities to pay nurses almost as much as shorthand typists There would be no need to worry about public sympathy with our demands, any more than the lorry drivers or coal miners do

One realizes of course that the present generation of doctors are not likely to act together in this way Many would altogether object to the principles involved some are too shortsighted, some are too lazy But it does seem that doctors of the future may smile as they look back upon this present pointless struggle—I am, etc

Crowthorne Berks

GERALD O GORMAN

Foretaste of Control?

SIR—I beg space to make comment on Dr Wilfred Harris's letter (Jan 11, p 69) on the subject of the Ministry of Food's reply to Dr Foxell's request for extra fat for his now posthumously famous patient Dr Harris would seem to maintain that whereas in this case the Ministry was fatuous in its reasons for refusal, he would regard it as more sane if a panel of experts, advising about a patient they had never seen, refused what was required to maintain life on the grounds that life would in any case terminate shortly, even with the extra nutrient recommended by the attending physician I do not know how Dr Harris would reconcile this sentiment with the spirit of the Hippocratic Oath or with even the most attenuated forms of humanitarian morality but I trust that the number of the profession who would be willing to withhold prescription from patients whom they had never seen, but whose poor prognosis they had gleaned from another's letter, would be few I, personally, would prefer any amount of Ministerial muddle, misunderstanding and delay to this

As to the waste of six persons' butter ration perhaps I am insane enough to believe that even in this utilitarian age which begets sentiments akin to those of Dr Harris the average Englishman would willingly forgo one eight-millionth part of his weekly allocation if this went to ameliorate the condition of a sick fellow—I am, etc,

Orpington Kent

BRIAN D JOHNSON

Health Centres

SIR—I have recently read with great interest an account in the lay Press of a scheme at Dartford, Kent, whereby four practices, involving eight doctors, have been merged into one. Three main surgeries have been provided, and the arrangement enables each doctor to have one day off per week, together with alternate Saturdays, night duty being by rota. Some time ago I put forward a plea in these columns for the early establishment of health centres and regular working hours under the proposed State Medical Service, so I am naturally pleased to see that some others at least share my views. It would be very interesting to have the views of other medical men on this project, and it is to be hoped that the Dartford doctors will be good enough to inform the profession as a whole of the success or otherwise of their scheme in due course.

After eight years of general practice in various parts of the country I must confess myself unable to understand or appreciate the "freedom" which we are supposed to enjoy at present and which so many doctors, writing each week in this *Journal* are so afraid of losing. Most of us already take N.H.I. patients, whom we are bound to attend at all times, and are in addition the virtual slaves of the rest of the community. In theory one can accept only the patients one desires, in practice, as everyone knows, one must take all and sundry. This being the case, I cannot believe that it is fear of "control" which is the true reason for the widespread opposition to any form of State service, nor can one assume that the reason is financial, since the overhead cost of running a practice nowadays is so great that the profits are, in general, extremely modest.

It is unfortunate that in the past we have represented ourselves to the public—falsely, I think—as a race of supermen to whom leisure and a certain amount of private life meant nothing, and that we have allowed them to persist in the mistaken belief that a patient must always have the same doctor, whatever the circumstances. No one can doubt that a proper system of health insurance will be of inestimable value to the community, but it is also clear to every general practitioner that under such a scheme the amount of work will be enormously increased. It is not too much to say that the medical man already has one of the most harassing jobs in the world. Under a State service, unless some suitable provision is made, we know instinctively that our lives will be quite intolerable.

I do not wish to appear dogmatic, but it does seem to me that this is one of the main reasons for the existing distrust and apprehension. I have yet to meet a colleague who believes that the present quixotic system is right or necessary, yet how seldom does one hear the fact mentioned in public. Possibly this is due to fear of the fatuous retort (usually made by some person with ample leisure) "Why did you become a doctor?"

With regard to the direction of doctors, which will obviously be necessary in some form to ensure a proper distribution, I think it is clear that with fixed hours, and the removal of surgery premises to a health centre, this innovation would lose most of its distasteful character, as it would enable the doctor to live where he pleased within reasonable distance of the centre. In conclusion, I would like to express my admiration for the pioneer action of the Dartford doctors and to express my hope that their project will be a success. So far from opposing the new Health Service, it appears to me that the time has come for us to confess our limitations and to request the Minister of Health to provide us with conditions which will no longer be a grave menace to our health and happiness and a constant source of anxiety to our dependants—I am, etc.

Llandudno Junction, Caernarvonshire

H. DAKIN

Supply and Demand

SIR—It seems to be a matter of general agreement that the successful working of a National Health Service (in whatever form it finally emerges) will require an increased number of doctors. The formation of Regional Appointment Boards, therefore, leads to some interesting speculations. One early result might be that Scottish, Welsh and Northern Ireland graduates would be prevented from leaving their own countries which presumably would have first claim on their services if required. If in addition the Government of Eire were to ban the export of doctors the question would then arise of whether

the population of England could receive adequate medical attention.

Further, consideration of their own needs by Provincial Boards might lead to a situation in which graduates qualifying in the provincial universities, would be tied to their own districts and, under a rigid appointments system, doctors from the Dominions might find it difficult to enter English medicine by "free lancing" in resident posts at the various special hospitals in London. What would be the ultimate fate of English medicine and surgery without these convergent and enriching streams? Perhaps, after all, there is still something to be said for the much abused *laissez-faire* and its often forgotten concomitant *laissez-passer*—I am, etc.,

Bournemouth, Hants

T. R. AINSLEY

Soluble Sulphonamide Compounds

SIR—The soluble sodium salts of sulphapyridine, sulphathiazole, sulphadiazine, etc., introduced first in 1939, have been exceedingly useful preparations for intravenous injection especially in the unconscious patient. Their great disadvantage, as is now well known, is their high alkalinity and consequent liability to cause irritation and even necrosis in the tissues unless they are highly diluted. This property is occasionally dangerous—as when, by some inadvertence, these preparations are injected undiluted into the theca, the brachial artery (in mistake for a vein), or the subcutaneous tissue (in mistake for a muscle). From these respective causes I have seen permanent sciatic palsy, loss of an arm, and deep sloughing ulcers of subcutaneous tissue and skin. It would seem therefore that these preparations would by general agreement be superseded as soon as a neutral preparation, proved to be harmless and equally efficient, could be obtained. This I consider has been done.

My colleagues and I have injected the preparation known as "soluthiazole" intravenously or intramuscularly whenever a sulphonamide injection was indicated in this hospital for over two years. We are quite satisfied that this preparation is harmless intravenously, intramuscularly, and even when injected as sometimes happens, deeply into the subcutaneous tissue. The pH value is around 7. The solution is not, however, isotonic. It is hypertonic. Accordingly we have not used it, nor, indeed have had occasion to use it, in contact with mucous or serous membranes. The first preparation which we tried had a tendency to crystallize out in some of the ampoules, but I understand that the preparation now in use has been slightly modified to obviate this defect, and we have seen no trace of crystallization in any of our ampoules for more than a year. The ampoules of 5 ml each containing 1 g of sulphathiazole should be kept at room temperature, not in the cold.

During the course of my teaching of students and post graduates I have been struck by the almost universal ignorance that the problem of the production of a soluble neutral preparation of sulphonamide in concentrated form and completely satisfactory for intravenous and intramuscular injection has been solved. Hence this letter—I am, etc.,

London SE 13

H. STANLEY BANKS

Lung Puncture and Artificial Pneumothorax

SIR—The annotation headed "Pleural Gas Analysis" (Jan 4 p. 21) makes reference to induction of artificial pneumothorax and raises the interesting question of the frequency of lung puncture during this operation. During the induction of well over one hundred artificial pneumothoraces during the last year I have had two cases of *tension* pneumothorax, which followed the inductions within a few hours. In these cases emphysematous bullae were found on the lung surface at subsequent thoracoscopy, and probably the development of the tension element in these cases was due to puncturing these bullae.

That a leak of air at the lung surface does, however, much more frequently occur when it is punctured than these two cases suggest I have no doubt, because I have often been struck by the greater degree of collapse of the lung seen when screening the patient after induction than could be accounted for by the amount of air introduced. Since the great majority of artificial pneumothoraces very soon "stabilize" themselves without any tension element developing, some mechanism must be at work to close this puncture hole. I think it can

simply be accounted for by the relaxation of the previously stretched lung surface afforded by its collapse, which allows the edges to appose sufficiently to close the gap even during inspiration. A simile would be the pin prick in a piece of stretched sheet rubber that closes when the tension is released. In the case of the punctured emphysematous bulla, on the other hand, elastic tissue is reduced in its wall and the lung relaxation will not assist the closure of the puncture to the same degree. Especially will this be the case on inspiration, when the lung surface will be more stretched than on expiration even when partially collapsed. Thus a "ball valve" mechanism is not difficult to visualize where air is admitted to the pneumothorax space during inspiration but cannot escape during expiration, producing an ever-increasing air pressure within the pleural space.

The opportunities for puncturing the lung at induction are great, and I think the incidence is high. Most tuberculosis workers must have been struck by the number of times the lung has obviously been punctured with no attendant ill effects. However carefully the induction is done, air may be withdrawn into the novocain syringe when making sure the needle is not in a vessel, or lung pressures may be obtained on the manometer with the induction needle itself penetrating the lung. I would suggest, therefore, that in the great majority of cases it does not matter if the lung is pierced as the mechanism described above protects the patient from ill effects. Although my series is very small and no definite conclusions can be drawn from it, it is, I think, significant that emphysematous bullae were discovered in the two cases developing a tension element. Although the lung was pierced in many other cases (as proved at induction or later by screening) no bullae were discovered on the lung surfaces at subsequent thoracoscopy—I am, etc.,

London NW 10

PETER STRADLING

Epidemic Gastro-enteritis

SIR—I take the liberty of encroaching upon your space to make a few remarks about the recent outbreaks of "enteritis" which are occurring in maternity units throughout the country. We have had sporadic cases since August, 1944, though no case was fatal and all responded to treatment. It is mostly the nursing mothers who become affected, and it is also noticeable that the nursing staff, especially new pupil midwives, are susceptible.

The onset in mothers is sudden. The patient may be quite well in the morning and yet some hours later may complain of a feeling of nausea. This is seldom followed by vomiting (though occasionally, yes), but appetite is lost and the sight of food aggravates the nauseous feeling. This is followed shortly by a feeling of abdominal discomfort, which in turn is followed by abdominal pain of a colicky nature (umbilical region). Examination of the abdomen at this time shows a certain amount of meteorism to be present and also a "splashing" sensation in the caecal area. Watery stools are passed and may number anything from three to eight daily.

Patients who exhibit these symptoms are generally in the third to the eighth day of the puerperium. The condition clears up in about four days, and its cessation is abrupt.

For those who may be interested I give the routine treatment. At the onset of symptoms nothing in the way of diet is given except milk and soda-water for 24 hours or 48 hours. At the same time two tablets (1 gramme) of sulphasuxidine is given every four hours for 48 hours. If pain is prominent and the stools very frequent tincture of opium 15 min (0.9 ml) is given t.i.d. This generally leads to cessation of all symptoms in 36-72 hours. Occasionally treatment is preceded by the administration of ol ricini 2 dr (7 ml) on the assumption of a toxin being present in the gastro-intestinal tract.

Bacteriological examination of faeces has been abandoned—all findings having been negative. Analysis of the water supply (to exclude metallic poisoning) was done, and a rough examination of the kitchen utensils failed to show any possibility of solvency of metals. We are ignorant of the cause but are inclined to think that food—especially frozen meat—may be involved.

In regard to the newborn babies we have been fortunate (so far) isolated cases have and do occur. Breast fed babies are not immune and indeed a relation can readily be established between infected nursing mothers and their babies. Our worst case was one of a breast fed infant. My own opinion is that while the mother is incubating or developing the toxin a minimal amount may escape through the milk to the infant, and while the amount is not

sufficient to cause symptoms as yet in the mother, it is sufficient to cause disturbance in the baby. A careful watch is kept in the nurseries, and as soon as an infant develops an "unusual" relaxation of stools the following treatment is adopted.

No milk of any description is given. Ol ricini 15 min (0.9 ml) is administered and 0.5% saline with glucose is given by mouth sufficient being given to satisfy basic fluid requirements—that is to say, 2½ oz (71 ml) per lb body weight in 24 hours. At the same time sulphasuxidine 0.25 g is given 6-hourly for a minimum of 36 hours. When symptoms abate half-strength boiled breast milk is given (which is sometimes acidified by adding 2-3 min (0.12-0.18 ml) of B.P. HCl dil). The feeds are increased daily.

It would be interesting to hear the treatment from other units—I am, etc.,

Burnley, Lancs

ANTHONY EUSTACE.

Aspiration of Acute Pleural Effusions

SIR,—Experience in consulting practice and in hospitals, civil and military, suggests that there is not a little uncertainty as to the indications for aspirating an acute pleural effusion. It may be due to the natural desire to prove an effusion diagnosed on clinical signs, coupled with faulty teaching of the inexperienced. Removal of a sample for demonstration to students and for pathological examination is legitimate in a teaching hospital. Aspiration is quite another matter and may be detrimental to the patient. Liaison between clinical teachers should enable every student to see aspiration of the pleural cavity (for this or for some other condition) at least once in his career, and most house-men to perform it. The indications should be clearly taught. I believe them to be as follows.

- (1) Dyspnoea at rest, particularly if increasing.
- (2) Circulatory embarrassment from mediastinal displacement, particularly if increasing.
- (3) Any suspicion of pus—for example, unduly toxic appearance, coated tongue, rapid loss of weight, swinging temperature. It should be noted here that the temperature may be very high with clear effusions, but that it seldom varies by more than two degrees in the day.
- (4) An effusion which shows no sign of absorption at the end of three weeks, particularly if fever is not diminishing. Removal of part will often lead to absorption of the remainder, or examination of the liquid may raise the question of tuberculous empyema or of neoplasm.
- (5) An underlying pulmonary condition requiring artificial pneumothorax treatment. Then it is important to air-replace the effusion before pleural adhesions develop.

I have seen a rise of temperature and increase of effusion so frequently after needling the chest in the acute stage that I prefer not to withdraw even a sample unless one of the above conditions exists, or unless there are strong reasons to suppose that the pleurisy is due to something other than tuberculosis—I am, etc.,

St Leonards-on-Sea, Sussex

E. A. WOOD

Intra-articular Injection in Osteoarthritis

SIR—Over the last eight years at the Charterhouse Rheumatism Clinic and in their private practice members of the staff have treated several thousand cases of arthritis by Grant Waugh's method of intra-articular injection.¹ Some hundreds of these were for disease of the hip-joint. I entirely agree with Dr Vernon Heitnerington's warning (Dec 28, 1946, p 1007) that for these a prolonged treatment is necessary, and also with his remarks on Dr Mawson's paper (Nov 9, p 691) which is certainly too optimistic.

The object of this letter is to draw the attention of your readers to the advantage of using acid potassium phosphate (APP) and acid magnesium phosphate (AMP) rather than lactic acid for the larger joints, as the effect of the injection is more prolonged, consequently the treatment which is by no means painless, need not be administered so often. I make no claim that the salts are more effective than the acid as we have made no comparative tests, but merely that the effect is more prolonged.

In practice for a hip-joint 20 ml of APP is used on the first occasion as AMP is sometimes followed by considerable local reaction. A fortnight to three weeks later 10 ml of AMP is injected, and thereafter the interval is judged by the tendency to relapse, which may be from a month to six weeks. Usually six or eight injections are sufficient.

Personally I now always use the anterior approach to the joint. In about 10% of cases some fluid is present, which should first be aspirated before the injection is made. As much as 35 ml may be withdrawn. For the smaller joints A.M.P. should not be employed, but it is excellent for knees and shoulders—I am, etc.,

London W 1

H WARREN CROWE

REFERENCES

- ¹ Grant Waugh W. *Lancet* 1938 1 487
- ² Crowe H W. *ibid* 1944 1 563
- ³ ——— *ibid* 1946 1, 590

Chemotherapy in Virus Diseases

SIR,—May I, greatly daring, be allowed to question the accuracy of a statement in the leading article on "The Chemotherapy of Tuberculosis" (Dec 7, 1946, p 862)? You say "There is so far scarcely a hint that viruses are susceptible to any such [chemotherapeutic] attack, and nothing that we know of their properties and behaviour encourages belief to the contrary." Viruses are large protein bodies, and while little is known as to how they get into a living cell it seems probable that they do not ordinarily multiply except in the intercellular phase. Human beings after attack seem able to develop some method of sterilizing the viruses and acquiring an immunity which is usually permanent—e.g., measles and smallpox—though sometimes—e.g., influenza and the common cold—this immunity is lamentably transient, which suggests that there may be at least two methods of inactivating a virus. There is however a third possible way of attacking the problem besides those of actually killing the virus or in some way inactivating it. If, when once a virus has gained access to a cell, it could be imprisoned within that cell or (more hopefully) other cells have their walls made impermeable to the virus, either the virus would die out or the body have time to develop its defensive mechanism—that is, unless the original dose were already fatal. Is there any possibility that such a thing can be done by chemotherapy or any other means?

Our present knowledge about living cell membranes has recently been conveniently summarized by Jevson and Danielli in their book *The Permeability of Natural Membranes*, and I have good grounds for believing that what follows is at least agreeable to such knowledge. The cell membrane is semi-permeable, which means that it retains certain electrolytes and other substances while it is freely permeable to others. By virtue of this property the cell contents exert an osmotic pressure which distends the cell with fluid. When a child is in full health and particularly after a seaside holiday, its flesh has a full firm feel which is quite different from that of oedema. The difference is that in the healthy flesh the fluid is contained in the tissue cells while in oedema it is in the tissue spaces—i.e., it is intracellular instead of intercellular. What has happened is that something has occurred to the cell walls that has enabled them to retain products to which they were previously permeable and so their osmotic pressure has risen with the consequent firm feeling typical of robust health. (It is of course also possible that the cells might have manufactured some new metabolite which had raised the osmotic pressure but on many grounds this seems unlikely particularly as the reverse process in shock, wherein the erythrocytes soon become permeable to potassium, which is then excreted, is well known.) Now the cell wall consists of what one might consider a very fine network made up of lipoids unravelled protein molecules and other bodies making the fine semi-permeable sieve, and it is also probable that there exist some larger spaces or "pores" and that it is through such pores that the viruses and the large molecules of toxins find entrance. If therefore we could in some way diminish these pores we might expect not only to exclude stray viruses but also toxins as well. In fact we should produce health. Can this be done?

I have written of the typical health of a seaside holiday but we know that clinically many of the benefits of such a holiday can be reproduced by liberal dosage with cod-liver oil or vitamins A and D and vitamin D at least is directly produced in the body at the seaside. These two fat-soluble vitamins are chemically closely allied with substances already known to exist in the cell walls and it is no far-fetched hypothesis to suggest that an ample supply of these vitamins

would, in fact, adsorb on to the existing cell wall network so producing that finer sieve which is required to enable the cell to retain other contents and so raise its osmotic pressure. It might even materially alter the physical, chemical, or electric formation of the larger pores. (When one gets down to molecular phenomena spatial, chemical, and physical or electrical conceptions largely merge into one another but in this case the process is most easily visualized as a net or sieve.)

Now I believe that chemotherapy on these lines—i.e., the injection of large doses of vitamins A and D—does give us just the effect that I have suggested as required to limit and inhibit the invasion of the body by viruses. I have mentioned in various communications, and do not here repeat, the effect of such injections on bacterial conditions—i.e., presumably on the large toxin molecules—and also their effect on cases of influenza in a letter which attained most unexpected publicity a publicity which has, I fear, prevented many doctors from testing the truth of what I then stated and have since proved many times over, not least in my own person. Most cases of measles are hardly bad enough to warrant giving the child an injection, but in those cases where for one reason or another I have given such injections (I use "dekadexolin," which was first made for me some sixteen years ago) the subsequent improvement has been rapid and marked. Chicken pox is even less in need of chemotherapy and I have only had two cases in which "dekadexolin" seemed justifiable. They were children in whom the chicken pox had got complicated with an impetigo with the result that nearly every pock became impetiginous—a distressing complication I have not seen recorded hitherto. To both these children I gave some "dekadexolin," and the way the infection cleared up was startling in its rapidity.

The simplest and easiest virus infection in which to study the effect of "dekadexolin" is herpes zoster, a condition so painful that the occasional discomfort caused by the injection is of little account. In my experience these cases all respond the same way. If the case is seen in the erythematous stage before any vesicles have formed, 2 ml of "dekadexolin" will abort it completely. Even after many vesicles have fully matured before the case is seen I find that administration of "dekadexolin" stops the threatening areas from developing as one would normally expect, and the whole disease runs a more rapid course. I have used "dekadexolin" very little for mumps but one adult to whom I gave it made such a rapid recovery that I doubted the diagnosis until his children later developed the disease, which he insisted I should treat in the same way and with the same happy results. I have had no opportunity to treat any cases of smallpox, but during the recent epidemic at Birkenhead I found that there was no known treatment for the very severe cases, so I wrote suggesting the use of "dekadexolin." My letter only finally reached the doctor in charge while he was treating the last severe case. I was told verbally that there was dramatic improvement for 48 hours after "dekadexolin" was started but then the improvement ceased and the child rapidly died. No further case occurred on which to try the treatment but apparently this was the only therapeutic measure which had been followed by any improvement in any such case and the child was very bad when it was instituted. I have not seen full notes of the case so I cannot comment on it further. I am well aware that one swallow does not make a summer, but it certainly seems a treatment worth further investigation.

All this may seem a meagre result for sixteen years' patient study. My reasoning may be wrong but of the correctness of my observations I am quite convinced and where I have been able to obtain controls or the opinion of better clinicians than myself I have availed myself of them. All too often however such help has been of little use. For example during the war I had two children brought to me with muscular pains and tenderness and weakness of one leg, just like a very early poliomyelitis. The obvious thing to do was to prevent development if I could, so I gave a dose of "dekadexolin" and arranged for the mother to take the child next day to the Manchester Children's Hospital. In each case the physician there could find no trace of anything wrong. Were they cured as according to my hypothesis they might well be, or was my provisional diagnosis wrong? These are the conditions under which a general practitioner works. I have just picked up straws as I found them in the course of a busy pra-

To me they all seemed to be blowing the same way. Many years ago they caused me to formulate the hypothesis I have restated above and all the further knowledge I have gleaned seems to me to suggest that we have here a method of general application which may point the way to as signal a victory over the viruses as has been achieved in other fields by the sulphonamides and penicillin. Even in bacterial infections it is a great adjuvant to their action, for viruses it seems at present our only practicable method.

I should not close this letter without a note about the administration of 'dekadexolin'. For some reason it does not act well unless it is given into the gluteal muscles, and more than 1 ml should not be given in one spot if pain is to be avoided and absorption hastened. Absorption is probably the great problem and not at all a simple matter. One might see even more marked effects if larger doses could be given intravenously as a very fine emulsion. The production of emulsions of the requisite fineness and stability presents great technical difficulties, though I have handled them and if the general thesis of this letter is correct they would no doubt be made generally available. There may be other substances more effective than vitamins A and D. "Dekadexolin" anyhow is perfectly harmless for I have given full doses to newborn babies as well as to the very aged. I only hope that this letter may stimulate research into the physicochemical effects of vitamins as well as their catalytic actions for it may well add to our control over illness and improve the health of our patients—I am, etc.,

Winsford, Cheshire

W N LEAK

Calcification of the Thyroid Gland

SIR—I read Dr R T Shiggins's report (Dec 14, 1946, p 899) of calcification of the thyroid gland with interest. A few days later I saw a somewhat similar case which you may consider worthy of record.

CASE REPORT

An unmarried female patient aged 62 years was admitted to hospital complaining of frequent vomiting for 9 weeks prior to admission. She had had an operation for carcinoma of the right breast eleven years previously. Examination revealed a moderately wasted individual of neurotic temperament. There was a hard fixed mass attached to the mid-sternum and clinical signs suggesting metastatic carcinoma of lungs and mediastinum, abdomen, NAD.

Radiography confirmed the presence of widespread secondary deposits in sternum, lungs and mediastinum, and showed an oval calcified mass measuring 5.0 cm long, 3.0 cm broad, and 2.5 cm antero-posteriorly situated in the position of the left lobe of the thyroid gland.

Clinically the neck was normal on inspection, but palpation revealed a hard movable oval mass in the region occupied by the left thyroid lobe, which moved freely on swallowing. The patient showed no signs of abnormal thyroid activity or of local pressure.

In these circumstances, and having regard to her general condition, exploration was not indicated. The differential diagnosis would appear to include calcified lymph gland, calcified adenoma of thyroid, and calcification of the left lobe of the thyroid. In view of the standard measurements of a thyroid lobe—5 cm. by 3 cm. by 2 cm. (Gray's *Anatomy* 27th edition)—calcification of the lobe would seem the most probable. It is interesting to note that digestive symptoms were prominent in both patients, and, in each, abdominal investigation was negative—I am, etc.,

South Shields Co Durham

R T TOWSON

R.M.B.F. Christmas Gift Fund

SIR—I would like to thank through your *Journal* all who have generously subscribed to our Christmas Gifts Fund, it is a very great pleasure to be able to report that over £2,200 has been received.

On behalf of the Committee I warmly thank all the contributors and at the same time would like to express our gratitude to all the British Medical Association Divisions and Branches, Panel Committees and Medical Societies who arranged collections or who gave donations—I am, etc.

C LUTHER BATTESON
Hon. Treasurer
Royal Medical Benevolent Fund

Obituary

SIR ARNOLD LAWSON, KBE, FRCS

Sir Arnold Lawson, for many years ophthalmic surgeon to Middlesex Hospital, and afterwards a member of its consulting staff, died on Jan 19 at the age of 79. He was an exceptionally able ophthalmologist and a man of attractive personality. He was born in London in 1867, the son of George Lawson, FRCS, surgeon-oculist to Queen Victoria. One of the tasks he undertook early in his professional career was to revise and largely rewrite in 1903 the sixth edition of his father's notable textbook *Diseases and Injuries of the Eye*.

He went to Merchant Taylors School, and then began his training at the Middlesex Hospital, where he was Senior Entrance Scholar. His school career gave promise of future high achievement. He won the Hetley clinical prize in 1890, and later he became Senior Broderip Scholar. He qualified in 1891, and in the same year took the MD of the University of Brussels. In 1893 he became a Fellow of the Royal College of Surgeons. Paternal example, no doubt determined his choice of ophthalmology, and he had the great advantage of a period as clinical assistant to Sir John Tweedy at Moorfields. He joined his father in consulting practice at No 12, Harley Street, and continued at that address after his father's death and throughout his professional life. In 1896 he was appointed ophthalmic surgeon to the Paddington Green Children's Hospital, a position which he held until 1910 when he became assistant ophthalmic surgeon to his old hospital, the Middlesex, and full ophthalmic surgeon and lecturer on ophthalmology four years later. These posts he retained until his retirement under the age limit, when he was elected to the consulting staff. From 1900 to 1914 he was also surgeon to the Royal London Ophthalmic Hospital, and here again he was afterwards consulting surgeon. Other institutions with which he was associated as a consultant were the Royal Victoria Hospital and Home for Incurables, Putney, and Epsom College.

When St Dunstan's for War-blinded Soldiers, Sailors and Armenians was founded by the late Sir Arthur Pearson during the first world war, Lawson discovered there a form of service which engaged all his sympathy as well as his clinical skill. He served the institution not only as ophthalmic surgeon but as chairman of the Ophthalmic Advisory Board. His experiences among blinded soldiers were set out in a narrative, *War Blindness at St Dunstan's* published in 1922. He also served other war institutions including the King Edward VII Hospital for Officers. In 1939 he was appointed part-time civil consultant (ophthalmic) to the Royal Navy.

Sir Arnold Lawson took a conspicuous share in the advancement of ophthalmology in general. He stood aside from the semi-political aspects of ophthalmic service but he did a great deal to advance the subject on its scientific and clinical side. He was a prominent figure for nearly half a century in the Ophthalmological Society of the United Kingdom, of which his father was an original member. For very many years Sir Arnold served as its treasurer with scrupulous care. The Society had his real affection, and it was due to him and the late Treacher Collins and some others that it kept its identity and refrained from amalgamation in the Royal Society of Medicine. But he was an active member of the RSM and at one time president of its Ophthalmological Section. He also served as one of the honorary officers of the Section of Ophthalmology at Annual Meetings of the British Medical Association in 1899, 1906 and 1927. At the meeting in Edinburgh in



(Elliott and Fry Ltd)

the last of those years he read a noteworthy paper on the value of antiseptics in modern ophthalmic surgery

He was a most careful operator, and yet in some ways unconventional. While he never advocated any neglect of pre-operative precautionary measures, he thought the routine use of antiseptics in eye work in some respects proceeded from a misconception. He recalled that he was the first surgeon at Moorfields to adopt an overall, and that his revered teacher, Sir John Tweedy, right up to his retirement used his index finger to effect counter-pressure and to prevent the eye rotating inwards when making his cataract section, instead of employing fixation forceps. The results obtained compared quite favourably with those seen in later years when masks, gloves, overalls, and all the other appurtenances were, rightly, held to be *de rigueur*. Lawson himself entirely gave up the use of gloves in intraocular and strabismus operations, but he was extremely careful that no part of any instrument other than the shaft or handle should be touched by his fingers. He was accustomed to soak his hands in spirit after scrubbing, and to have a bowl of spirit by him during the operation so that he could rinse his hands at any moment.

What appears to have been his first contribution to the literature of ophthalmology was an account in 1897 of a case of orbital cyst. His father had operated and removed the cyst, and had then handed it over to his son for examination and report. From that time onwards the *Transactions* of the Ophthalmological Society contain frequent contributions from him not only set papers but remarks in discussions, generally brief but always pointed by personal experience. He described his method in operating on intraocular tumours, his employment of Thiersch grafts for xerophthalmia in the early years of this century, and his treatment of corneal ulcers by quinine. He collaborated with Sir James Mackenzie Davidson in trying radium treatment for various external diseases of the eye. Quite early in his career he published the report of an exhaustive inquiry he had made into the bacteriology of the normal conjunctival sac, and the results of that investigation, he claimed, safely guided him through many years of operative work. Apart from the revision of his father's standard work, Arnold Lawson did not write a book but articles by him on such subjects as cataract, affections of the ocular muscles, diseases of the iris and ciliary body, and sympathetic ophthalmia are to be found in various medical encyclopaedias.

He married in 1904 the eldest daughter of Andrew Clark, F.R.C.S., honorary surgeon to the King, and had two sons and one daughter. His knighthood was conferred upon him in 1920. Perhaps his last services to the profession were in connexion with the Royal Medical Benevolent Fund. He was elected president in 1945, on the death of Sir Thomas Barlow.

Dr FLORA NIHAL-SINGH died at her home in Pebmarsh, Essex, on Dec 19 at the age of 64. Miss Singh was the daughter of the first native canon of Lucknow and was born in India. She was educated at the Calcutta Medical College and the London School of Medicine for Women, qualifying M.R.C.S., L.R.C.P. in 1917. She had been a senior house-surgeon at the Essex County Hospital in Colchester before she moved to Pebmarsh, where she built up an extensive practice. She was greatly interested in the work of the British Red Cross Society and was an active member of the Colchester Medical Society. She had been a member of the British Medical Association for twenty-six years.

Dr JOHN YOUNG of Bishop's Stortford, died at the age of 81 on Dec 20. A student of Guy's Hospital, and later a house-physician and resident obstetrician there, he took the M.R.C.S., L.R.C.P. in 1891, the M.B., B.S. in the same year, and proceeded M.D. three years later. He had been in general practice for many years at Stamford Hill, in North London, before he moved to Bishop's Stortford in 1919. Though in nominal retirement, he acted as medical officer to Bishop's Stortford College, of which he was later a governor. In 1922 he was elected to the urban council and also to the old board of guardians. This was the beginning of a long period of public work. He was chairman of the visiting committee of the Bishop's Stortford board of guardians and a member of the board of management of the local hospital and of the East Herts Joint Hospital Board. He had been an elder and former deacon of the Congregational Church. Dr Young finally retired from the local council after having served for twenty-four years. Among his many other interests was the local

Beekeepers' Association, of which he was treasurer. He was also president of the local Conservative Association when that body presented him with an illuminated address on the occasion of his eightieth birthday.

Dr MARY HELEN MACGREGOR GORDON, of Newport, Monmouthshire, died on Dec 20. Dr Gordon was a daughter of the late Rev William Gordon of Arnshean, Barrhill, Ayrshire. A student of Edinburgh University, she qualified M.B., Ch.B. in 1921, and took the D.P.H. a year later. Early in 1924 she became assistant medical officer to the Monmouthshire County Council, and was also an assistant physician in the dermatological department of the Royal Gwent Hospital. She was secretary, and a former president, of the towns Caledonian Society, and had been a member of the British Medical Association for twenty-one years.

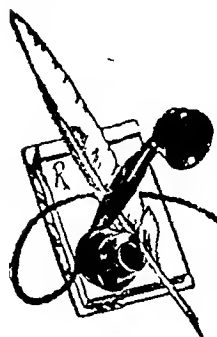
Dr Margaret M. Basham writes: Mary Gordon was much beloved in this county and will be greatly missed by a wide circle of friends and patients. Among other things, she was in charge of the V.D. clinics at the Royal Gwent Hospital for the women and children of the county. She always gave of her best and was always ready to help others.

Dr JOHN LISSAUER, who died on Dec 24, 1946, was educated at Munich, Heidelberg, and Berlin. He had specialized in paediatrics, but he had the misfortune to be a Jew in pre-war Germany. After a brief period in a concentration camp at the end of 1938, he managed to reach this country in February 1939. Later he became assistant medical officer of health and assistant school medical officer at West Hartlepool. His wife, who survives him and is also a doctor, joined the Middlesbrough school medical service at much the same time.

Dr CHARLES LLEWELLYN LANDER, who was 73, died on Christmas Day at Gillingham, Dorset, where he had been residing since his retirement from practice in Plymouth in 1934. He had been consulting surgeon to the Prince of Wales's Hospital, Devonport, and had served on the surgical staff there for some thirty-five years. A member of the British Medical Association since 1902, he took a keen interest in medico-political affairs. He had been chairman of the Plymouth Division and representative at the Annual Representative Meeting in Glasgow in 1922. He was also an active member of the Plymouth Medical Society. In the 1914-18 war he served with distinction, and was awarded the M.C. and the D.S.O. while in command of the 2/3 South Midland Field Ambulance. He was a J.P., and for many years a city councillor and vice chairman of the public health committee. Although devoted to the voluntary hospital he firmly advocated the introduction of the municipal hospital system and foreshadowed mutual benefits from close co-operation. A first class chess player he reached the semi-final of the B.M.A. Melbourne Chess Cup competition in Plymouth in 1938. Of a kindly and sincere disposition he was beloved by his patients, and his opinion, in debate or at the bedside was always appreciated by his colleagues, who will ever remember him with the highest affection and esteem. Dr Lander is survived by his widow, one daughter, and two sons. One son, Dr Oswald Lander, practises in Plymouth.

Dr ALEXANDER JOHN GIBSON died in a Glasgow hospital on Dec 27, 1946, at the age of 56. It was with great regret that the members of the Ayrshire Division of the British Medical Association learned of the death of Dr Gibson, the only son of the late Mr and Mrs James B. Gibson of Baillieston, Glasgow. Dr Gibson had had a distinguished career. He served in the first world war, gaining the D.S.O. and retiring with the rank of lieutenant-colonel. Between the wars he was in active practice in the Royal Burgh of Irvine and took a leading part in the activities of the Ayrshire Division. After serving for many years as a member of the committee, he was elected chairman of the Division in 1932, continuing in office until 1934. Dr Gibson had a very attractive personality, and anything that he undertook always seemed to move smoothly. He was a first rate golfer and enjoyed membership of the Bogside course. He represented the Division in the competition for the Treasurer's Cup in 1936. In 1939 Dr Gibson rejoined the R.A.M.C. and was appointed A.D.M.S. of the 15th Scottish Division. Later he served in the Northumbrian district and overseas, in command of the 12th General Hospital in Palestine, retiring in 1945 with the rank of colonel. Dr Gibson was twice married and to his wife and his two daughters the Division has already expressed sincere sympathy.

Dr GEOFFREY WARD THOMPSON died at his home in Scarborough on Dec 27, 1946. He was educated at Rossall School, Christ's College, Cambridge, and St Thomas's Hospital. After qualifying in 1893 he was house surgeon and house physician at St Thomas's, and later house-surgeon at the hospital for



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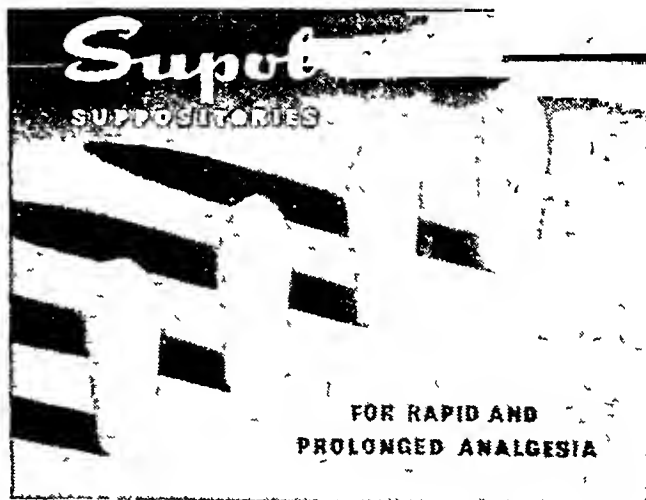
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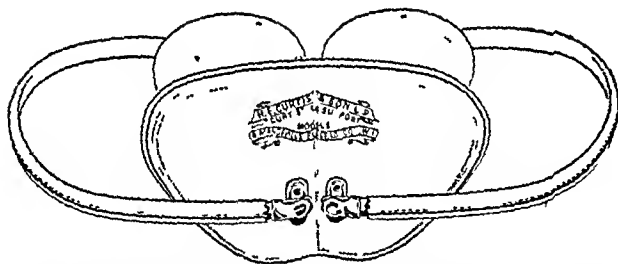
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sick children in Nottingham. He settled in Scarborough in 1895 and was in general and consultant practice there until his retirement in 1939. Dr Thompson was medical officer to Bramcote, Queen Margaret's, and Queen Mary's Schools, and medical referee for the Ministry of Pensions, 1919-39. He joined the R A M C in 1914, and served in Gallipoli, Mesopotamia, and India. He was an active member of the British Medical Association for fifty-one years, serving on all the committees of the local division and holding office as chairman in 1913.

A colleague writes: Geoffrey Thompson's interests were so wide and varied that it is difficult to catalogue them in a brief notice. They can best be summarized as primarily, his family and his profession, and then all forms of sport. In his youth he was a first class performer at cricket, soccer hockey, and athletics, and this interest in sport was retained throughout his life. In 1934 he was president of the Scarborough Cricket Festival. Thompson was a true Christian in the highest sense of the word, and his life, professional and otherwise bore eloquent testimony to this fact. He was loved and respected for his professional skill, his kindness, his unselfishness and for those characteristics that a lifetime of devoted service must bring. He will long be remembered in Scarborough as a good physician and a good man.

Dr WILLIAM HAROLD WHITE died at his home in Hindhead, Sussex, on Dec 29 at the age of 64. A son of the late Rev Samuel White, he was educated at the Clergy Orphan School at Canterbury and at St Thomas's Hospital. He qualified in 1917 and did a year's service in the R A M C. He had been a house surgeon at the Royal Portsmouth Hospital, and a house-physician at the General Lying-in Hospital in York Road before he began to specialize in obstetrics. Dr White, with his partner, founded a maternity home at Stonefield Blackheath, London, SE2. He was a keen advocate of vegetarian diets with a high proportion of uncooked food, and insisted on the special value of this regime for expectant mothers. During the recent war the main part of his maternity home was evacuated, but Dr White stayed on at Stonefield to attend patients who were unable to leave this much-bombed area. His death came only a few months after his retirement to Hindhead. He leaves a widow, three sons, and two daughters.

Dr JOHN SAMUEL MARTIN who died at the age of 82 on Dec 29 at St Margaret's Bay Dover, had been a well-known general practitioner in Kidderminster. A native of Co Down, Dr Martin was a student of Queen's College, Belfast and Surgeons' Hall, Edinburgh, and he took the Scottish triple qualification in 1892. He first of all acted as assistant to his brother, James Martin, who was medical attendant for the Kidderminster medical aid association. When his brother resigned in 1895, Dr John Martin took over as senior medical officer a position he held until 1914. During the 1914-18 war he served with the R A M C, and was at one time in command of No 4 Ambulance Train. He returned to practise in Kidderminster after the war but moved to Dover on his retirement.

Dr HERBERT STANLEY-JONES died on Dec 29. Dr Jones was an Australian who took the M R C S, L R C P in 1903 as a student of Guy's Hospital. He graduated MB B S in 1904 and was for a time house-surgeon to the Hospital for Sick Children at Great Ormond Street. He was in practice in Bournemouth until the outbreak of war in 1914 when he served in the R A M C. After demobilization he entered into partnership with Dr A. H. Burnett, but later he opened a practice of his own in Southampton. He did a great deal of work for the Ministry of Pensions in Southampton and was also well known as an examiner for some of the insurance companies. He had contributed papers on the physiology of the thyroid and the suprarenals to the medical press and he was an active member of the Southampton Medical Society. He had been a sick man for some time but he continued in active practice until barely a month before his death.

On Dec 31, 1946, ARTHUR MANTELL DALDY died at his home in Hove, Sussex. He was 77 years of age. Arthur Daldy was a student at Guy's Hospital and he qualified MB B S in 1892, winning the gold medal in medicine after taking the M R C S, L R C P in 1891. He proceeded MD in 1893 and was elected F R C S a year later. Before coming to Hove in 1905 Dr Daldy had practised for years in Surbiton. Throughout his successful medical career, for many years as a general practitioner and latterly as an ophthalmic specialist, he placed his skill and energies unstintingly at the service of the community. During the 1914-18 war he served in the 2nd Eastern General Hospital with the rank of captain R A M C. In 1914 he was appointed honorary surgeon to the Sussex Eye Hospital

and on his retirement in 1929 was elected consulting surgeon to the hospital. From 1920 to 1945 he was ophthalmic specialist to the Hove Education Authority. He had been a member of the British Medical Association for over fifty-five years, and was a past vice-president of the Richmond Division and formerly secretary and treasurer of the Brighton Division for a period of seven years. His high sense of duty, his high ethical standards, and his unfailing kindness and gentleness had endeared him to patients and colleagues alike and a large circle of friends in all walks of life will mourn his passing. He is survived by his widow, a son, and a daughter.

A colleague writes: By the death of Arthur Mantell Daldy the profession in Hove has lost one of its oldest and most respected members. In 1922 Dr Daldy became hon. secretary and treasurer of the Sussex Branch. On his retirement from this office he was presented with a testimonial from his colleagues in appreciation of his valuable work for the Branch over many years. His work as Branch secretary brought him into contact with doctors all over Sussex, and his charm of manner and upright personality brought him a host of friends among them. At the Annual Meeting in Brighton in 1913 he acted as one of the secretaries of the Ophthalmological Section. Dr Daldy was an able, courteous, and unassuming man, never seeking the limelight or pushing forward his claims. It can be truthfully said of him that in spite of his rather retiring manner he won the respect, admiration, and friendship of his fellow doctors, who deeply regret the loss of a valued colleague.

Dr WILLIAM HARTLEY THOMPSON who died at the age of 81 was buried at All Saints' Church, Bradford, on Jan 3. Dr Thompson was a student of Leeds University and qualified M R C S, L R C P in 1891. He had been a house-physician at the Leeds Infirmary before starting practice in Bradford. He was one of the original members of the medical staff of St. Luke's Hospital, from which he retired as senior physician in 1939. Dr Thompson was also honorary physician to the Bradford Children's Hospital, and after serving as a major in the R A M C during the 1914-18 war he became neurologist and medical specialist for the Ministry of Pensions. He contributed several short articles to this *Journal*, notably those on adenocarcinoma of the breast in a girl of 11 years, and strangulated inguinal hernia in an infant of 29 days. Dr Thompson had been in partnership with Dr W. G. Burnie, and his death will be regretted by all his many friends and colleagues in Bradford.

Mr CHRISTOPHER TREDWELL HOLFORD, consultant surgeon to the General Infirmary, Burton-on-Trent, died suddenly at Triverton, Devon, on Jan 4. Having been forced to retire by ill-health brought on as a result of his long period of strenuous and untiring effort as honorary surgeon to the Burton Infirmary, it was his unfortunate lot to be unable, owing to war conditions, to settle down to enjoy the quiet of Devon and the delights of angling. These were his joys. These he had looked for as the just relaxations of a man who had worked unceasingly and without complaint to the benefit of thousands in the area the infirmary served. Mr Holford was educated at Winchester and from there went to St Thomas's. He qualified M R C S, L R C P in 1902, and afterwards held surgical appointments at St Thomas's at Warneford Hospital in Leamington, and at the Royal Infirmary, Hull. He took his F R C S Ed in 1904. He then came to Burton and was in general practice until 1938, but it was as honorary surgeon to the infirmary that he was best known. His tirelessness, his unfailing consideration for patients, and his great technical skill as a surgeon soon made his name known, respected, and loved throughout the area served by the hospital. He overworked himself badly, but built up the infirmary to the high standard of efficiency that it now possesses. There will be his most lasting memorial—the new nurses' home when opened being given the name of Holford House. Throughout this busy life he gave service wherever it was required. During the years 1914-18 he was surgeon to the V A D Hospital at Burton. He was also consultant surgeon to the Yoxall Barton and Ashby cottage hospitals. A member of the British Medical Association since 1903, he was a representative at the Annual Representative Meeting in 1911, and was president of the Staffordshire Branch in 1920-1. He was also chairman of the Burton Panel and Medical Committee for many years. He was made a Justice of the Peace of the county borough of Burton-on-Trent in 1940. Christopher Tredwell Holford was a man who will be greatly missed by all who knew him—by his fellow practitioners, by his own patients and by the many who passed through his careful hands during his long office as honorary surgeon to the Burton Infirmary. A quiet, tireless, simple, honest man, he bent his whole attention towards helping those who required his aid and in the cause of the hospital he loved so much—N J C.

Dr WILLIAM MILL died on Jan 5 at St Andrew's Lyne Regis in his ninetyeth year. He was the son of the late David Mill, of Tavistock, Devon. His medical studies were pursued at St Mary's Hospital, London, where he qualified MRCs in 1882 and LRCP and LM in 1883. He was in general practice for many years at Wigan, but retired from this soon after the 1914-18 war and thereafter acted as locum tenens. This work he did regularly until 1942, in which year a fracture of the leg put an end to his physical capacity to continue. He was then 85, and his gallant struggle to earn a living excited the sympathy of both the Royal Medical Benevolent Fund and of Epsom College when he was obliged to apply to them for help which was very liberally forthcoming from both organizations. Dr Mill married Miss Etty Frederica Brooks in 1885. She died more than thirty years ago, leaving no family.

We announce with regret the death at the age of 75 of **Dr JOHN VINCENT SHAW** of Hereford. Dr Shaw was born in Colcar, near Huddersfield in 1871, and he qualified MB ChB at Leeds in 1895. He was in general practice in Yorkshire and later in Derbyshire before he settled in Hereford in 1922. Dr Shaw was always keenly interested in local affairs and particularly in housing conditions. He served on the Hereford City Council for several years and was elected mayor in 1934. He became an alderman in 1941. It was also in 1934 that he won his seat on the Herefordshire County Council. He stood for Parliament as a Liberal candidate in 1929, and again in 1935 it was suggested that he should stand for the Torquay Division, but he withdrew his candidature in order to devote more time to his municipal activities in Hereford. Dr Shaw had been a member of the British Medical Association for forty-eight years and he was also an active honorary secretary of the Herefordshire Free Church Council. He retired in 1930 but during the war years he took up practice again at Chippenham. Friends and colleagues in Hereford will all regret the passing of an invigorating personality who made an outstanding contribution to the medical public social, and religious life of the county. Dr Shaw continued his many duties as an alderman and as a county councillor up to three days before his death from acute pneumonia on Dec 22. Almost to the end he retained the buoyant optimism and cheerful disposition which had endeared him to the people of Hereford.

CATHERINE MABEL EDGERLEY was one of the first few women to qualify in Scotland. She took the LRCP, MRCs at Edinburgh and the LRFPS of Glasgow in 1894. Educated at Edinburgh and in Germany, she was at one time assistant medical officer at the West Riding Mental Hospital at Sheffield. She was also sugeon-in-charge of the Otley Division of the St John Ambulance Brigade. She contributed an article to the *Journal of Mental Science* in 1900 on the glioma of the corpus callosum. Her medical work came to an end, however, with her marriage in 1907 to Dr Samuel Edgerley, who survives her. From then onwards perhaps her main interest was in the Bronte Society, and in 1931 we published in this *Journal* a note of hers on the eyesight of the Brontes and in the following year a discussion of the causes of death in this remarkable family. She was for seventeen years the secretary of the Bronte Society and a frequent contributor to its *Transactions*.

Dr FREDERICK CRICHTON MATTHEW will be greatly missed in Cornwall by a small circle of doctors who knew him well and by a large number of the general public who knew him intimately, chiefly in his home town of St Ives. Dr Matthew qualified in Edinburgh in 1900, took the FRCS Ed two years later and proceeded MD in 1903. He was a resident surgeon at the Edinburgh Royal Infirmary for a brief period. He came to Cornwall in 1905 before the motor car had invaded the quiet, winding streets of this pleasant little Cornish town. From that time onward with one break during the first world war, when he served as a captain in the RAMC, he worked for the people of St Ives with a devotion which can seldom have been surpassed. He rarely took a holiday, and when he did he was always impatient to get back to the job. He had few hobbies or interests outside his professional work, and in later years he had little interest in medical politics. Despite his academic distinctions he remained a general practitioner and did not practise as a surgeon. Though he was shrewd in judgement and accurate as a diagnostician his sense of devotion to duty and the affection he evoked in the warm-hearted Cornish people among whom he worked were what most impressed those of his colleagues who came to know him. The profession in Cornwall will mourn the loss of a loyal friend and great gentleman.

The Services.

HRH the Prince Regent of Belgium has conferred the Chevalier of the Order of Leopold II with Palm and Croix de Guerre, 1940 with Palm upon Capt A R Turnbull and Lieut A N Wright, RCAMC, in recognition of distinguished services in the cause of the Allies.

The Bronze Star Medal of the USA was presented to Major H G McQuade, RAMC at the US Ambassador's residence in London on Jan 3 by Major Gen Bissell (Military Attaché), for meritorious achievement in connexion with military operations against the enemy in Italy from April 9 to 29 1945. The Efficiency Medal (Territorial) has been awarded to Capt (Hon Major) G W Thomas Lieut (Hon Capt) C J Stokes and Lieut R D Sim, RAMC, and Capt (Temp Major) Janet E Leng, employed with the RAMC.

DEATHS IN THE SERVICES

Col JOHN HEATLY-SPENCER CBE, MD, FRCP, who died at Kew on Dec 31, 1946, aged 68, was a distinguished member of the Royal Army Medical Corps. He was educated in New Zealand and at Charing Cross Hospital and qualified in 1906 at the London University. He was elected a Fellow of the Royal College of Physicians of London in 1935, after passing the MRCP in 1921. He obtained a commission in the RAMC in 1906 and served in India and in various parts of Europe in the first world war. In 1923 he took the DTM&H, Cambridge and held the important post of professor of medicine at the Millbank RAMC College from 1929 to 1934. He then became professor of tropical medicine at the College and consulting physician to the British Army until 1937 when he retired. He established a reputation as a sound physician, which led to his election to the coveted fellowship of the Royal College of Physicians—a position which few Army Service officers have attained. He was appointed Hon Physician to the King in 1935-7. For his long and meritorious service he was awarded the OBE in 1927 and the CBE in 1937. In 1928 he had changed his name from John Heatly Spencer to John Heatly as Colonel R A R of O and as a member of the Ministry of Pensions tribunal in 1944. He was also a member of council of the British Medical Association in 1939-40. He leaves a wife and two daughters to mourn his loss.

Col LEWIS AUGUSTUS CLUTTERBUCK ASC (retired), died on Jan 2 at Falmouth at the age of 92. He had an unusual career, for after being educated at Sydney College, Bath he obtained a commission in the Army in 1872 and saw active military service in the Sudan in 1882, held various staff appointments, and retired from the Army after thirty years' service. He then turned his attention to the study of medicine as a hobby. He qualified at Edinburgh in 1899 and soon after in Glasgow and Dublin. In 1904 he obtained honours in the Durham MB, BS, and in the following year he passed the MRCP. Yet he never practised medicine except for serving on recruiting and pension assessment boards during the 1914-18 war. He lived at Falmouth and was interested in special treatment clinics, orphanages, and similar institutions, up to very recently. He will be missed by his many friends.

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In a Congregation held on Dec 14, 1946, the following medical degrees were conferred:

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An intensive postgraduate course in surgery will be conducted in Dublin from April 14 to June 12, and will consist of afternoon clinical sessions at the main teaching hospitals with correlated demonstrations in the anatomy and pathology departments of the College. The fee for the course is £21 and, as numbers will be restricted, those intending to join should make early application to the Registrar of the College Prof W N Rae DSc St Stephen's Green, Dublin from whom detailed particulars can be obtained.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW

Mr Philip H Mitchiner will deliver a lecture on "Surgery in Two Wars" in the Hall of the Faculty 242 St Vincent Street Glasgow, on Wednesday, Jan 29 at 4 pm.

No 1

EPIDEMIOLOGICAL NOTES

Discussion of Table

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Jan 4

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year for (a) England and Wales (London included) (b) London (administrative county) (c) Scotland (d) Eire (e) Northern Ireland

Figures of Births and Deaths and of Deaths recorded under each infectious disease are for (a) The 126 great towns in England and Wales (including London) (b) London (administrative county) (c) The 16 principal towns in Scotland (d) The 13 principal towns in Eire (e) The 10 principal towns in Northern Ireland

A dash — denotes no cases a blank space denotes disease not notifiable or no return available

Disease	1947					1946 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	61	8	32	1	—	53	4	34	3	2
Deaths	—	2	—	—	—	—	—	1	—	—
Diphtheria	242	19	65	33	6	469	31	172	85	14
Deaths	4	—	2	—	—	12	1	4	—	—
Dysentery	65	2	17	—	—	285	32	38	2	—
Deaths	—	—	—	—	—	—	—	—	—	—
Encephalitis lethargica	—	—	—	—	—	—	—	—	—	—
acute	—	—	—	—	—	—	—	—	—	—
Deaths	2	1	—	—	—	1	—	1	—	—
Erysipelas	—	—	40	13	4	—	—	35	9	7
Deaths	—	—	—	—	—	—	1	—	—	—
Infective enteritis or	—	—	—	—	—	—	—	—	—	—
diarrhoea under 2	—	—	—	—	—	—	—	—	—	—
years	—	—	—	—	—	—	—	—	—	—
Deaths	76	9	7	38	1	66	7	6	17	—
Measles*	10 823	359	206	28	758	771	88	32	103	1
Deaths	10	—	2	—	2	6	—	—	1	—
Ophthalmia neonatorum	67	5	9	—	—	62	7	12	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Paratyphoid fever	3	1	—	—	—	2	2	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia influenzal	1 264	76	40	5	5	1 165	99	36	9	9
Deaths (from influ	36	5	12	—	—	123	15	17	—	2
enza)†	—	—	—	—	—	—	—	—	—	—
Pneumonia primary	—	82	185	48	19	—	79	432	27	9
Deaths	—	—	—	—	—	—	—	21	—	—
Poli-encephalitis acute	1	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Polymyositis acute	9	2	1	20	—	13	—	—	2	—
Deaths	—	—	—	—	—	—	—	—	—	—
Puerperal fever	—	4	15	—	—	—	2	14	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Puerperal pyrexia‡	120	10	23	—	—	135	11	9	1	—
Deaths	—	—	—	—	—	—	—	—	—	—
Relapsing fever	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever	1 161	75	246	37	35	1 250	111	263	16	31
Deaths	—	—	—	—	—	1	—	—	—	—
Smallpox	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid fever	5	—	2	4	—	3	—	2	5	1
Deaths	—	—	—	—	1	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough*	2 030	115	68	64	62	1 048	96	37	10	9
Deaths	17	2	3	—	—	14	2	—	—	—
Deaths (0-1 year)	612	82	86	—	19	483	65	49	51	14
Infant mortality rate	—	—	—	—	—	—	—	—	—	—
(per 1 000 live births)	—	—	—	—	—	—	—	—	—	—
Deaths (excluding still	6 820	1171	851	—	177	6 291	1055	742	263	149
births)	—	—	—	—	—	—	—	—	—	—
Annual death rate (per	—	—	18.7	—	—	—	—	16.8	16.9	—
1 000 persons living)	—	—	—	—	—	—	—	—	—	—
Live births	10 882	1770	1217	—	338	7 484	1195	898	408	254
Annual rate per 1 000	—	—	24.5	—	—	—	—	18.0	26.1	—
persons living	—	—	—	—	—	—	—	—	—	—
Stillbirths	306	41	36	—	—	217	20	34	—	—
Rate per 1 000 total	—	—	—	—	—	—	—	—	—	—
births (including	—	—	29	—	—	—	—	36	—	—
stillborn)	—	—	—	—	—	—	—	—	—	—

Measles and whooping-cough are not notifiable in Scotland and the returns are therefore an approximation only

* Includes primary form for England and Wales, London (administrative county) and Northern Ireland

‡ Includes puerperal fever for England and Wales and Eire.

In *England and Wales* a large increase in the prevalence of infectious diseases was recorded during the week. There was a rise in the incidence of measles 3,755, whooping-cough 881 acute pneumonia 504, scarlet fever 218, and diphtheria 620.

The largest increases in the notifications of measles were in Lancashire 799, Warwickshire 464, Yorkshire West Riding 273 Cheshire 227, Middlesex 207 Staffordshire 171 Nottinghamshire 157, London 130 and Derbyshire 115. The increase in cases of whooping-cough was larger in the North, and especially in Lancashire 137, Staffordshire 65, Warwickshire 51 and Yorkshire West Riding 45. The only variations of any size in the local trends of diphtheria were increases in incidence in Essex 12 and Lancashire 10.

A fresh outbreak of dysentery was recorded in Gloucestershire, involving 12 persons, the only other important centre of infection was Lancashire 15.

Small increases in the incidence of scarlet fever were recorded in most areas of the country but no large local variations were reported. The chief increases in the notifications of acute pneumonia were Lancashire 70, Essex 45, and London 35.

In *Scotland* infections decreased in prevalence, in contrast to the experience of England and Wales. There were falls in the notifications of whooping cough 78, scarlet fever 53, and measles 18, the only increase of any size was cerebrospinal fever 9 and this rise in incidence was confined to the south-eastern and western areas.

In *Eire* the chief change in the trends of infectious diseases was the decrease in measles only 28 cases being notified.

In *Northern Ireland* a large increase occurred in the measles epidemic in Belfast C.B. notifications increasing from 325 to 758. An increase of 26 in the notifications of whooping-cough was also reported from this city.

Week Ending January 11

The notifications of infectious diseases in England and Wales during the week included scarlet fever 1 058 whooping-cough 1,928, diphtheria 232, measles 10,223 acute pneumonia 1,264 cerebrospinal fever 56, dysentery 87, acute poliomyelitis 14, paratyphoid 4 typhoid 4.

Medical News

The Cambridge University Medical Society is to celebrate its twenty fifth anniversary by a silver jubilee ball to be held at Grosvenor House, Park Lane W, on Thursday, March 27, when there will be dancing to Sydney Lipton's orchestra from 8 p.m. to 1 a.m., a supper, and a cabaret. The cost of double tickets (strictly limited to 225) for life members is £3 13s 6d and to non-members £4 4s. Application forms may be obtained from the Ball Committee of the society at Trinity Hall, Cambridge.

A general meeting of the Medical Society for the Study of Venereal Diseases will be held at 11, Chandos Street, Cavendish Square, W, on Saturday Jan 25, at 2.30 p.m., when Prof J. W. McLeod will give an address on "Smear and Cultural Diagnosis in Gonorrhoea".

A meeting of the Nutrition Panel of the Society of Chemical Industry will be held at the Chemical Society's rooms (Burlington House, Piccadilly, W) on Wednesday, Jan 29, at 6.30 p.m., when Prof E. Capstick will present a paper on "The Nation's Milk Supply and its Best Use". A discussion will follow. Members of the Food Group are invited to attend.

The next meeting of the British Branch of the International League Against Epilepsy will be held at the National Hospital Queen Square, London W.C., on Friday Jan 31 at 10 a.m. Papers will be read and discussed in the morning and in the afternoon. Luncheon arrangements have been made with the Royal Hotel Woburn Place, W.C.

The second International Congress of the International Academy of Legal and Social Medicine will be held at Brussels and Liège from June 25 to 28, and will be divided into five sections, legal medicine in its application to crime, social medicine, industrial medicine medico legal and social psychiatry, and scientific police. The official languages will be English and French. Those who wish to present reports or read papers should notify without delay the president of the Congress Prof Dr M. De Lact, Faculté de Médecine 7 Rue de la Gendarmerie Brussels or one of the general secretaries Prof Dr P. Moureau (47, Rue Villotte Liège) or Prof Dr F. Thomas (23, Kluykensstraat, Ghent).

Sir Ernest Cowell was last week invested by the French Ambassador with the insignia of the Legion d'Honneur and the Croix de Guerre with palms, which was awarded in 1943.

A new quarterly publication entitled *The British Journal of Cancer* is to be published as the official organ of the British Empire Cancer Campaign. The annual subscription is £2 2s, and it is hoped that the first number will appear at the end of March. The journal is for the publication of original communications concerning the causes, distribution, symptoms, pathology, and treatment of malignant disease and allied conditions. Papers upon clinical, bacteriological, biochemical, pharmacological, physiological, radiological, serological and other subjects, therefore, would be acceptable when related to this subject. The publishers are Messrs H K Lewis and Co., 136, Gower Street, London, WC1.

Since the Galton Laboratory Serum Unit (Medical Research Council), formerly at Cambridge, closed in May, 1946, Dr R R Race, the former director, has moved to the Lister Institute, London, where he is in charge of the new Blood Group Research Unit of the Medical Research Council. Dr A E Mowbray, who formerly assisted Dr Race, has become director of the new Blood Group Reference Laboratory of the Ministry of Health. This laboratory, which is part of the Ministry of Health Blood Transfusion Service, is also situated at the Lister Institute, and will provide grouping serum and investigate clinical blood group problems. The juxtaposition of these two laboratories will be of great mutual benefit and ensure the close association of the theoretical and practical sides of this subject. Hospitals and doctors requiring grouping serum should, in the first instance, apply to their local Regional Transfusion Centre, through which grouping serum will be issued.

Col Lawrence Whitaker Harrison, C.B., D.S.O., M.B., Ch.B. Glas., F.R.C.P. Ed., has retired from the staff of the Ministry of Health, to which he has been adviser on venereal diseases since 1919. Col Harrison has been associated with the control of venereal diseases in England and Wales for nearly half a century. In recognition of his work the American Social Hygiene Association awarded him the William Freeman Snow Medal for 1946. This annual award "for distinguished service to humanity" consists of a medal replica of the portrait plaque which was presented in 1937 to the distinguished American doctor, William Freeman Snow, to mark his fortieth year of service in the field of public health and social hygiene.

King Edward's Hospital Fund has received a further instalment of £75,000 from the Nuffield Trust for the Special Areas. In founding this Trust Lord Nuffield provided that any sums that might be available by way of repayment of loans or otherwise from his Trust for the Special Areas should pass to King Edward's Hospital Fund for London. A total sum of £575,000 has now been received, the first £250,000 of which was, at Lord Nuffield's request, allocated to Guy's Hospital.

After fifty years devoted to the advancement of medical publishing, including the issue of the *Medical Directory*, Mr A W Churchill has decided to retire from the position of managing director of Messrs J and A Churchill, Ltd. He will remain on the board as vice-chairman, so that the business, which was founded by his grandfather in 1825, will continue to benefit from his skilled help and advice. His place as managing director has been taken by Mr J Rivers, who joined the firm forty years ago.

The Medical Research Council have appointed Dr S T Cowan (formerly of the University of Manchester) to succeed Dr R St John Brooks as Director of the National Collection of Type Cultures of Micro organisms. The Collection continues to be housed at the Elstree establishment of the Lister Institute of Preventive Medicine but will be moved to the Central Public Health Laboratory at Colindale as soon as accommodation there is available.

The Association of Scientific Workers, 15, Half Moon Street, London, W1, of which Prof P M S Blackett, F.R.S., is president, has informed us that its membership is open to doctors and especially to laboratory workers. Its present members include chemists, engineers, agriculturists, and others.

In view of the increased supplies of pharmaceutical livers now available it has been decided to revoke the Liver Extract (Regulation of Use) Order, 1945, and the necessary Order has now been issued. The effect is that both injectable and oral preparations of liver may be freely manufactured and used in treatment.

Maj Gen Sir Alexander Ingram, F.R.C.P., has been appointed Director of Postgraduate Studies in Medicine by the Postgraduate Board for Medicine in Edinburgh. The University Medical School and the Royal Colleges of Physicians and Surgeons of Edinburgh have co-operated to establish the Board.

Prof Olympio Da Fonseca, of Brazil, who was head of the tropical diseases section of the recent Pasteur Commemoration conference in Paris, is on a short visit, arranged by the British Council, to this country, and will meet British colleagues and visit institutions concerned with tropical medicine in London and in Liverpool.

At the invitation of the Central Council of Physical Recreation and the British Council a party of French medical specialists has arrived in England to study British methods of physical recreation with a view to their possible adoption in France.

Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Effects of Tobacco

Q—Does tobacco smoke contain any injurious products and has it any demonstrable carcinogenic activity? Is the pathogenesis of the following conditions related to the abuse of tobacco: retrobulbar neuritis, arterial disease including hypertension, cardiac disturbances, peptic ulceration, leukoplakia and carcinoma of the lip, tongue, stomach and bronchus? If so how may heavy smokers avoid such unpleasant sequelae? Can tobacco stains be removed from the teeth without a visit to the dentist?

A—In addition to nicotine, cigarette smoke contains hydrocyanic acid, pyridines, ammonia, and carbon monoxide. The ammonia is responsible for some of the irritation of the respiratory passages which many confirmed smokers suffer, the pyridines are said to cause the gastro-intestinal distress of the neophyte. Tars are formed when tobacco is heated, but these are only weakly, if at all, carcinogenic when painted on the skin of mice. It is difficult to assess the extent to which tobacco can be blamed for the disorders mentioned. Publications on the subject often have a partisan flavour, and appear to be animated by the spirit which led the earlier Czars to transfix the smoker's nose with the stem of his pipe before beheading him. Tobacco amblyopia (retrobulbar neuritis) is traditionally said to occur in smokers of shag, it has been claimed that smoking causes a retinal vasoconstriction. Others hold that this type of visual disturbance is seen only in smokers who are also heavy drinkers, and that it is due to a deficiency of vitamin B₁. It has been stated that vision returns to normal when thiamine is given, even though the consumption of tobacco and alcohol is undiminished.

There is no evidence that hypertension is related to tobacco but thrombo-angiitis obliterans does seem to be more common in heavy cigarette smokers. It has been shown that smoking a cigarette is accompanied by a fall in the skin temperature of the extremities due to vasoconstriction. In some persons heavy smoking is associated with premature contractions, but there is no reason to suspect that it has any permanent effect on the heart. Peptic ulceration does not appear to be more common in heavy smokers nor does smoking affect this disorder adversely. There is no evidence for believing that carcinoma of the stomach or bronchus can be attributed to tobacco. Many *ex cathedra* pronouncements impugn it as a cause of cancer of the lip and tongue, it must be regarded as an irritant in these situations and thus as a possible aetiological factor. The only way in which heavy smokers can avoid these dangers many of them probably hypothetical, is by smoking less. Once the teeth have become discoloured there is no satisfactory alternative to a visit to the dentist.

Fluorine, Chlorine, and Milk

Q—Why is extra milk given to workers with fluorine? Is it likely to be of value to workers with chlorine?

A—There are two reasons for giving milk to workers with fluorine: (a) to take up acid in the gastric contents and therefore act as a demulcent against gastritis, (b) to prevent decalcification of the bones, by providing extra calcium. The first of these functions would apply to chlorine workers, but not the latter.

Delay in Delivery of Twins

Q—A multigravida aged 35 gave birth after five hours labour to a healthy full-term male infant. I was called six hours later on account of the presence of a previously undiagnosed twin. The second twin a healthy female infant was delivered 106 hours later. Is so long an interval rare? What is the correct management of twin delivery?

A—An interval of several hours, days, or even weeks between the birth of the first and second twins was well known

years gone by, but during this century, at any rate, it has become the established practice to intervene in cases of delayed cases such as the one described have therefore become rare. Pearson in 1880, according to DeLec, found that the interval between the two births if left to Nature varied from a few minutes up to 44 days. Any search for a record, however, is unprofitable because the longer the interval the more likely is one to become involved in the old debatable problem of overfoetation and in reports of cases of doubtful authenticity. Moreover cases in which one twin has been aborted early in pregnancy, the other remaining *in utero* to continue to develop a term, would need to be considered.

The management of twin delivery is now generally agreed immediately after the birth of the first baby abdominal examination should be carried out to make sure that the lie of the second child is longitudinal and that it is alive. If after an interval of twenty to thirty minutes the uterus remains inactive, then even in the absence of maternal and foetal distress the second bag of membranes should be ruptured artificially and the presenting part pressed into the brim of the pelvis by bimanual manipulation. Expulsive uterine contractions then follow quickly. Many prefer less conservative treatment and carry out vaginal examination and rupture of the membranes (first correcting the position of the baby) immediately after the first twin is born. Some even proceed at once to deliver the second child by forceps or by breech extraction after version. If this is done, however, the delivery should not be unduly hurried.

Although all went well in the case quoted in the question, delay in the delivery of the second baby does involve risk. The baby may die *in utero* from placental separation or prolapsed cord, so far as the mother is concerned there is always a possibility of haemorrhage, while some degree of intrauterine infection is almost inevitable.

Chronic Barbiturate Intoxication

Q—*What risks are associated with continuous and high dose medication with barbiturates?*

A—A large number of symptoms and signs have been attributed to prolonged medication with barbiturates. These include vertigo, ataxia, nystagmus, tremor, motor paralyses, squint, diplopia and facial palsy. Syndromes resembling lethargic encephalitis, bulbar palsy and cerebral thrombosis have been reported. Psychic disturbances, such as increasing lethargy, mental hebetude, depressive states, mental deterioration, mania, and a condition resembling delirium tremens, have been noted. Finally, there are records of gastro intestinal irritation, albuminuria, anaemia and porphyrinuria. In spite of this wealth of possible symptoms, it is remarkable how rare instances of chronic barbiturate intoxication are. It may be as some have held, that this is because they are seldom recognized.

Those drugs whose effect is of long duration are said to cause chronic poisoning more readily. Complete recovery usually follows withdrawal of the barbiturates for two to three weeks.

Auricular Fibrillation

Q—*A woman aged 60 has suffered from auricular fibrillation for a number of years. This has been controlled by digitalis folia 1/2 to 1 gr (32 to 65 mg) administered once or twice daily as required. Recently she has shown intolerance to digitalis and the fibrillation has returned with an apex beat of 140 and signs of congestive failure. Please advise as to further treatment.*

A—In view of the fact that the patient has developed congestive failure she should be put to bed well propped up with pillows in the position of greatest comfort. Diet should be nutritious and small in bulk, with frequent feeds, and fluids should be restricted to 2 pints (1.14 litres) or even less daily provided thirst is avoided. No added salt should be given. As digitalis folia has not been well tolerated, digoxin 0.25 mg three or four times daily might be given for the rapid auricular fibrillation, the dose being decreased according to pulse rate and general response. A heart rate of approximately 70 should be aimed at but coupling avoided. Sleep is an important consideration and for this morphine gr 1/4 (16 mg.) hypodermically (or sublingually using the hydrochloride or tartrate) should be given for a few nights provided there are no respiratory

contraindications and the response is good. It may be found by trial and error that a larger dose is needed. For the bowels an enema should first be given followed by appropriate laxatives. Subsequent treatment will depend on progress and also on the precipitating causes of the failure.

If the response is good the pulse slows and the signs of congestive failure disappear. The patient should be kept in bed for about three weeks and then gradually allowed to get up and do more, the return to activity being carefully graduated according to the response to effort. Sleep should be ensured with phenobarbitone and the diet gradually increased, but all excessive consumption of food and unnecessary fluid or salt should be avoided. If the response on these lines is not satisfactory and signs of the congestive failure persist, then mercurial diuretics should be tried, each injection being preceded by ammonium chloride gr 30 (2 g) administered four hours before Mersalyl 1 ml intramuscularly might be given first, followed by 2 ml every third or fourth day so long as the injections are well tolerated and no contraindications arise. They should be continued with diminishing frequency until the oedema has completely disappeared.

Localized Slimming

Q—*What methods are effective for reducing fat locally without reducing the weight in general? In particular, how may fat be dispersed from around the hips and buttocks?*

A—It is doubtful whether any methods are effective in reducing fat locally. An electrical device used to be sold which massaged the areas mentioned, a simpler means was a roller with an irregular surface with which the patient applied violent friction where reduction was desired. Some masseurs claim that by means of vigorous—and painful—rolling, pinching, and rubbing they can disperse local deposits of fat. The theoretical basis of all these methods is claimed to be the actual disruption of fat cells. Their efficacy is doubtful but it is likely that the energy expended in wielding the roller is to the patient's benefit.

Venepuncture by Non-medical Persons

Q—*Apart from specially trained individuals as for example in V.D. clinics should venepuncture be carried out by non-medical personnel? Is it good hospital practice to allow a ward sister or senior nurse to take blood specimens for routine laboratory tests?*

A—The question of venepuncture for withdrawal of a blood sample must be considered separately from that of venepuncture for injection of a drug. It is clear that the latter operation entails risks to the patient for which a medical practitioner must be responsible. In some V.D. clinics it is deputed to a trained orderly, although this appears inadvisable. In many hospitals specimens of blood are taken by nursing staff or by laboratory technicians, this arrangement is often expedient and there seems no reason to regard it as unethical. Inexpert venepuncture can be uncomfortable for the patient, but it is seldom, if ever, harmful. The common sense answer depends on the dexterity of the performer, and many sisters and technicians possess this in high degree.

How Penicillin Acts

Q—*How long does penicillin take to act? Is the problem one of therapy continued until all invading germs have had an opportunity of contact with an immediately lethal substance or one of gradual extinction over several generations by a maintained adverse environment which has been experienced by all the bacteria from the beginning of treatment? Can an in vitro experiment yield a precise answer?*

A—*In vitro* studies enable this question to be answered as follows. When susceptible and actively growing bacteria are exposed to a lethal concentration of penicillin growth ceases after a single generation and death rapidly ensues, sterilization being almost complete within a few hours under optimal conditions. It might be concluded from this that a single dose of penicillin should be capable of terminating an acute infection. That this is not usually so is due to at least three causes. Even in an apparently uniform actively growing bacterial population there is a very small minority of cells which are not killed, and bacteria which are not actively growing are not subject to

rapid lethal action. There will thus be survivors of the initial attack which will multiply and continue the infection if treatment is not continued. Thirdly, there may be some part of the infected area not in close enough contact with the circulation for penicillin to reach it quickly and in adequate concentration. For these reasons total extermination of the invading bacteria by the action of penicillin alone is usually not to be expected, its influence must be maintained until the normal defence mechanism has been enabled to complete its work.

Prevention of Rust on Instruments

Q—Is there any substance which can be added to boiling water when sterilizing instruments which will prevent their rusting? Is it true that borax serves this purpose?

A—It is true that rusting will not occur in water containing borax in solution, even when instruments are immersed in it for weeks. This substance is therefore included in the formula of disinfectant solutions, of which the main constituent is formalin or *p*-chlorometacresol used for the storage of sterile instruments. Two such formulae are

R		
Borax	15 g	
Formalin	25 ml	
Phenol	0.4 g	
Aq. dest.	ad 100 ml	
R		
Borax	10 g	
<i>p</i> -chlorometacresol	0.2 g	
Spirit	0.6 ml	
Aq. dest.	ad 100 ml	

The addition of borax to water in which instruments are boiled is usually considered unnecessary, since there is no time for appreciable rusting to occur unless the instruments are left in the sterilizer for some time after it has cooled. On the other hand, the addition of 2% sodium carbonate has the advantage that it enables boiling to destroy all kinds of bacteria including spores which may be unaffected by boiling in plain water.

Ergot and Ergotamine Poisoning

Q—What are the early and late toxic effects of ergot and of ergotamine?

A—A comprehensive account of the toxic symptoms produced by ergot and ergotamine is given by von Storch (*J. Amer. med. Ass.* 1938, 111, 293). The usual form of ergot poisoning is the gangrenous type, in which the premonitory symptoms are general lassitude, mental dullness, vague lumbar pains, cramp-like pains in the calves and burning pains in the extremities followed by intense waves of heat and cold. The less common form is the convulsive type, usually associated with malnutrition, in which there are contractures of the muscles of the face, hands and feet.

The first signs of poisoning due to ergotamine are nausea, vomiting, numbness, or tingling of the hands or feet, and muscle pains. The later signs are gangrene of the extremities, which usually remains dry. In a small proportion of patients there may also be insomnia and restlessness, substernal oppression, and vascular pain around the femoral or brachial vessels or in varicose veins.

INCOME TAX

All inquiries will receive an authoritative reply but only a selection can be published.

Practitioner's Expenses

J F inquires whether the cost of repairing a consulting room chair and of replacing a divan in his assistant's bedroom is allowable.

****** Yes—in both cases.

Cost of Assistant's "Living in" Accommodation

G L asks how much can be allowed for such expenses.

****** In addition to the salary paid the principal can deduct sums expended to provide the board and lodging which the assistant is entitled to under the service agreement. No rule can be suggested for calculating the amount except that it should be a reasonable proportion of the general cost of maintaining the private establishment plus any sums specifically expended for the assistant's benefit.

Letters and Notes

Nocturnal Diuresis

Dr B E READ (Shanghai) writes: Nocturnal diuresis among internees in Shanghai was most pronounced. There is no evidence that I know of to support the theory that this is due to a rice diet as suggested in Dr C Romer's letter (Aug 3 p 176). The Chinese on a rice diet do not micturate more freely than those in North China on a wheat diet, nor is a greater volume of urine excreted. I attribute the nocturnal diuresis observed to the nervous strain under which internees were living. My personal experience may be of interest. Living in one camp for 15 months in a dormitory of 67 men, I, in common with many of the others, was micturating five to six times a night. This entirely ceased when I moved to a second camp where at first I had a quiet private room. A month later I shared a larger room with a doctor and some time later I spent a year in a quiet billet with five other congenial people and had no recurrence of this trouble in an extreme form though the diet was the same in both camps. Internees were generally unwilling to acknowledge any nervous strain. One man, who before internment was in the hands of the Gestapo for about one month, two weeks after his release said he was much better, having micturated the previous night only fourteen times.

Swallowed Kirby Grip

Dr A P MACDONALD (Newark) writes: In view of Mr A M Desmond's communication (Dec 28, 1946, p 1012) the following case is considered worth recording. A child aged 2½ years was admitted to the Newark and District General Hospital on Dec 19, 1946, with a history of having swallowed a Kirby grip two days previously. There was also a history that the child had been operated on successfully for pyloric stenosis at the age of 7 weeks. On admission, the child did not complain and nothing abnormal was discovered clinically. X-ray examination showed the hair grip to be lying in the stomach. The patient was given stodge food and cotton-wool by mouth. Further x-ray examination on Dec 2 showed the Kirby grip still in the stomach, and a small quantity of barium was given for confirmation. The child did not complain of any symptoms and it was decided to wait a little longer. After the barium the patient vomited three times, and the following day one week after swallowing the foreign body he vomited the Kirby grip back with a small quantity of barium. The grip measured 2 in (5.1 cm) in length.

Disclaimer

Drs G F TRIPP, F N NEWNHAM, D M THOMSON, A B BAXTER, M J LINDSEY, T O MASON, G R FORD, C F KNIGHT (Dartford) write: We hereby disclaim all responsibility for recent Press reports on the medical service in Dartford, which were published without our knowledge or consent.

Correction

Dr J F BROMLEY writes: As honorary secretary of the Faculty of Radiologists, I would like to draw attention to the fact that your account in the *Journal* for Jan 4 (p 25) of the discussion on carcinoma of the stomach, there is no reference to the part played by the Faculty of Radiologists. In fact the bodies taking part in the joint meetings were the British Institute of Radiology, the Faculty of Radiologists, and the R.S.M. Section of Radiology, and the chairman at the first meeting on Dec 14 was our President, Dr C (Teall). This was clearly stated in the notice of the meetings issued by all three societies.

A misprint occurred in the report of Sir Allen Daley's speech at the luncheon of the City of London Corporation Health Committee (*Journal* Jan 4, p 24). Under the sub-heading 'Hygienist and Surgeon,' col 1, line 21, the date 1885 should read 1855.

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RETRODISPLACED GRAVID UTERUS

BY

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Extensive studies have shown that approximately 20% of nulliparous women have retrodisplaced uteri. Polak (1926) in an analysis of 2,000 cases found 18% of congenital retroversions in nulliparous women and 35% in post-partum women. Since 1928, 66 patients with retrodisplaced gravid uteri have been admitted to the wards of University College Hospital. They were admitted on account of threatened abortion, hyperemesis gravidarum, incarceration of the uterus, or because it was considered necessary to keep the patient under observation. It should be pointed out that many cases are seen and treated as out-patients. In addition it is hardly necessary to point out that a number of pregnant women who present themselves at the clinic with normally anteverted uteri after the 16th week of pregnancy may have started the pregnancy with a retrodisplaced uterus. According to the figures of Polak (1926) 18% of primigravidae and 35% of multiparae should have a retrodisplaced gravid uterus in the early weeks of pregnancy. This, however, would only be so if the woman with the displaced uterus were fertile.

During the years 1944-5 474 patients were examined in the antenatal department of this hospital before or during the 12th week of pregnancy, 381 were primigravidae, of whom 21 had a retrodisplaced uterus, and 93 were multiparae, of whom 6 had this malposition of the uterus. The incidence of the retrodisplacement from this small number of cases is therefore 5.5% for primigravidae and 6.5% for multiparae. Hence the incidence of the condition is perhaps greater than is generally realized and certainly much greater than that obtained from the records of patients admitted to the wards. Similarly, since those not admitted usually continue their pregnancies to a successful conclusion, the incidence of abortion obtained from in-patient records is greater than it is in fact.

Sterility

It is generally supposed that retrodisplacement may be a cause of sterility. Wilfred Shaw (1945a) states "It is common clinical experience that sterility can be cured by suspending the uterus in a position of ante flexion by operation so that it is reasonable to assume that the retroflexion of itself may cause sterility." Beckwith Whitehouse (1935) makes a similar statement "Women with a backward displacement are by no means necessarily sterile, but it has been frequently observed that after several years of non-fertile marriage cure of a backward displacement has been followed by conception. This displacement is therefore a possible factor in the causation of sterility." Ten Teachers

(1942a) state "Retroversion of the uterus either may be congenital or may occur for the first time after abortion or childbirth. That the majority of women can become pregnant with the uterus in this position is undoubtedly the case. In a small proportion, however, the retroversion would appear to be a definite cause of the inability to conceive in that pregnancy has at once followed the replacement of the organ." Fairbairn (1924a) says "Possibly they [conical cervix, pin-hole os, and retroversion] may play a part in lessening the chances of conception, but pregnancy occurs so often in spite of them that it cannot be a big part."

Among the in-patient cases under review there were 33 primigravidae. The duration of marriage before conception is known in 25 of them and two others were unmarried. Seven of the 25 married primigravidae had been married for more than 4 years, and three of these had previously presented themselves to a gynaecological clinic on account of sterility of 4 years', 7 years', and 7 years' duration. The three patients were investigated in the usual way, and each had either an insufflation or hysterosalpingography. Two conceived immediately and the third within a month of this investigation.

It seems reasonable to suggest, therefore, that any woman complaining of sterility in whom the only abnormality to be found is a retrodisplaced uterus should be investigated and treated along the same lines as would be a woman with an anteverted uterus. This investigation should include, of course, the determination of tubal patency and fertility of the husband. Only if conception has not taken place within a reasonable number of months after such investigations and treatment should operative correction of the malposition be considered in a nullipara, or manual correction and pessary treatment in the multipara if this is possible.

Abortion

Sinclair (1900), writing on the retrodisplaced gravid uterus, states "It is, in my opinion, probably the most common cause of repeated abortions in the same woman." Barnett (1941) states "Abortion is a frequent termination of the retroflexed pregnant uterus, usually occurring after about two and a half months of pregnancy, and is caused by a disturbance in the uterine circulation." Other authorities (Munro Kerr, 1937a, Wilfred Shaw, 1945a) write in the same vein.

In the present series of admitted patients there were 14 abortions out of a total of 44 pregnancies which were under observation until the termination of the pregnancy. There were a further 22 patients who were discharged from

hospital undelivered with an anteverted gravid uterus (see Table I) The ratio of abortions to pregnancies is therefore,

TABLE I—*Outcome of Pregnancy*

	Abortion	Live Child	Discharged Undelivered	Totals
Primigravidae				
(a) Before onset of symptoms of incarceration	8	17	5	30
(b) After onset of symptoms of incarceration	0	1	2	3
Multiparae				
(a) Before onset of symptoms of incarceration	5	10	11	26
(b) After onset of symptoms of incarceration	1	2	4	7
Totals	14	30	22	66

at worst, 1/3, for it is probable that, of the 22 cases, the abortions would have been readmitted, whereas the successful pregnancies might have been delivered elsewhere. Furthermore, when one considers the number of women with a retrodisplaced pregnant uterus which spontaneously anteverts while they are under observation and treatment as out-patients and who continue their pregnancies successfully, and also the number of patients who begin pregnancy with a retrodisplaced uterus but who cannot be diagnosed owing to late presentation at the clinic, it is clear that the incidence obtained must be greater than it actually is. Danforth and Galloway (1926) studied a series of 55 private patients with a retrodisplaced pregnant uterus, and found the incidence of abortion to be as low as 1 in 13.7 pregnancies. Of the 27 women with a retrodisplaced gravid uterus examined before or during the 12th week of pregnancy in the years 1944-5, only 2 aborted—an incidence of 1 in 13.5 pregnancies. Of the 447 women with an anteverted gravid uterus examined before or during the 12th week of pregnancy during the same period, 54 aborted—an incidence of 1 in 8.3.

The usual quoted incidence of abortion for all pregnancies is 1 in 5 (Malins, 1903, Wiehl, 1938), and Adair (quoted by Danforth and Galloway, 1926) states that 1 in 3+ is nearer the truth.

More detailed study of the abortions in the cases admitted to University College Hospital shows that 8 occurred in primigravidae and 5 in multiparae. There was one other abortion in a multipara with a retrodisplaced incarcerated gravid uterus. The earliest abortion occurred at 9 weeks and the latest at 25 weeks. Six of the abortions came from uteri after anteversion, six from uteri while still retrodisplaced, in another the position of the uterus is not stated and the 14th was from the incarcerated uterus. The abortions from the anteverted uteri took place 2 days, 5 days, 14 days, 7 weeks, 11½ weeks, and 15 weeks after anteversion had been attained. It would appear that the retrodisplaced gravid uterus which is destined to abort does so in spite of attaining a position of anteversion and even after maintaining the pregnancy in the new position for some weeks.

Table II outlines the treatment adopted for the patients before the onset of symptoms of incarceration. From it

TABLE II—*Outcome of Pregnancy in Cases Before Onset of Symptoms of Incarceration*

Treatment	Abortion	Live Child	Discharged Undelivered	Totals
Postural	6	12	6	24
Pessary alone	3	0	3	6
Manipulation with or without pessary	4	15	7	26
Totals	13	27	16	56

we see that the treatment adopted has little effect on the outcome in this small series of patients. In spite of manipu-

lation 15 patients continued their pregnancies successfully. It was noted, too, that after such a procedure the uterus aborted some weeks later, when one would consider any disturbances from manipulations to have ceased. It would be idle to suggest, however, that manipulation might not materially affect the outcome if signs of threatened abortion immediately preceded it or if it were carried out too forcibly.

From the above observations it would appear that the incidence of abortion in patients with retrodisplaced gravid uteri is at least no higher than that for all pregnancies, that the abortion can occur some weeks after anteversion has been attained and that the treatment adopted seems to have little effect on the outcome. The importance of the retrodisplacement of the uterus as a cause of abortion has been overemphasized. This was certainly borne out by experience in the Services, where there was opportunity for seeing many early pregnancies. It is therefore suggested that the position of the uterus is likely to be a factor in abortion only where it causes incarceration in the bony pelvis. Even then the pregnancy often continues at the expense of the bladder. Gibberd (1938a) says "A retroverted uterus is frequently blamed for an abortion, but except when it leads to incarceration at the twelfth week it is difficult to understand why the retroversion *per se* should affect the safe embedding of the ovum. Indeed, it is doubtful whether retroversion is to be regarded seriously from this point of view." Eden and Holland (1937) state "Retroflexion of the uterus, apart from rare cases of incarceration of the pregnant uterus, is seldom a cause of abortion, and when the two are associated and other causes can be excluded it is probable that it is not the displacement but some concomitant abnormality of the endometrium that is to blame." Treatment of the retrodisplaced pregnant uterus should therefore be primarily instituted to prevent incarceration.

The question is of some moment, for many authorities advocate operative correction of the retrodisplacement following an abortion considered to be due to the malposition (Munro Kerr, 1937b, Browne, 1946a, Ten Teachers 1942b, Wilfred Shaw, 1945b). In a number of cases this has been rewarded by success. On the other hand it has been unsuccessful, and in spite of the anteverted position abortion has been repeated. In this connexion three of the multiparous patients are of interest.

Patient No. 39 had a ventrosuspension operation in 1940. In 1941 she had a six-weeks abortion and in 1942 a 10 weeks abortion. In 1943 she was seen when 13 weeks pregnant with a retrodisplaced uterus. The uterus was manually replaced and a ring pessary inserted. The pregnancy continued and she was delivered of a live infant at term. If the ventrosuspension operation was successful in anteverting the uterus, then the abortion in 1941, and probably the one in 1942, occurred in spite of the correction, and retrodisplacement took place after the second unsuccessful pregnancy. If ventrosuspension was unsuccessful in anteverting the uterus then all three pregnancies occurred in a retrodisplaced uterus and the third was successful.

Another patient (Case 42) had a retrodisplaced gravid uterus in 1936. She was seen when nearly 12 weeks pregnant, was treated by pessary, and spontaneous anteversion occurred. The pregnancy continued until 23 weeks, when she aborted. In 1937 she was seen when 9 weeks pregnant with retrodisplaced uterus. Manual replacement and pessary treatment was given and the pregnancy continued to a successful conclusion. Had she been operated upon for the malposition between the two pregnancies the operation would have been credited with the success.

Patient No 43 aborted at 20 weeks early in 1929, at 8 weeks late in 1929, at 16 weeks in 1930, and at 20 weeks in 1932. In 1933 she was seen when 10 weeks pregnant with retrodisplaced uterus. Manual replacement and pessary treatment was given. She aborted at 25 weeks. She was next seen in 1934 when 7 weeks pregnant with retrodisplaced uterus. Manual replacement and pessary treatment was again given. The pregnancy was continued and she was delivered of a live premature infant. The uterus was in an anteverted position when seen three months after delivery. In 1936 she was again seen when 12 weeks pregnant with an anteverted uterus. This ended in premature delivery at 29 weeks and neonatal death of the infant. The patient was again seen in 1939. She was 12 weeks pregnant with an anteverted uterus. The pregnancy terminated in abortion at 27 weeks. This appears to be a case of habitual abortion (the pregnancy surviving long enough to end in premature delivery on two occasions) which was influenced by the position of the uterus.

Operative correction of a retrodisplaced uterus on account of abortion is therefore not advocated. The next pregnancy should be under observation as soon after the first missed period as possible and the patient treated as a case of habitual abortion. The position of the uterus is treated along the lines to be mentioned later only to prevent incarceration.

Incarceration of the Retrodisplaced Pregnant Uterus

Incarceration of the retrodisplaced pregnant uterus occurred in ten patients—3 primigravidae and 7 multiparae. Sudden onset of retention of urine accompanied by lower abdominal pain was the cardinal symptom. This was occasionally preceded by a few days of painful, difficult and frequent micturition. Sinclair states that frequency of micturition precedes the onset of retention. One patient had retention with overflow, the paradoxical incontinence starting three days after the onset of the retention. The onset of the symptoms will depend on the relative size of the growing uterus to the mother's pelvis. In the present series it occurred as early as the 13th week of pregnancy and as late as the 17th week.

Sacculation of the incarcerated uterus is uncommon. Fairbairn (1924b) states "A rare occurrence described in the books, of which, however, I have neither any personal experience nor met anyone who has is sacculation. One case was diagnosed as sacculation of the retrodisplaced gravid uterus. This patient was seen when 17 weeks pregnant. She complained of lower abdominal pain and vomiting of 3 weeks duration. There was no retention of urine. The diagnosis was made on palpation of the fundus of the uterus in the pouch of Douglas and per abdomen, a uterine tumour reaching half-way to the umbilicus. She was kept under observation and at the 19th week aborted.

Another patient a multipara (not included in the above series owing to late presentation), was seen at University College Hospital when 27 weeks pregnant. She was found to have a sacculated retrodisplaced uterus, the cervix of which was displaced upwards above the level of the symphysis pubis. There was no history of urinary symptoms. She was admitted in labour when 32 weeks pregnant. The fundus of the uterus in the pouch of Douglas contained the foetal head. Caesarean section was performed and the diagnosis of sacculation definitely confirmed. The anterior wall was only 1.8 in (32 mm) thick, and before closing the abdomen the position of the uterus was corrected manually. In 1937 this patient again became pregnant and again had a sacculated retrodisplaced uterus. She went into premature labour at 30 weeks and was treated at

St Pancras Hospital. There it was found possible to push up the fundus of the uterus out of the pelvis, the cervix descending to its normal position, and she was delivered *per vias naturales* of a stillborn premature infant.

The cause of the retention of urine is imperfectly understood. Gibberd (1938b) and the Ten Teachers (1942c) state that with the elongation of the urethra there is an upset of the neuromuscular mechanism of micturition. Browne (1946b) says that it is due to pressure on the neck of the bladder combined with the elongation and narrowing of the urethra. Reed (1904) regards the retention as a form of "pressure paralysis" due to interference with the nerves supplying the bladder.

The urethra is elongated and narrowed as the bladder rises out of the pelvis and the enlarging uterus fills the pelvic cavity. A similar state of affairs exists during the second stage of labour, when the bladder becomes an abdominal organ and the foetal head is passing through the lower part of the pelvic cavity. In the cases of sacculation mentioned there was no retention of urine although the urethra must have been lengthened. In another patient there was lower abdominal pain preceding difficult micturition at the 16th week, but the onset of retention was prevented by prompt treatment. Again the urethra must have been lengthened. In spite of lengthening of the urethra in these three cases, retention did not occur as might be expected if mere lengthening of the urethra caused an upset of the neuromuscular mechanism of micturition. It seems reasonable to suggest that the retention of urine is mechanical in origin. As compared with the normal urethra, the elongated and narrowed urethra is less able to withstand the external occluding pressure of a pelvic tumour such as the incarcerated uterus or the foetal head. The occluding pressure need not be great and may allow the introduction of a rubber catheter. The picture visualized is akin to a stretched rubber tube where pressure to occlude its lumen is less than would be needed if it were unstretched.

Pregnancy as a Cure of the Retrodisplacement

Of the 33 primigravidae 16 were followed throughout pregnancy to a successful conclusion and seen in the post-natal period. Nine of these 16 patients had an anteverted involuted uterus at 8 weeks post partum. Four of these were seen some months after delivery, when the anteverted position was found to be still present. The anteverted position in these nine patients was obtained solely by postural treatment in the puerperium. One may therefore expect pregnancy to cure more than half the cases of congenital retrodisplacement of the uterus. Whether a woman who starts a pregnancy with a congenitally retrodisplaced uterus and who finally, after a successfully concluded pregnancy, is left with an anteverted uterus can be regarded as "cured," or whether such a state of affairs is desirable, are moot points. Certainly the anteverted uterus with its fundus above the level of the cervix, in a woman in the standing, sitting, or normal lying posture is mechanically in a better position for drainage of its cavity than a retrodisplaced one where the fundus is possibly at a lower level than the cervix. Certain it is, too, that the anteverted position avoids the possibility of incarceration in a subsequent pregnancy.

Treatment of the Retrodisplaced Gravid Uterus

The importance of the retrodisplaced gravid uterus lies in the possibility of its becoming incarcerated. This may occur as early as the 13th week of pregnancy and may be preceded by a few days of difficult, painful, and frequent micturition. No active treatment is really needed, therefore until the 12th week of pregnancy, but passive postural treatment should be adopted before this time. Many cases

spontaneously antevert in the early weeks with or without the aid of posture. When seen in the early weeks patients should be instructed to sleep in Sims's position or, if they prefer, in the full prone position. If anteversion has not occurred by the 12th week, then more active measures should be adopted to avoid the possibility of incarceration with its accompanying pain, retention, and possible super-added urinary infection. Preferably, the patient should be admitted to hospital, a large rubber watch-spring pessary inserted into the vagina, as advocated by Sinclair (1900), and posture continued under supervision. The postural treatment may be elaborated to include knee-chest position and prone lying for short periods during the day, and instructions should be given that any difficulty in micturition is to be promptly reported. Such difficulty may be due to too large a pessary, and a full bladder will tend to prevent anteversion. The regime should be tried for a few days and, if unsuccessful, manual reposition without or with an anaesthetic should be attempted. Once the uterus is anteverted, a watch-spring pessary is inserted to help retain the anteverted position and is worn until the fundus approaches the umbilicus at about the 20th week.

There will be very few cases where one or other of the above procedures is unsuccessful. Laparotomy is mentioned by many authorities for such cases, dense adhesions being blamed for failure of the more conservative methods of treatment. There was one case in the series under review in which the patient had a right tubal pregnancy treated by operation in 1928. In 1929 she was diagnosed as having a fixed retroversion. She was next seen in 1932, when 8 weeks pregnant with a retrodisplaced uterus which appeared fixed. She was treated by posture. Spontaneous anteversion occurred and the pregnancy continued to a successful conclusion. It seems probable that there were adhesions, which did not, however, prevent anteversion occurring as pregnancy advanced. On the other hand, if adhesions are extensive it is probable that the patient will be sterile.

If incarceration occurs then it is the bladder that must receive attention in the first instance. Continuous catheterization is preferable to intermittent catheterization, and should be given along with postural treatment. Slow decompression of the bladder is needed if the retention has been of long standing. If this treatment is unsuccessful in 24 to 48 hours, a watch-spring pessary is used for 48 hours as outlined above. If such procedures fail manual reposition will be needed. Urinary antiseptics should be given in all cases.

Summary

A series of 66 patients with a retrodisplaced gravid uterus, who were admitted to the wards, is analysed.

A plea is made for conservative treatment of the sterile woman with a retrodisplaced uterus.

It is suggested that operative correction of a retrodisplaced uterus for a previous abortion is unwarranted.

Incarceration may occur between the 13th and 17th weeks of pregnancy, and two cases of sacculation of the incarcerated gravid uterus are briefly described. The cardinal symptom of incarceration is sudden onset of retention of urine with lower abdominal pain.

Treatment of the condition which is primarily instituted to avoid incarceration, is outlined.

I wish to express my gratitude to my late chief, Prof F J Browne, and to Prof W C W Nixon for permission to make use of the case records of the Obstetric Unit, University College Hospital.

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LIVER DAMAGE IN AMOEBIASIS

BY

DENNIS SHUTE, M.D., D.T.M.

Despite the obviously close connexion of amoebic colitis with liver disease there have been surprisingly few attempts to investigate the condition of the liver in amoebiasis other than by clinical methods. Much of the symptomatology of amoebic dysentery suggests that there is some degree of liver damage, the toxic appearance, anorexia, emaciation, sallow complexion, and chronic ill-health are such symptoms and signs, and to cases presenting these Manson-Bähr (1943) has applied the term "amoebic cachexia". In addition, he says (Manson-Bähr, 1940) that during the course of an attack of amoebic dysentery, and for many months afterwards, the possible supervision of amoebic hepatitis must be borne in mind, and the "condition of the liver must receive the most careful attention", but this careful attention is presumably dependent entirely upon the clinical acumen of the physician.

The *Quarterly Cumulative Index Medicus* for the years 1931 to 1944 and the *Tropical Diseases Bulletin* from 1934 to 1944 list only four attempts to apply laboratory methods to assessments of liver damage in amoebiasis—namely Heilig and Visveswar (1944), Gminder (1939), Barhagallo (1936), and Cordaro (1938). In the case of the first three investigations the tests were the hippuric acid synthesis, the Takata-Ara and the Weltmann coagulation reaction. The paper by Cordaro was not available.

When an investigation of the condition of the liver in amoebiasis was contemplated consideration had to be given to the limited time, equipment, and technical assistance available in the laboratory of a large naval auxiliary hospital, and a method chosen which it was hoped, not only would give reliable results but could also be applied rapidly to a reasonable number of cases. Consideration of the liver-function tests and those empirical procedures which are stated to assess the degree of liver parenchyma damage led to the choice of Hanger's cephalin-cholesterol flocculation test (CCFT) as the most promising to apply to this problem.

The CCFT was first introduced by Hanger in 1938, and since that time has been studied and used considerably in North America and, to a smaller extent, in Britain. The results and conclusions have been published by Hanger (1939), Pohle and Stewart (1941), Hanger and Patek (1941), Gutman and Hanger (1941), Rosenberg (1941), Lippman and Bakst (1942), Mateer, Baltz, Marion and MacMillan (1943), Mirsky and von Brecht (1943), Bruger (1943), Kirschner and Glickman (1943), Kopp and Solomon (1943),

Yardumian and Weisband (1943), and Dick (1945) The consensus of opinion is that it is a sensitive means of demonstrating disease of the liver parenchyma cells

Material, Technical Procedure, and Results

The patients were selected in that they were all Europeans Asiatics (Ceylonese) were excluded in view of the high incidence of chronic malaria and helminth infestations to be found in them This was of considerable importance, as the sera of malaria patients will cause flocculation with cephalin-cholesterol emulsions (Kopp and Solomon, 1943), while Karunaratne (1940) reported five cases of histologically perfect hepatic cirrhosis in Asiatic children with heavy hookworm infestations Chopra has estimated that 90% of the natives of Ceylon harbour the *Ankylostoma duodenale*, whereas among the European Service personnel dealt with over a period of a year (during which time 450 faecal specimens were examined monthly) only one case of hookworm disease was diagnosed

The diagnosis of amoebiasis was established in every case by the demonstration of the trophozoites or the cysts of *Entamoeba histolytica* in the faeces or in the material obtained by sigmoidoscopy or proctoscopy

The CCFT was done on each patient's serum as soon as the diagnosis was made, approximately half-way through the course of anti amoebic treatment, and on completion of the course As the treatment for amoebiasis is both exhausting and unpleasant, the patients were always granted fourteen days' sick leave, which they usually spent in a hill station Thereafter they returned to the hospital for the test of cure This necessitated a stay of about a week in hospital so the opportunity was taken to carry out a final CCFT before discharge to duty Owing to the exigencies of the Service, this final test had to be omitted in some cases

The scheme of treatment in all cases was based on that advised at the Liverpool School of Tropical Medicine, and is as follows

Emetine hydrochloride was given subcutaneously at night in 1-gr doses to a maximum of 10 gr Many of the patients had less than the maximum dosage, as the sterilizing course was started as soon as the acute symptoms had been controlled

The sterilizing course lasted 21 days the days being numbered 1 2 3 4 etc, to 21 Day 1 is the day following the last emetine injection

Odd Days 7 a.m. 11 a.m., 3 p.m. and 7 p.m. 1 gr (65 mg) of auremetine in a capsule 9 a.m. 1 p.m. and 5 p.m., 1 dr (4 g) bismuth subnitrate by mouth in a quarter-pint (142 ml) of milk

Even Days 7 a.m. 12 noon and 5 p.m. 4 gr (0.25 g) of stovarsol by mouth 8 a.m. 2% sodium bicarbonate lower bowel wash out, 9 a.m. 2-4% quinine retention enema of 1 pint (568 ml) to be retained 8-10 hours

Sick leave was spent in a hill station

The test of cure was 7 days in hospital for faeces examination and in some cases sigmoidoscopy

Heiliger's test was done (1) before the first dose of emetine hydrochloride (2) between day 9 and day 11 of the sterilizing course (3) within two days of the completion of the sterilizing course and (4) on return from sick leave for the test of cure

The cases were divided on clinical grounds into four groups as follows (1) acute amoebic dysentery (2) chronic amoebic colitis (3) amoebiasis presenting with unusual symptoms (4) amoebic hepatitis

Although this work was intended primarily as an investigation of the liver in cases of intestinal amoebiasis, the opportunity was taken of applying the CCFT to a small number of patients suffering from amoebic hepatitis They were selected with considerable care so there was no reasonable doubt of the correctness of the diagnosis It is

well known that *E. histolytica* is frequently not found in the faeces of patients with amoebic hepatic disease (55% according to Manson-Bahr, 1940), but in all the cases shown in Table IV the cysts of *E. histolytica* were demonstrated and this fact, combined with the symptoms, physical signs radiological evidence, and white blood cell counts, made the diagnosis almost certain The response to emetine therapy clinched the diagnosis in every case

Cephalin was extracted from sheep brain and made up with cholesterol in ether, as originally described by Hanger (1939) His technique for the test was also followed, except that the final readings for the degree of flocculation (i.e. those shown in Tables I-IV) were made after a 24-hour interval and not after 48 hours Dick (1945) states that a considerable proportion of normal sera will cause some flocculation after 48 hours, and this observation was amply confirmed in the present work

Normal controls were included as a routine with every batch of sera from amoebiasis cases which were put up for the CCFT The numbers in the batches varied from 10 to 26, and with each batch at least two normals and one abnormal were included The normal controls were sera from members of the medical, nursing, and sick-berth staffs of the hospital Results were as follows

Total No. tested	47
No. with negative CCFT	45 (95.7%)
positive	2

The two positives were obtained with the sera of male laboratory technicians one gave a history of severe and frequent attacks of migraine, while the other had had attacks of catarrhal jaundice 5, 21, and 31 months before the first CCFT The results of the test in these two men varied from \pm to $++$ over a period of about a year The positive control sera were obtained from cases of malaria and from patients suffering from obvious liver disease chiefly catarrhal jaundice Among the jaundice cases the results varied from $++$ to $++++$, depending upon the severity and stage of the disease Of 17 cases of malaria 8 were benign tertian and 9 malignant tertian All gave $++++$ reactions with the exception of two of the benign and one of the malignant tertian which gave only $+++$ degree of flocculation

Discussion

Heilig and Visveswar (1944) investigated the functional efficiency of the liver in 15 cases of acute or subacute amoebic dysentery using the hippuric acid synthesis test (oral technique) They concluded that over 46% had definite impairment of liver function If the cases shown in Tables I and II are considered together, approximately 49% of the patients gave evidence of parenchymal liver damage There is thus fair agreement in the results obtained, using entirely different laboratory techniques With regard to the response to treatment, it is impossible to draw an exact parallel between the work of the above named authors and that recorded in this paper, as the patients investigated with the aid of the CCFT were given the minimum quantity of emetine hydrochloride required to control any acute symptoms, followed by a complicated schedule with a multiplicity of drugs On the other hand all of Heilig and Visveswar's patients received a routine course of 12 gr (0.8 g) of emetine

Gminder (1939) applied the Takata-Ara test to the sera of 23 patients with amoebic dysentery (9 acute and 14 chronic) He concluded that there was no evidence of liver damage in any of the acute cases, while in 10 (over 71%) of the chronic cases there was some evidence of parenchymatous liver change Barbagallo (1936) used the Weltmann coagulation test in connexion with a series of patients suffering from amoebic and non-amoebic colitis

TABLE I—*Acute Amoebic Dysentery*

Case No	Age	Presenting Symptoms	CCFT			
			1	2	3	4
1	28	22 days acute diarrhoea	+	—	—	—
2	32	28 days diarrhoea and occasional vomiting	+++	+	—	—
3	21	17 days diarrhoea and colicky upper abdominal pain	—	—	—	—
4	19	3 days acute diarrhoea	—	—	—	—
5	25	3 days mild diarrhoea	++	++	±	—
6	26	5 days diarrhoea and abdominal discomfort	+++	++	—	—
7	19	24 hours hyperacute diarrhoea and abdominal pain	++	+	±	—
8	23	9 days acute diarrhoea	++	+	—	—
9	22	3 days diarrhoea and steady epigastric pain	+++	+	—	—
10	30	3 days diarrhoea. Also invalided from S F A C area with fibroid phthisis	—	—	—	—
11	31	Slight bowel looseness and colicky epigastric and hypogastric pain	++	±	—	—
12	19	3 days diarrhoea	+++	—	—	—
13	27	6 days severe diarrhoea and vomiting	+++	+	—	—
14	19	3 days mild diarrhoea	±	±	—	—
15	20	Acute diarrhoea immediately after Liverpool course	±	+	—	—
16	33	2 days diarrhoea and gripping abdominal pain	+	+	+	±
17	22	2 days mild diarrhoea	++	+	—	—
18	38	24 hours diarrhoea	±	—	±	—
19	20	36 hours hyperacute diarrhoea	±	—	—	—
20	20	24 hours mild diarrhoea	±	—	—	—
21	20	6 days' diarrhoea	—	—	—	—
22	23	3 days acute diarrhoea	++	±	±	—
23	24	3 days severe diarrhoea and gripping abdominal pain	++	—	±	—
24	21	7 days mild diarrhoea	++	—	±	—
25	22	4 days severe diarrhoea	+++	+	—	—
26	23	4 days mild diarrhoea and slight generalized hypogastric pain	++	+	—	—
27	20	11 days severe diarrhoea	+++	+	—	—
28	21	7 days acute diarrhoea	+++	+	—	—
29	24	11 days severe diarrhoea	+++	+	—	—
30	19	7 days acute diarrhoea	+++	+	—	—

CCFT readings 50% gave ++ or +++ 23 3% gave +++ 26 6% gave ++

and found an increase of the coagulation band in all cases. The last two authors' results therefore do not agree with those of Heilig and Visveswar or with those obtained by using the CCFT.

With regard to amoebic hepatitis, Heilig and Visveswar found that in 11 cases there was little evidence of impairment of function, whereas in all the 5 cases shown in Table IV the CCFT was positive. The literature gives conflicting reports on the value of liver-function tests in amoebic hepatitis. Hurst (1941) maintained that the laevulose-tolerance test always demonstrated 'hepatic deficiency in this condition, but Manson-Bahr (1940) and Strong (1942) both state that liver-function tests are disappointing. Brown and Hodgson (1938), using the bromsulphthalein retention test, found a reduction of the excretion of the dye in 8 of 13 cases of amoebic liver abscess.

In view of these conflicting reports and opinions it is impossible to draw any final conclusion on the value of any type of liver test in amoebic hepatic disease. It seems probable that any liver disease demonstrable in cases of intestinal amoebiasis is due primarily to secondary bacterial invaders and their toxins. This view is strengthened by the work of Hargreaves (1944-5) and Willmore (1944-5). They found that in chronic relapsing cases of amoebic dysentery, when repeated courses of anti-amoebic treatment had failed, an initial attack on the bacteria with penicillin and sulphasuxidine often led to dramatic symptomatic improvement. Hargreaves (1945) also points out that among the bacteria normally present in the bowel lumen are numerous penicillin-sensitive strains of staphylococci and streptococci, and that there is no evidence that either penicillin or sulphasuxidine is amoebicidal.

Consideration must now be given to the morbid histological picture to be expected in the liver in the absence

of frank abscess formation. Bartlett (1916-17), while investigating the dysentery epidemic among the Allied European troops in Gallipoli in 1915, conducted necropsies on the bodies of 30 individuals. Three may be excluded here, as liver abscesses were found. In the remaining 27 the following histological features were demonstrated in the livers: (1) Degenerative changes—i.e., cloudy swelling with a little fatty degeneration of the parenchyma of the central zones of the lobules, (2) necrotic areas infiltrated with a few neutrophil leucocytes, and (3) infiltration of the portal tracts associated with degenerative or necrotic lesions. Of these 27 cases, 17 were of amoebic aetiology and 10 had suffered from bacillary dysentery. In the amoebic cases the liver showed necrosis and portal infiltration in 2, degeneration and portal infiltration in 4, degenerative changes in 9, atrophy in 1, and normality in 1. The livers of the bacillary dysentery cases had necrosis and portal infiltration in 3, degenerative changes and portal infiltration in 5, and degenerative changes only in 2. The similarity of the microscopical picture in the liver in the two diseases is obvious, and this would appear to be additional evidence of the major part played by bacteria in damaging the liver in amoebiasis.

Bartlett's findings accord reasonably well with those of Palmer (1938), who conducted post-mortem examinations on the bodies of 19 patients in whose large bowels active amoebic lesions were demonstrated. Macroscopically the liver was larger than normal in 12 cases, normal in size and weight in 4, smaller than normal in 2, while in the nineteenth case no record was kept. Microscopically, 18 cases had increased portal connective tissue ranging from marked diffuse to moderate irregular or spotty increase. In 9 of the livers there was pronounced fibrosis and definite bile-duct proliferation, and in 9 there were fatty changes. Palmer's final conclusions were that there is "definite hepatitis associated with active amoebic lesions of the colon, and this is indicated by the generalized increase of portal connective tissue, by lymphocytic and mononuclear

TABLE II—*Chronic Amoebic Colitis*

Case No	Age	Presenting Symptoms	CCFT			
			1	2	3	4
1	36	Diarrhoea 'off and on' for 2 years	—	—	—	—
2	30	Diarrhoea 'off and on' for 2 months	—	±	—	—
3	21	2½ months mild diarrhoea	—	—	—	—
4	27	18 days slight bowel looseness	+++	+	—	—
5	28	Diarrhoea occasionally for 2 years loss of weight and appetite	++	±	—	—
6	41	Occasional attacks of diarrhoea for a year	—	—	—	—
7	26	Bowel looseness for more than 1 year	++	—	—	—
8	28	St a month for a year loss of 14 lb weight	++	—	—	—
9	24	Diarrhoea occasionally for over 2 years	—	—	—	—
10	22	Very slight bowel looseness for about 5 months	++	±	—	—
11	28	10 weeks mild diarrhoea	—	—	—	—
12	21	Diarrhoea 'off and on' for 3 months some hypogastric pain	±	±	—	—
13	28	24 days bowel looseness and tenesmus	++++	+	—	—
14	24	4 months diarrhoea 'off and on'	+	—	—	—
15	22	2 weeks diarrhoea. Bowels very 'unreliable' and irritable	+++	+++	—	—
16	23	6 months' occasional diarrhoea	++	+	±	—
17	21	7 months' irregular diarrhoea	—	—	—	—
18	26	10 months' early morning bowel looseness	—	—	—	—
19	23	2½ months mild bowel looseness	+++	+	—	—

CCFT readings 47 4% gave ++, +++ or ++++ 21 1% gave +++ or ++++ 26 3% gave ++

infiltration, and by constant degenerative changes—for example, parenchymatous degeneration, fatty changes, hemosiderosis, and hepatic cell lysis”

Summary and Conclusions

In a series of 73 cases of amoebiasis (excluding those proved to have hepatic involvement) 37 (50.6%) gave evidence of damage to the liver parenchyma—that is, ++, +++, or ++++ flocculation in Hanger's CCFT. The cases were divided on clinical grounds into three groups (1) acute amoebic dysentery (2) chronic amoebic colitis, and (3) amoebiasis presenting with unusual symptoms.

The 37 cases giving evidence of liver parenchyma damage were fairly evenly distributed among the three groups and there was no great difference in the incidence of liver involvement between the groups.

The symptomatology and physical signs did not give any indication of the cases in which hepatic damage could be anticipated.

The institution of suitable anti amoebic therapy produced a rapid recovery of the liver (as indicated by the CCFT).

A very small series of hepatic amoebiasis was investigated, but it was not considered justifiable to attempt to draw any conclusions from the results obtained.

The actual pathological changes present in the liver which can be assessed by the CCFT are probably generalized increase of portal connective tissue lymphocytic infiltration and degenerative changes—for example, parenchymatous degeneration, fatty changes, and hepatic cell lysis.

TABLE III—Amoebiasis Presenting with Unusual Symptoms

Case No.	Age	Presenting Symptoms	C.C.F.T			
			1	2	3	4
1	21	Upper abdominal pain with occasional vomiting after meals suggestive of peptic ulceration	++	+	-	-
2	23	3 days nausea and epigastric pain	-	-	-	-
3	19	6 days epigastric pain	-	-	-	-
4	20	Appendix abscess treated by surgical draining	++++	+	±	-
5	29	Loss of weight appetite and energy Cachectic case	=	+	±	-
6	32	Symptom free Cysts found in faeces 6 weeks after full Liverpool course	-	=	+	-
7	24	Treated as amoebic dysentery 4 weeks previously. Admitted with vomiting and right hypochondriac pain	+++	++	-	-
8	32	Upper abdominal pain. Diarrhoea 6 and 7 weeks before	-	-	-	-
9	25	Left chest and left shoulder pain	+++	±	±	-
10	21	Pain in left lower chest. No bowel symptoms at any time	-	-	-	-
11	22	Loss of weight and energy Cachectic case	-	+	=	-
12	20	Weak and worn-out feeling Cystic case	-	±	=	-
13	21	Weak and worn-out feeling Cystic case	+++	=	-	-
14	19	Odd aches and pains	+	+	-	-
15	22	Anorexia nausea and abdominal discomfort	±	+	=	-
16	18	Loss of weight energy and appetite Cachectic case	-	-	-	-
17	19	Subacute appendicitis with vomiting RIF pain and tenderness	-	-	-	-
18	24	Growing lower abdominal pain Admitted on surgical side with anal fissure. Attack of diarrhoea 6 weeks before	+++	=	-	-
19	22	Vague dysentery and abdominal discomfort	-	-	-	-
20	23	Lack of energy and anorexia One attack of diarrhoea 10 months before Cachectic case	+++	-	-	-
21	24	Hemorrhagic pain. No history of bowel trouble	-	-	-	-
22	27	Upper abdominal pain after meals suggestive of peptic ulceration	-	-	-	-
23	29	RIF pain and tenderness and abdominal discomfort	+++	-	=	-
24	30	Symptoms suggestive of amoebiasis but no history of diarrhoea	+++	-	-	-

CCFT results: 1-4 gave +, 5-10 gave ++, 11-16 gave +++, 17-24 gave ++++, 25-30 gave +, 31-33 gave ++.

TABLE IV—Amoebic Hepatitis

Case No.	Age	Symptoms and Physical Signs	C.C.F.T			
			1	2	3	4
1	20	Right sided thoracic pain. No history of diarrhoea. Deficient air entry at right lung base. Liver not palpable. Irregular fever to 101° F (38.3° C). Leucocytosis to 11 600/c mm. Radiograph showed right dome of diaphragm fixed and raised.	++	-	-	±
2	26	Admitted with diagnosis of clinical malaria. No history of diarrhoea. Fever to 103.2° F (39.55° C) with rigors and sweats. Liver palpable 2 in (5 cm) below right costal margin. Leucocytosis to 13 400/c mm. Radiograph showed no abnormality.	+++	-	±	-
3	24	Admitted with vomiting and right hypochondriac pain. Bout of diarrhoea 4 weeks before. Liver palpable 1 in (2.5 cm) below right costal margin. Leucocytosis to 9 900/c mm. Low fever to 99-100° F (37.2-37.8° C). Radiograph showed right cupola of diaphragm fixed and raised.	++++	++	-	-
4	20	Malaria. Shivering sweating anorexia and abdominal discomfort. Fever to 103° F (39.4° C). Liver palpable 1 in (1.25 cm) below right costal margin. Leucocytosis absent. Radiograph showed partial collapse of base of right lung.	+	±	±	-
5	37	10 days diarrhoea and pain in right chest. Tender in right hypochondrium. Liver palpable 1½ in (3.75 cm) below right costal margin. Fever to 102.4° F (39.1° C). Leucocytosis to 19 800/c mm. Radiograph showed right cupola of diaphragm fixed. Possibly an element of alcoholic cirrhosis.	++++	++++	++++	++

It is suggested that secondary bacterial invaders and their toxins are primarily responsible for these changes in the liver in cases of amoebiasis.

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SPINAL WASH-OUTS IN THE TREATMENT OF PURULENT MENINGITIS

BY

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The special physiological and anatomical peculiarities of the central nervous system constitute great impediments in the way of maximal action of penicillin in purulent meningitis. In the first place there is a blood-CSF barrier to penicillin penetration. In spite of some favourable reports on the exclusive use of systemic penicillin, increasing experience shows that even in large doses it is not reliable enough for intrathecal administration to be dispensed with. In the present series, doses of 200,000 units intravenously in adults produced no detectable penicillin in the CSF within two hours nor did 200,000 units intramuscularly to a child aged 2 years. Further evidence on this point is given by the work of McAdam *et al* (1945), Smith, Duthie, and Cairns (1946), and Kinsman and d'Alonzo (1946). Schwemlein *et al* (1946) showed that an intravenous infusion of 25 million units of penicillin in 24 hours given in the treatment of syphilis produced only 0.04–0.55 unit per ml in the CSF. So much for the efficacy of this barrier. Secondly, as the CSF becomes purulent the pia and arachnoid tend to adhere. Apart from the liability of these adhesions to produce hydrocephalus, if CSF pathways are blocked they produce cesspools beyond them inaccessible to intrathecal penicillin. Thirdly, the thick plaques of adhesions themselves form areas resistant to penicillin penetration and become admirable niduses where organisms thrive unperturbed, and, what is more, they lead to thromboses of adjoining veins with extending focal lesions and consequent fatal termination.

Experience with the present series gradually gave an impression of the overriding importance not only of the second but of the third factor in the majority of the fatal cases. Of over 40 patients observed or treated personally, the five that died directly from the meningitis and came to necropsy all showed thick, creamy, and sometimes almost organized adhesive exudates. Pneumococcal, streptococcal, staphylococcal, and influenzal varieties are included.

Contrary to expectation, only one of these five cases showed evidence of a block that would interfere with the free flow of penicillin and could be blamed for progressive meningitis beyond. Thick intensive exudate of pus at the base of the brain matted everything together, with resultant non-communicating hydrocephalus. In the four remaining cases no such blocks were found, but fibro purulent exudates formed scattered and sometimes confluent plaques, covering large areas of the brain surface and sometimes of the spinal cord.

Spinal Wash-outs

Thus it was in the post-mortem room that the idea of combating the formation of these plastic exudates by further means first arose. Some cases pass the precipitation stage before coming under medical care, but others undergo that stage immediately after. The use of spinal wash-outs was considered and its possibilities were explored.

Only the cases treated after the adoption of spinal wash-outs are included here. They number eight, and have a miscellaneous pathology (Table I). The ages ranged from 13 months to 39 years. The series comprises one case of pneumococcal meningitis, two influenzal, one staphylococcal, one streptococcal, one aseptic following rupture of an old sterile brain abscess, and two cases the pathogenic organisms of which were not isolated. All were treated

TABLE I—Analysis of Cases

Case No	Age and Sex	Organism	First seen after Onset	Result	Re-lapses	Focus	No of Wash outs
1	3 M	?	24 hrs	Recovered	0	7	1
2	2 M	<i>H strept</i>	7 days		1	Ears	1
3	29 F	<i>Staph aureus</i>	48 hrs	Died	0	Empyema	4
4	1 1/12 M	<i>H Influenzae</i>	48 hrs		1	?	0
5	39 M	?	7 days	Recovered	0	?	3
6	8 M	Pneumococcal	About 7 days	Died	0	?	4
7	1 2/12 M	<i>H Influenzae</i>	?	Recovered	1	?	13
8	20 M	Aseptic (ruptured abscess)	Same day		1	Old brain abscess	3

with sulphamezathine, 15,000 units of intramuscular penicillin three-hourly, and varying doses of intrathecal penicillin. They were first seen 1 to 7 days from the onset. Five recovered and three died. Of these three, one died of other causes, and necropsy showed no meningitis; one died because the infecting haemophilus acquired penicillin resistance, and the third (pneumococcal), admitted in coma and with hemiplegia, showed thick exudates on both hemispheres. The existence of the hemiplegia prior to admission constitutes evidence of the antecedent formation of the plastic exudate, and hence the expected lack of response.

Technique of Spinal Wash-outs

The two-needle method was rejected as ineffective except for the space between the needles, but the washing effect through one needle was considered worth investigating. On consulting the available literature later, no specific mention was found of the one-needle method of spinal lavage.

The following were fitted in series—a vacoliter of Hartmann's solution, a glass connexion, a 3–4 in (7.5–10 cm) rubber tube with a clamp, a rubber stopper with inlet and outlet glass tubes, a 20-ml syringe barrel (filled by releasing the clamp), a long piece of Ryle's tubing, and a metal connexion for the lumbar puncture needle. The connected apparatus was attached to a metal pole clamped to the LP trolley (Fig 1). The Ryle's tubing was clamped with forceps till in use. Irrigations were performed by connecting the apparatus to the LP needle in situ, and repeated in 20 ml till the return fluid became clear. The technique was tried, and improved, on two cases. One was a child of 3 years (organism not isolated), the other a child aged 2 with a relapsed streptococcal meningitis. The method was successful in both.

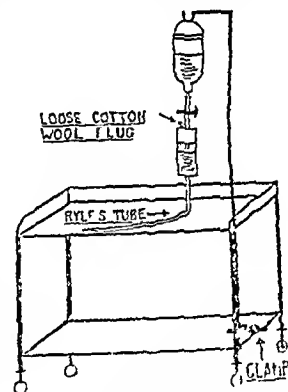


FIG 1—Method of fitting the lavage apparatus to the LP trolley

Effectiveness of a Wash-out

The effectiveness of each irrigation in reducing the CSF cell count was next studied. The third case was that of a female aged 29 with staphylococcal meningitis and empyema. The cerebrospinal fluid was turbid under a pressure of 300 mm H₂O. Queckenstedt's test was normal. Wash-outs of 40 ml were absorbed easily, and were repeated three times, so that 120 ml was used altogether. A second specimen was taken at the very end, just before the dose of intrathecal penicillin. The count of the pre-lavage specimen was 1,335 cells per cmm while on the post-lavage specimen it was 430.

After 8,000 units of penicillin in 40 ml of distilled water, introduced into the free tube of the rubber stopper, were allowed to seep in through the same apparatus, a steady fall of C.S.F. pressure was noted. The explanation lay evidently in the reduced osmotic pressure consequent on the removal of excess proteins, fibrin, etc., and the dilution of the C.S.F. by the addition of 40 ml of dilute penicillin. In a quarter of an hour the pressure fell from 250 mm to 50 mm H₂O. On the second day the C.S.F. pressure was 100 mm H₂O. 180 ml was used in spinal lavage, and pre- and post-lavage counts were 375 and 50 cells per cmm respectively.

The same phenomenon of rapid absorption of the diluted C.S.F. was noted on this and subsequent occasions. Concurrent with the fall in manometric reading there was increasing concentration in the C.S.F. cell count. Specimens taken 1/4-hourly showed a rising count of 12, 20, 38 cells per cmm. It became a practice to leave the pressure after a wash-out at 300 mm H₂O. This brought the final pressure to 80–120 mm H₂O. Lower pressures were avoided with an inflamed pia-arachnoid as that would approximate the two layers and promote adhesions.

The wash-outs seem to have solved the problem of increased C.S.F. pressure in meningitis, since in a total of 30 of them not once was the pressure markedly high after the first wash out. On the third day it was 130 mm H₂O, and the cellular count 109 per cmm, on the fourth the corresponding figures were 50 and 12. Wash-outs performed on these two occasions showed that they do not provoke pleocytosis when aseptic.

Further Trials

The fourth case was that of a child of 13 months with influenzal meningitis. Lumbar puncture produced only two beads of thick pus. Aspiration was tried without effect. Spinal wash-outs were attempted, but the fluid would not go in freely. Penicillin was given intrathecally, and the following day no more could be done than on the first. The *Haemophilus influenzae* isolated was penicillin-sensitive. The child improved, and was afebrile for a few days. It soon relapsed, and as there was the same difficulty with the lumbar puncture the ventricles were tapped four hours after an intrathecal dose of penicillin. Fluid from the ventricles, however, contained more than 8 units of penicillin per cmm, and the thick perispinal exudate formed no block to the passage of penicillin as was feared, but the *haemophilus* was shown to have acquired much greater resistance to penicillin. The child died next day. Necropsy revealed thick pus below the tentorium and surrounding the spinal cord.

Small concentrations of penicillin were found on the brain surface at necropsy.

In the fifth case of purulent meningitis the organism eluded isolation, but response to treatment and spinal lavage was quick. On one occasion the

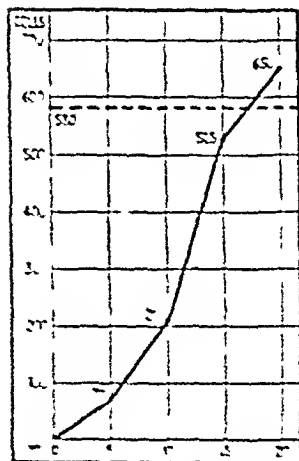


FIG. 2—Case 4. CSF cell count after 20 ml wash-out.

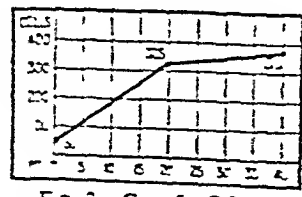


FIG. 3—Case 5. CSF cell count after a further wash-out.

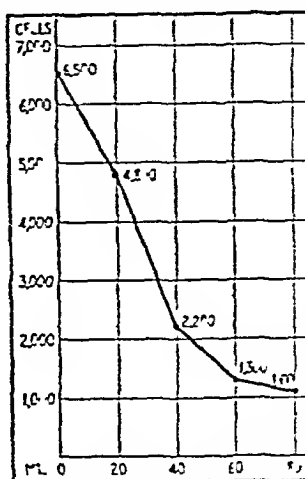


FIG. 4—Case 6. Effect of wash-out on the first day of admission.

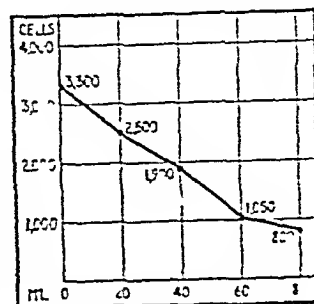


FIG. 5—Case 6. Effect of wash-out on the second day of admission.

respective cell counts were before irrigation, 580 per cmm after, 70, 210, 525, 650 (Fig. 2). Another irrigation with 40 ml was given and counts on pre-, mid-, and post-lavage specimens were 50, 325, and 375 respectively, showing even better mixing (Fig. 3).

The sixth case was that of a boy of 8 years with pneumococcal meningitis admitted in coma with right-sided hemiplegia. The effect of the wash-outs on the first and second days is shown in Figs. 4 and 5 respectively. On the third day the C.S.F. did not flow freely. Queckenstedt's test became abnormal and lavage impossible. Ventricular puncture gave a freer flow of C.S.F. but no evidence of increased pressure, and no improvement followed. The next day the same difficulty was met with during lumbar puncture, and a large dose of 50% dextrose intravenously to relieve a supposed tonsillar herniation had no effect. The L.P. needle was shifted two spaces higher up and the C.S.F. flow and Queckenstedt's test were here normal. To exclude a delayed effect of the injection another L.P. needle was introduced in the lower spaces, but the same initial state of affairs was still evident and a spinal block was diagnosed. The child died two days later, necropsy revealed no convincing hydrocephalus, no herniation and no organic blocks above the foramen magnum, but there were thick purulent exudates over the convexity of the hemispheres. Unfortunately the spinal cord was not exposed.

Cerebrospinal Fluid Clearance

The seventh patient was a child of 14 months with influenzal meningitis and very turbid C.S.F. (4600 cells per cmm). The organism was only slightly sensitive to penicillin and it was felt that the effect of repeated wash-outs might show to better advantage here. Six daily wash-outs were done and progress was satisfactory. A relapse followed and 7 more daily wash-outs were given. The child recovered fully.

The effect of these wash-outs on pus clearance was studied in this case. All wash-out fluid drained was collected, mixed, and measured. A cell count on a specimen of it gave an idea of the amount of pus removed. Further, the number of millilitres of purulent C.S.F. cleared of pus could be calculated on the same lines as that of urea clearance of the blood. The results of the first six wash-outs are shown in Table II.

Leaking Cerebral Abscess

The eighth patient was a young man of 20 years who had had a cerebral abscess on the right side drained

TABLE II

Wash-out	Pre lavage Count (cells/c mm)	Average Count of Return Fluid (cells/c mm)	Post lavage Count (cells/c mm)	Total Cells Removed	CSF Cleared (ml)
First	4 600	3 125	1 350	246 000 000	53.5
Second	3 020	1 740	1 200	166 000 000	55.2
Third	1 340	450	440	44 000 000	33.5
Fourth	845	275	230	32 000 000	38.6
Fifth	510	127	102	24 000 000	48.5
Sixth	390	130	100	26 000 000	69.0

successfully two years previously. On Jan 12, 1946, he had convulsions culminating in status epilepticus, which later became strictly right-sided. The CSF was acellular and sterile. The next day severe symptoms and signs of meningitis developed and the convulsions ceased. Rupture of a left-sided abscess was suspected, and the CSF was now purulent (8,000 cells/c mm) and under pressure. Table III shows the effect of successive daily wash-outs on this patient. The third wash-out is peculiar in that the average count of the return fluid and the post-lavage count are both higher than the initial count. The abscess must have leaked during the procedure. The patient considerably improved. Six hours after the fourth lumbar puncture (603 cells per c mm) he suddenly developed an acute exacerbation, and the CSF contained 2,700 cells per c mm. Further leakage must have occurred. All specimens of CSF during the illness were sterile. The patient recovered.

TABLE III

Wash-out	Pre lavage Count (cells/c mm)	Average Count of Return Fluid (cells/c mm)	Post lavage Count (cells/c mm)	Total Cells Removed	CSF Cleared (ml)
First	8 000	4 000	3 200	488 000 000	61
Second	6 300	1 330	700	385 000 000	61
Third	1 365	2,180	1 700	215 000 000	157
Fourth	603	246	197	27 000 000	45

Pain in Spinal Wash-outs

The most frequent cause of pain was the low temperature of the solution. Warming the fluid obviated the pain in the majority, but some complained of discomfort or headache when there was much variation in the CSF pressure, and wash-outs then had to be restricted to 20 ml at a time. Another cause of pain may be the position of the needle-point in the spinal theca. On the whole, spinal wash-outs performed by allowing fluid to seep in by gravity are not often painful, and the pain is less than that caused by mixing the CSF with the injected penicillin several times in a 20-ml syringe as recommended by some authorities.

Discussion

Merritt and Fremont-Smith (1937) express themselves as follows: "The conception of acute purulent meningitis as an abscess of the ventriculo-subarachnoid space has previously been presented. It is a well-known principle that the best treatment for an abscess is free drainage. Continuous drainage of the fluid is especially valuable. Irrigation of the subarachnoid space through a needle in the cisterna magna and out through a needle in the lumbar space, or vice versa, will often prevent development of subarachnoid block."

For the reason given earlier, the one-needle method described here was preferred. It is felt that penicillin has not done away with the necessity for preventing deposit formation. Smith, Duthie, and Cairns (1946) state that "the subarachnoid space may become blocked in the early stages of the illness by the rapid deposition of thick fibrinous pus. On the second or third day after the first injection of penicillin most patients show an increase in the

cells in the CSF. It is at this stage that there is most danger of the subarachnoid space becoming blocked." Jepson and Whitty (1946) feel that "the post-mortem appearances tempt one to search for some means of increasing CSF circulation, especially through the basal cisterns."

These views are similar to those that led to the present work on the merits, practicability, and effectiveness of spinal irrigations. Jepson and Whitty also state that "withdrawal of much fluid from lumbar sac or cistern remains of doubtful value in view of the possibility of encouraging herniation through the tentorial hiatus or foramen magnum, especially when cerebral oedema is present, although in our experience withdrawal of 30 to 40 ml by the lumbar route has had no untoward consequences." Withdrawal of similar amounts had no ill effects in the present series of cases. It is felt that the fear of herniation in uncomplicated meningitis has been exaggerated unduly. The frequent use by earlier workers of the double-needle method of spinal irrigation and forced drainage suggests that this is not a serious possibility. Merritt and Fremont-Smith caution people against the removal of large amounts of CSF in cases with increased intracranial tension, except in patients with meningitis, when "as much fluid should be removed as it is possible to obtain." Katzenelbogen (1935) states that "forced drainage was demonstrated by several workers to be innocuous and well tolerated by patients."

If apprehension is felt about the reduction of pressure—for example, in traumatic cases, where cerebral oedema is suspected—a preliminary hypertonic injection may be given. The spinal wash-out should then not be delayed, not only for fear of the pressure rising again but because of the concentrating effect on the CSF and the consequent precipitation of thick exudates. It is felt that this measure will rarely be needed in uncomplicated meningitis.

Of the 30 wash-outs performed none resulted in contamination, as shown by frequent cultures. Apart from clearing pus and organisms, and restoring osmosis to normal, the irrigating fluid may break up commencing adhesions. The CSF pressure is kept down.

Summary

The shortcomings of penicillin in purulent meningitis are discussed.

The seriousness of the formation of deposits of plaques from fibro purulent exudates is emphasized. These result in occluded areas inaccessible to intrathecal penicillin and, because of adjoining thromboses, inaccessible to systemic penicillin.

The possibilities of spinal irrigation by a single needle method, as a preventive measure against these adhesions, are explored.

A safe aseptic technique is described, and its effectiveness is demonstrated. A CSF cellular clearance is calculated.

I should like to express my gratefulness to Drs A. Wilson Gill, B. Maclean, and L. Boyd for their permission to publish the case material, to Dr A. J. McCall for the use of the necropsy reports, to Mr Holdsworth for his help in cell counts, and to the nursing staff for their full co-operation.

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PSEUDOMONAS PYOCYANEA MENINGITIS FOLLOWING SPINAL ANAESTHESIA

BY

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(From Medical Clinic B of the University of Louvain)

At Medical Clinic B we had the opportunity of observing four cases of *Pseudomonas* meningitis following spinal anaesthesia, and in the literature we were able to consult* accounts of a certain number of cases. Garrod (1946) asserts that this complication is not as rare as one would think. He rejects the opinion of Livingstone and his collaborators (1943), believing that aseptic meningitis is not due to local irritation but is produced by Gram-negative bacilli not easily detected by ordinary laboratory technique. Evans (1945) deals with the different sources of contamination (the hands of the surgeon, the instruments, the anaesthetic solution, etc.) and describes the method of prevention. Barrie in 1941 had in the course of three months 11 cases of meningitis among 96 patients who underwent hypobaric "percaine" spinal anaesthesia, one of these was fatal. The affection started about the eighth day after the spinal anaesthesia and usually disappeared within eighteen days. The cell count of the cerebrospinal fluid varied from 9 to 11,400 per cmm and the albumin fluctuated in the neighbourhood of 100 mg per 100 ml. Bacteriological analysis showed in one case Gram-negative bacilli, not fermenting common sugars, and producing no indole, but which could not be identified. Smith and Smith (1941) made the bacteriological analysis in Barrie's cases and found the same bacilli in the water, which had passed through a Berkefeld filter and then been used to rinse the syringes. After the filter was discarded no further case was seen. Hewer and Garrod (1942a, 1942b) saw an increasing number of cases of meningitis when the ampoules containing the spinal anaesthetic were sold with gummed labels (formerly the

surgeon. He attributes the infection either to the "novocain" used for local anaesthesia or to the saline employed to rinse the syringe.

In wartime literature (Cairns, 1944) we meet with cases of deep skull wounds communicating with the arachnoidal cavity and producing *pyocyanea* meningitis. Botterell and Magner (1945) describe 9 cases. During the same period they had two cases of *pyocyanea* meningitis in patients whose wounds did not communicate with the arachnoidal cavity but to whom they had applied preventive intrathecal penicillin for slight meningism. They made a bacteriological test of all the phials of penicillin administered during twenty days, before and after use. Only the residue of two of them contained *Ps. pyocyanea*.

Meningitis caused by the *melanogenes* variety of *Ps. pyocyanea* was not reported in the literature consulted. This organism, which is very rare, was identified and described by Radais (1897), and Cassin (1902) found it in a purulent leg-wound. Cultures of the bacillus produce a black pigment which, unlike pyocyanine, is insoluble in chloroform.

Analysis of Personal Cases

We have been able to observe 4 cases of *pyocyanea* meningitis. Infection took place outside our service. Three of these patients were sent to Medical Clinic B for meningitis treatment, in the fourth patient we discovered an ectopic ovary (with perianadixitis) situated under the liver. She had been operated upon elsewhere, and we saw her again, in consultation, subsequent to the outbreak of meningitis, which took place a few days after the operation performed under spinal anaesthesia.

Our cases came from two different surgical centres (A and B). These centres have the peculiarity that the nursing personnel belong to the same staff. Cases 1 and 2 came from Centre A, Cases 3 and 4 from Centre B. The accompanying Table sums up the essential points of the observation.

Table giving Analysis of Cases

Case	Symptoms of Onset	Blood Leucocyte Count	Cerebrospinal Fluid				Course and Treatment	Total Dose of Sulphonamides
			Day	Albumin (mg/100 ml)	Cell Count per cmm	Bacteriological Test		
1	On 8th 15 days after scurocaine spinal anaesthesia. Evident symptoms of meningitis.	12,000	1st 15 d 60 h	180 110 117	1,120 polymorphs 2,230 11,400 "	<i>Ps. melanogenes</i>	Fatal issue in 76 days. Sulphonamide treatment per os (a few intrathecal injections). Nine returns of pyrexia with chills.	419 g. of sulphonamides in 76 days
2	On 8th 4 days after scurocaine spinal anaesthesia.	—	—	—	—	—	From 4th to 9th day penicillin intramuscularly and intrathecally. From 6th to 9th day 6-8 g. sulphonamides daily. Died 9th day.	Slight
3	On 8th 4 days after scurocaine spinal anaesthesia. Evident symptoms of meningitis. Severe headache.	7,500	1st 87 h 107 h	125 130 —	8,000 polymorphs 3,500 83 "	—	Fatal issue in 114 days. Three remissions of pyrexia.	1,172 g. of sulphonamides in 114 days
4	On 8th 4 days after scurocaine spinal anaesthesia. Another remission 12 h later. No more symptoms. At 10th 6 h chills.	9,500	1st 37 h 77 h 97 h	110 70 50	4,100 700 140 9 "	<i>Ps. pyocyanea</i> " " " "	Two returns of pyrexia. 59th day definitely afebrile. Complete recovery on 92nd day.	740 g. of sulphonamides in 92 days

particulars of the product were etched on the glass itself). The ampoules were immersed in spirit for 60 minutes, but the sterile water in which they were then rinsed gave positive cultures. Worth (1945) mentions the occurrence of staphylococcal meningitis following osteomyelitis of a vertebra after diagnostic lumbar puncture.

Evans (1945) describes two fatal cases of *pyocyanea* meningitis which occurred at three days interval after spinal anaesthesia had been administered by the same

Case Reports

Case 1—A woman 26 years of age was operated on for vesico-vaginal fistula under scurocaine spinal anaesthesia. Symptoms of meningitis occurred suddenly 15 days after the operation. Irregular pyrexia was present, accompanied by chills and she was somnolent, sometimes even semi-comatose. Lumbar puncture revealed *Ps. melanogenes* meningitis. Sulphonamide treatment was prescribed and a total dosage of 419 g. was given over 76 days, the only other treatment was symptomatic. The case presented striking remissions and at times there was promise of complete recovery. The blood serum contained no antipyocyanic agglutinins. The patient

* On one of the days of the lecture at the University of Louvain.

died on the 76th day of her illness after a fresh rise of temperature

Case 2—This patient, a woman aged 24, was operated on for ectopic ovary with perianthecitis, under scurocaine spinal anaesthesia. The fourth day after operation peritonism and meningism were seen. On the sixth day there were evident signs of meningitis, and *Ps melanogenes* was found in the cerebrospinal fluid. Penicillin was given intramuscularly and intraspinally, and medium doses of a sulphonamide were administered from the sixth day. She died on the ninth day.

Case 3—A man aged 41 was operated on for hernia and appendicitis under scurocaine spinal anaesthesia. Symptoms appeared suddenly on the fourth day. The patient complained chiefly of severe headaches. *Ps melanogenes* was found in the CSF. The illness seemed to respond favourably to sulphathiazole treatment, three remissions occurred but the temperature returns were of little importance. On the 100th day of the illness the cell count of the CSF was 83 per cmm (it was 8 000 at the beginning). The patient however, was anything but docile and we were unable to keep him any longer at the clinic. He went home, and very soon had a renewal of pyrexia, with signs of meningitis, urinary retention, and a Cheynes Stokes type of respiration. The patient died 15 days after returning home, having received 1,172 g of sulphathiazole in 114 days.

Case 4—A woman aged 35 was operated on for epigastric hernia under scurocaine spinal anaesthesia. Illness occurred four days after the operation. The patient was treated with sulphathiazole and seemed very soon to improve, but on the 12th day symptoms of meningitis were observed accompanied by general and local epileptiform crises. Lumbar puncture revealed the presence of true *Ps pyocyanea*. The patient was successfully treated with sulphathiazole, the headaches weakened the epileptiform crises diminished and after two minor relapses the temperature was normal from the 59th day, after 436 g of sulphathiazole had been given. Owing to a persistent slightly raised cell count in the CSF we gave her 8 g of sulphathiazole daily for 38 days. She took in all 740 g in 92 days. We kept her under observation for 15 days without treatment, before discharging her. Seven months after her departure she was perfectly well.

Comments

Patients 1 and 2 had been operated on at Surgical Centre A by two different surgeons. The two cases were caused by *Ps pyocyanea* of the *melanogenes* variety. At the same period and at the same clinic two other cases of meningitis occurred 15 days after spinal anaesthesia, these were cured by intensive sulphonamide therapy, but the pathogenic agents were not determined. Patients 3 and 4 were operated on by one and the same surgeon at Surgical Centre B. This surgeon has used the same technique for spinal anaesthesia for the last seven years, and so far no complication has occurred. But all of a sudden 7 cases of meningitis arose. After the appearance of the first case the surgeon intensified the aseptic measures, but, despite this, 6 new cases were seen at the same time. Three of these patients died (one of them is Case 3). Cultures of the CSF of all the cases were made at the surgeon's request.

The pathologist, Prof Bruynoghe (1944), found only two positive cultures (Cases 3 and 4) in one, true *Ps pyocyanea* was developing, in the other, *pyocyanea* of the *melanogenes* variety. The causes of the infection in our four cases are obscure.

The third surgeon (of Centre B), who had 7 cases of meningitis, sent to Prof Bruynoghe a box of scurocaine ampoules five of them were submitted to careful bacteriological examination, but did not reveal the slightest trace of any pathogenic agent. The brushes, however, used by the surgeon to clean his hands were never sterilized. Prof R Bruynoghe is inclined to attribute the cause of the infection to that reason since then the brushes have always

been sterilized, and no further cases of meningitis have been reported from the two clinics. It is interesting to repeat that the nursing personnel of the two surgical clinics belong to the same school.

The three cases treated by us have received very heavy dosages of a sulphonamide—419 g in 76 days, 1,172 g in 114 days, and 740 g in 92 days—without any reaction. The three cases caused by *melanogenes* proved fatal in spite of the fact that two of them (1 and 3) received intensive sulphonamide treatment. Patient No 4, whose meningitis was caused by true *Ps pyocyanea* recovered completely after 92 days sulphathiazole treatment.

Summary and Conclusions

Reports are given of 4 cases of *Ps pyocyanea* meningitis, three of which were of the *melanogenes* variety. Three of them received intensive sulphonamide treatment (by mouth). The fourth had a rapidly fatal issue, and was wrongly given penicillin and only medium doses of a sulphonamide.

One of the cases, caused by true *Ps pyocyanea*, was cured after intensive sulphathiazole treatment (740 g in 92 days).

Pyocyanea meningitis—in particular that due to the *melanogenes* variety—is very rare, and possibly is nearly always of traumatic origin.

The four cases recorded show that spinal anaesthesia may be the cause of the infection. When using that method the aseptic technique therefore can never be too thorough.

These forms of meningitis, in particular those of the *melanogenes* variety, are very resistant to treatment, early and intensive sulphonamide therapy, persevered with because of the frequency of relapses, seems to give the only hope for a real cure.

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Thorpe's Dictionary of Applied Chemistry is a work which has gained a well established position in technical literature. Volume VII of the fourth edition is now before us (Longmans, Green and Co price 80s). Its contents run from Iodine to Metallography. The work is primarily intended for consultation by technologists, and the technical aspect of the subject matter is everywhere prominent but the members of the Editorial Board have wisely recognized that pure science is entering the realm of technology in ever increasing measure. They have accordingly made a selection of contributors of special articles from among the most prominent men who are acknowledged specialists in the scientific approach to the respective subjects and these contributors have incorporated the newest information. As examples of the exhaustive treatment it may be mentioned that under Iodine considerable space is given to iodine therapy, and that a full account of Vitamin K is given under its own heading. Other articles worthy of special mention are those concerned with iron and steel, leather magneto-chemistry, mass spectra, and metallography. The references include a most extensive variety of matters extending from such subjects as those named above down to the chemical constituents of the lotus plant and of the homely leek. The eminent position of *Thorpe's Dictionary* in chemical literature is fully maintained in the new edition.

HEPATIC HYDATID CYST CAUSING SUPRARENAL HAEMORRHAGE

BY

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Hydatid disease in the British Isles is comparatively rare, and almost all the cases that have occurred originated in a small endemic area in South Wales. The following case presented a very unusual clinical picture. I have been unable to trace any similar case in the literature, although Barnett (1941) records haemorrhage as a cause of death in six cases of abdominal hydatid cyst, and Dew (1928) describes a case of haemorrhage due to anaphylaxis.

Case Report

The patient, a fitter and tester aged 29, was born in Abertillery, Monmouthshire. He was described as being delicate from birth, and at the age of 14 was suspected of having tuberculosis and went to live on a farm at Gilwern Monmouthshire, where he stayed for three years. He left South Wales at the age of 21 and had since lived in Ipswich. He had never been abroad.

In July 1944, he had an attack of jaundice, with vomiting and abdominal pain, lasting six weeks. A similar attack occurred in December 1944, and lasted eight weeks. Following these attacks his general health was impaired, he appeared languid, fainted frequently and had considerable flatulence. On May 27, 1946, he developed upper abdominal pain, diarrhoea, and flatulence, followed next day by jaundice and vomiting, with pale yellow stools and dark urine. He was seen by Mr Langley as an out-patient on May 30, when he was noted to be a well built man, with moderate jaundice, clean tongue, and good teeth. The liver was enlarged to 4 in (10 cm) below the costal margin, with slight tenderness in the gall bladder region but the gall bladder was not palpable. Rectal examination revealed no abnormality. At 8 p.m. on June 1 he was admitted to the Ipswich Borough General Hospital, having become dyspnoeic the previous evening and having passed no urine for twelve hours. On examination he was found to be deeply jaundiced and moderately dyspnoeic but not distressed or cyanosed. The temperature was 103° F (39.4° C), pulse 132, respirations 36. His pulse was of poor volume and his blood pressure was 80/50. No abnormality was found in the heart or chest on clinical examination. His liver was enlarged, as above, and very tender, with tenderness spreading down to the umbilicus. The spleen was not palpable.

Investigations—The following results were found on May 30. Urine S.G. 1030, bile + + +. Blood count Hb, 118% R.B.C., 5,240,000 per c.mm. reticulocytes, 0.5%, W.B.C., 10,300 per c.mm. (neutrophil polymorphs 52%, lymphocytes 40%, monocytes 8%). Van den Bergh strongly positive direct reaction. Serum bilirubin, 17.1 mg per 100 ml. Fragility test normal. W.R. negative. Radiographs of the chest on admission showed congestion of both lung bases and raised diaphragm.

A provisional diagnosis of acute hepato renal failure was made, and treatment with intravenous glucose saline, dehydrocholine, and insulin was started. He was also given eucortone in view of the

low blood pressure. Despite all this, however, he died in the early hours of the next morning.

Post-mortem Examination—The cause of the hepatomegaly was found to be a hydatid cyst 5½ in (14 cm) in diameter with multiple daughter cysts (see photograph). All the blood was noted to be fluid, and there were petechial haemorrhages on the visceral pericardium, peritoneum, and pleura. There was also haemorrhage into both suprarenals, more severe on the left. The lungs showed bronchopneumonia. The spleen was slightly enlarged. No abnormality was found in the brain, heart, or kidneys.

Discussion

The probable sequence of events leading to death seems to have been a rupture of the cyst into a large bile duct, causing blockage of the biliary system, jaundice, and lowered prothrombin level. This in turn led to multiple haemorrhages, including destruction of both suprarenals resulting in lowered blood pressure, extrarenal anuria, and death. The high temperature was due to a severe cholangitis in the left lobe of the liver, which can be seen in the photograph. Another possibility is that the whole picture is one of anaphylaxis due to rupture of the cyst into the biliary system, but in view of the absence of urticaria and the lack of eosinophilia this seems unlikely.

The period of infestation is still more debatable. It is tempting to think that the patient became infested while on the farm, where there were many dogs. In this case the cyst would be 12 to 15 years old. In a special investigation into the South Wales cases by the Welsh Board of Health (Howell, 1938), however it was found that the majority of cases occurred in the industrial areas and towns. It is therefore more likely that he was infested at a still earlier age while in Abertillery, and, indeed, this may have accounted for his debility, which led to the suspicion of tuberculosis. His two previous attacks of jaundice were probably also caused by partial rupture of the cyst into a bile-duct. This could account for both the cholangitis and the multiple daughter cysts which Dew believes are always initiated by trauma to the primary cyst, partial rupture into a bile-duct is a common type of trauma.

Summary

An unusual case of hydatid cyst of the liver is described. This caused three attacks of jaundice, in the last of which multiple haemorrhages developed, including haemorrhage into both suprarenals, leading to collapse, anuria, and death.

I wish to express my thanks to Mr G. F. Langley for much advice and assistance in writing this note, to Dr J. Fielding for the post-mortem examination and to Dr J. W. Hunter, medical officer of health, for permission to publish the case.

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Photograph showing hydatid cyst with multiple daughter cysts, cholangiectasis left lobe, and macroscopically normal right lobe.

WILLIAM KLYNE'S *Practical Chemistry for Medical Students* has been prepared with special regard to their requirements. With them the problem is to acquire a complete grasp of the principles and relationships of chemistry in the relatively short time at their disposal. The system by which they are successfully to be taught depends therefore on a judicious choice of subjects for practical experiment and on the presentation of these in a form which is most easily assimilable, free from ambiguity, and which clearly enunciates the principles that are to become the foundation for an understanding of future problems. The success of the author in accomplishing this purpose could only have been achieved by one who had had much experience in teaching the subject to students of that category and who was gifted with discernment to recognize the most effective plan. His experience as a teacher of practical chemistry to medical students has enabled him to develop under a system of continuous re-examination and review an excellent textbook for the purpose required. In its production the author has paid much constructive attention to the clarification of the exercises to be performed and has avoided the common danger of obscuring the theoretical purpose in the instructions for procedure. In this sense the text bears evidence of care to obviate all forms of ambiguity and to make every fact easy of recognition. The opening chapters giving general ideas on qualitative and quantitative work, on manipulation and on appreciation of the findings form an excellent example of how the subject should be introduced. This book, published in Edinburgh by E. and S. Livingstone at 20s. may be commended to all who have to follow the medical student's course of study.

Medical Memoranda

The Filigree Operation for Hernia

For a considerable time the filigree operation for hernia has fallen into disrepute in this country, but during the last two or three years one or two British surgeons have become increasingly interested in this method of treatment and several, though not making use of the actual lattices of silver wire known as filigrees, have nevertheless used sutures of silver or other unabsorbable material in order to repair the damaged inguinal canal.

During the past two years I have had the opportunity of watching the operation performed regularly at the Seamen's Hospital, Greenwich, and have been impressed by the apparent solidity of the repaired canal at the time of operation and also by the first-class results seen in the follow-up clinics there. In spite of this I have been reluctant to adopt the method wholeheartedly because of the great prejudice against it. I decided to discover exactly why the method had been condemned, and, by a combination of both clinical and experimental means, to investigate fully all criticisms directed against it. This would seem to be the only way to determine whether or not such objections really are valid or whether, in point of fact, the dangers and difficulties of this operation have been exaggerated, thus deterring surgeons from making use of what seemed to me to be a method which has a very definite place in the curative treatment of hernia.

After much discussion with my surgical colleagues I have come to the conclusion that the objections to the filigree operation put forward by competent and experienced men may be listed as follows:

- 1 The operation causes marked immediate post-operative pain, and this persists longer than is usual for cases operated on by other methods.
- 2 The filigrees move about in their beds when the patient moves his legs or trunk during convalescence.
- 3 The filigree is capable of movement in the tissues at a later period.
- 4 A rigid structure such as a silver filigree is apt to cause delayed post-operative pain and limitation of movement in the area in which it is implanted.
- 5 Secondary haemorrhage may occur from ulceration of blood vessels in the neighbourhood of the metal.
- 6 Faecal fistulae may be produced owing to the silver coming into contact with the bowel.
- 7 There is a great liability for the wound to become infected.
- 8 If the wound becomes infected the surgeon is faced with an exceptionally difficult problem as the metal cannot come away in small fragments, as can silk but must be removed in toto.
- 9 It is a bad surgical principle to implant foreign bodies in the tissues.
- 10 If there is a recurrence of the hernia following this operation its cure is rendered doubtful and very difficult owing to the presence of the previously inserted filigrees.
- 11 Finally, it has been stated that since hernia is the operation of choice for teaching surgery to beginners a highly skilled technique such as the implantation of filigrees would render the cure of hernia too difficult a procedure to allow surgeons to use it as a teaching ground for their juniors.

This list of objections could easily be divided into two groups—the one capable of solution by careful clinical study of patients before during and after the operation, and the second by animal experimentation in the laboratory.

In the first group may be included the question of post-operative pain, secondary haemorrhage from ulceration of blood vessels in the neighbourhood (in all those cases that I have seen operated on the filigree has been placed in direct contact with the deep epigastric vessels), rigidity of filigrees causing limitation of movement following operation and the special liability to wound infection. Whether or not the filigrees move in the body at later periods can easily be discovered by a

careful study of stereoscopic skiagrams taken shortly after the operation and again at an interval of weeks, months, or years. During the past few months I have collected many skiagrams which should yield useful information on this point.

In the second group experimental methods would seem to be necessary to determine how readily faecal fistulae are produced should the metal come into contact with the bowel and might also be expected to shed light on the question of secondary haemorrhage from vessels in the neighbourhood if such lattices were implanted in direct contact with blood vessels and bowel in the experimental animal. The question of limitation of movement after the use of silver lattices could also be solved in this way.

I hope to be able to investigate the dangers of operating for recurrent herniae in a field already containing filigrees by reproducing a similar set of conditions in some small animal such as a rabbit, and also the difficulties liable to be encountered if removal of filigrees from the tissues should become necessary at a later date.

Though it is true that the use of filigrees can be criticized on the ground that foreign material is being introduced into the tissues, it seems to me strange that this objection carries but little weight when applied to the use of other unabsorbable materials, such as silk, thread, etc. at present employed in so many operative procedures. Therefore it would appear useful to investigate further the relative tissue reactions provoked by introducing such substances as silk, thread, silver, tantalum, etc., into the tissues of the experimental animal. These investigations are at present being undertaken a number of experimental operations having already been performed. I propose, as soon as the investigation is completed to give a full account of this work, together with the conclusions reached.

D M COOPER FRCS

Primary Lymphogranuloma Inguinale in the Female

In countries where lymphogranuloma inguinale is prevalent the primary lesion is rarely seen in females. The following case in which the lesion developed in a contact under surveillance in this country is therefore of interest.

The husband, a Service man, came for examination one month after exposure to infection in Bombay. Three weeks after intercourse he had noticed stiffness in the right groin when walking, and a painful swelling had appeared there. On examination there was a slight mucoid urethral discharge and on the right side of the coronal sulcus was a herpetiform vesicle. The right inguinal glands were enlarged, matted together, and fixed to underlying structures and to skin which was otherwise normal. Clinically the case was typical of lymphogranuloma inguinale. The Frei test was negative at this stage but inclusion bodies were demonstrated in scrapings from the wall of the urethra. Tests for the other venereal diseases were negative.

The wife also was examined on the same day. She had no symptoms and no clinical signs. Five weeks later she returned complaining of swelling in both groins. There were then three small herpetiform vesicles on the lower third of the inner aspect of the right labium minus. A similar lesion was present on the anterior lip of the cervix. Both right and left inguinal glands were enlarged and painful. As in her husband's case, tests for the other venereal diseases were negative, but the Frei test was positive at the end of 72 hours. The genital lesions had also increased in size, though no apparent change in the glands was noted. By the end of ten days the primary lesions had healed spontaneously and the inguinal glands had become smaller. Thereafter she attended for examination every fortnight and nearly four months after the date of the original diagnosis ulceration with oedema and infiltration of the anterior rectal wall had occurred. Inclusion bodies were demonstrated in scrapings from the rectal ulcers.

We wish to thank Dr Robert Lees, Director of the Department for Venereal Diseases, the General Infirmary at Leeds, for permission to publish this case.

W FOWLER MB,
BETTY WALKER MB,

Assistant Medical Officers Department for Venereal Diseases the General Infirmary at Leeds

Reviews

"CONSTRUCTIVE MEDICINE"

A Future for Preventive Medicine Studies of the New York Academy of Medicine Committee on Medicine and the Changing Order By Edward J. Stieglitz, M.S., M.D., F.A.C.P. (Pp. 77 \$1 00 or 6s) New York The Commonwealth Fund London Oxford University Press 1946

The monographs of this series from the "Committee on Medicine and the Changing Order" of the New York Academy of Medicine are of a very high standard. They are published in co-operation with the Commonwealth Fund, and each writer in turn has been invited to deal with some phase or activity of medicine and relate it to the fast-changing pattern of the life of the American people.

In this book Dr. Stieglitz describes, as he sees them, many of the problems of how medical science can be applied to create a higher level of health as opposed either to curative medicine or to measures designed to avoid a specific infection or group of diseases. In his introduction he is careful to point to the indefinite article at the beginning of the title, and he has succeeded in the book in striking a reasonable compromise between the dogmatic and the mere throwing out of suggestions. Nevertheless such a method has limitations, and in this case, while there are many most thought-provoking definitions and some of the best expositions of the aims of "human eubiotics" or "social medicine" or "constructive medicine"—or by whatever phrase we express ourselves—the author has largely failed to put forward a scheme which is capable of application either by organized social effort or by the individual practitioner. Merely to "snipe" at this monograph in such a way would, however, be quite unfair. The following quotations indicate original thought and a power of simple expression which so many gropers after truth in this subject sadly lack.

"Health has quantitative attributes involving functional reserve capacities. There are various degrees of health. Health is relative. Health can be no more absolute than such states as freedom, slavery, wealth, poverty, beauty, or ugliness. Yet these terms, and many others with abstract connotations, have been used so loosely that the implication of absolute value has crept into our thinking and confused our understanding. Perfect health is an ideal, an abstraction. As such it is essentially unattainable. Nevertheless, like any other abstract ideal, it may be approached."

"For the type of preventive medicine which takes as its objective the improvement of health rather than the lesser goal of avoiding disease, the term 'constructive medicine' has been proposed. The selection of this name was based on the idea that medical science can construct health as well as reconstruct it when destroyed by disease. Basically the treatment of disease is an attempt to reconstruct health."

"It is impossible to prove that disaster is inevitable if preventive care is neglected, for disaster is not inevitable."

"Statistics have little or no emotional appeal, intellectual acceptance of a concept does not activate its application. Thus there has always been a tremendous resistance to any and all preventive effort. The inertia of humanity is immense, mankind learns very slowly indeed."

"In contrast to the negative connotations of prevention in the usual conventional sense, construction of health has positive and aggressive implications."

"There are many disturbances in which infection apparently plays no role whatever. This is particularly true with the so-called degenerative diseases, illustrated by hypertensive disease, arteriosclerosis, hypertrophic arthritis, and the metabolic disorders such as diabetes mellitus, gout, and the thyroid dyscrasias. Prevention of these disorders therefore cannot follow the existing pattern of approach now applied to infective diseases. Yet this pattern has become so fixed in the minds of public health officials that little change can be anticipated unless it is initiated by others."

"Popular support, however, cannot be taken as a guide to intrinsic worth, people rarely become enthusiastic about anything which involves real effort on their part, even though the results more than justify the effort. Tactics will change as our knowledge of etiology expands."

The individuality of the American outlook is well illustrated by the following passages:

"Bitter experience teaches that volunteered advice is almost never followed and gratuitous suggestions usually are ignored. Aid must be sought and paid for to be appreciated."

"Every practising physician old enough to remember the depression has seen repeated evidence of decadence in the sense of individual responsibility, especially among the beneficiaries of free medical service. A social attitude of pampering paternalism exaggerated by governmental policy in the last decade, has encouraged the belief that everyone is intrinsically entitled to health, security, and ease without personal effort. These privileges are supposed to be granted by the ideal state."

While many in this country would agree now that 'the last decade has been marked by an increasing tempo in the appearance of attempts to 'give' health to the people by means of legislation,' the focus of attention has invariably been upon the administrative machinery involved. Bureaucracy flourishes best in the maze of complex administrative organizations. Sometimes the political motives behind such legislation are so obvious that they hardly warrant comment, of course the indolent of the electorate are pleased with the idea of getting something for nothing. Most of these schemes have inappropriately been called, "health programmes," whereas they actually constitute tax-supported subsidies for the treatment of the sick—redistributing the economic burden and adding immense administrative costs.

The arrangement of type in this book illustrates well an unfortunate tendency to neglect chapter subheadings in scientific and serious books. Such books are not intended to be read as novels. The reader wants to refer back, and even the chapter headings give him no guide, while an index is only of value when the book has recently been read. Why have the old-fashioned marginal paragraph summaries disappeared from serious books?

OCULAR PHYSIOLOGY

Physiologie Oculaire Clinique By A. Magitot (Pp. 458 illustrated 750 francs) Paris Masson et Cie 1946

A book published in a foreign language has both advantages and disadvantages. A disadvantage is that one's reading is less rapid than would be the case if it were printed in English. That is where translations of such famous books as Helmholtz's *Physiological Optics* are so valuable. The advantages are that a foreign author has a different literature to survey and to draw information from, because he has access to original articles which are not readily available to English readers. In consequence, his point of view and outlook are different, and his lists of references are also different. The book under review is very useful for this reason. It contains references to many publications with which the reviewer was unfamiliar.

The book deals with the following subjects: The lids, the lacrimal apparatus, the sensory nerves of the conjunctiva, the choroid, the ciliary bodies, the aqueous humour, the vitreous, the intra-ocular pressure, glaucoma, the conjunctival circulation, the cornea, the pupil reflexes, the crystalline lens, the mechanism of accommodation, the innervation of the ciliary muscles, the retina, the retinal vessels and circulation, visual acuity, the perception of colour, the Purkinje phenomenon, the perception of movement, chronaxie, the visual field, the visual centres, the encephalogram, the external eye muscles and eye movements, nystagmus, binocular vision, the importance of proprioceptors. The book as a whole is interestingly written, though it does not seem to contain anything startlingly new. Many of the diagrams are very clearly drawn.

THORACIC DISEASE

Diagnosis and Management of the Thoracic Patient Edited by C. P. Bailey M.D. (Pp. 334, illustrated 24s) London J. B. Lippincott Co 1946

This book from the "American Practitioner Series" is a symposium of articles by various authors, and it suffers from the fault which is so common in works of this type—unevenness. The editorial preface states that the aim of the book is to familiarize "the internist and the general practitioner with modern surgical practice in the management of the more important diseases of the intrathoracic organs." Unfortunately, however, most of the articles are too specialized and too long to be appreciated by anyone who is not himself specializing in chest disease.

The first contribution is an extended account of pulmonary resection for tuberculosis. Although this is well written and documented, pride of place should not have been given to a

BOOKS RECEIVED

[Review is not precluded by notice here of books recently received]

Renal Diseases By E T Bell, MD (Pp 434 35s) London
Henry Kimpton 1946
A monograph co ordinating 25 years study of renal diseases
Includes discussions on toxæmia of pregnancy, renal lesions,
diabetes, and relation of hypertension to the kidneys

The Eternal Child By Evelyn White, A.I.A. (Pp 79 6s)
London Chapman and Hall 1946
Describes the work of the children's almoner Intended to instruct
almoner students house men, and general practitioners

A Prelude to Modern Science By C Singer and C Rabin
(Pp 144 45s) Cambridge The University Press (for the Wellcome
Historical Medical Museum) 1946
A discussion of the history and sources of Vesalius's *Tabulae
Anatomicae* Sex with a translation and many illustrations

The Science of Seeing By I Mann, M.A., D.Sc., M.B., B.S.
F.R.C.S., and A Pirie (Pp 220 1s) London Penguin Books
1946
An account for the layman of the physiology of vision Contains a
chapter on the blind and how they may be taught

Old People (Pp 202 3s 6d) London Oxford University Press
(Geoffrey Cumberlege) 1947
A report on the individual social and medical problems of old
age and on the work for their care and comfort by public authorities
and voluntary organizations, with suggestions for future action
Illustrated

Etudes sur les Piropasmoses Bovines By Edmond Sergent
A Donatien, L Parrot (Pp 816 No price) Algiers Institut
Pasteur D'Algerie 1945
An investigation into the diseases of cattle caused by *Piropasma
bigenum* the *Babesiellae*, and the *Anaplasmae*

Renal Hypertension By E Braun Menéndez, et al Translated
by Lewis Dexter, MD (Pp 451 \$6.75) Springfield, Illinois
Charles C Thomas 1946
A monograph from the Institute of Physiology, Buenos Aires
Extensive bibliography The differences between human and experi-
mental renal hypertension are stressed

Urgent Surgery By various contributors Editor T L Spradell
MD (Pp 714 \$10.50) Springfield, Illinois Charles C Thomas
1946
The subjects covered include shock and haemorrhage, blood trans-
fusion, anaesthesia, as well as the usual abdominal catastrophes

Women and Children First By V H Wallace MD (Pp 341
15s) Melbourne Oxford University Press (Geoffrey Cumberlege)
1946
An investigation into factors affecting the birth rate in Australia
the effect of abortion, economic measures, and sterility The
immigration policy relating to coloured races is also considered

Whither Medicine from Dogma to Science? By Anton
Fidler, MD (Pp 115 6s) Edinburgh Thomas Nelson and
Sons 1946
The author criticizes the materialist theory implied in medical
science, and outlines an alternative scheme which he calls 'the
medicine of probability'

Microbiology and Pathology for Nurses By M A Morse
MD, Martin Frohisher Jr, S.B., Sc.D., and C B Rabin, MD
Second edition (Pp 758 17s 6d) London W B Saunders
1946
An introduction to the principles of bacteriology, hygiene, and
pathology for nurses Many illustrations

Fundamentals of Chemistry By L Jean Bogert Sixth edition
(Pp 571 15s) London W B Saunders 1946
An introduction to inorganic and organic chemistry for students
The author stresses the fundamental laws of chemistry rather than
the details of reactions Biochemistry is included

Laboratory Manual of Chemistry By L Jean Bogert Fifth
edition (Pp 196 5s) London W B Saunders 1946
A description of simple laboratory experiments for students
Designed to supplement the same author's *Fundamentals of
Chemistry*

DISTURBANCES OF SPEECH AND VOLUNTARY ACTION

Agnosia Apraxia Aphasia Their value in Cerebral Localiza-
tion Second edition By J M Nielsen MD, F.A.C.P.,
Associate Clinical Professor of Medicine (Neurology) University
of Southern California (Pp 292 59 illustrations \$5.00)
New York Paul B Hoeber

This book is much more than a new edition of its predecessor
In it Dr Nielsen has presented the evidence upon which he
has based his published statements on the functions of speech
and voluntary action and the disturbance of these functions
in disease Over half the text is devoted to the evidence—
much of it tedious but most of it necessary The ugly nomen-
clature, abounding with adjectives which has come to surround
this subject makes very difficult reading, although Dr Nielsen
has done his best to achieve uniformity He has presented a
new nomenclature based on the anatomy and physiology of
speech and behaviour, and has found it necessary to devote
over 30 concise pages to the presentation of this new termin-
ology The loss of such terms as 'verbal deafness' for
'auditory agnosia and auditory semantic aphasia,' and the
substitution of 'agnosia subcortical angular, verbal' for
agnosia, subcortical visual verbal leaves us confused, and
when we reach the 87th and last definition which states that
irremembrance visual verbal temporal, is loss of ability to
revisualize words due to a lesion of the temporal lobe, we are
incapable of more The early short chapters give a useful out-
line of the subject, the later ones will only attract the most
senior students of symbolism and speech

The FitzPatrick Lectures before the Royal College of Physicians
of London were to be delivered in 1939 by ARCHIBALD MALLOCH
MD (McGill) and Fellow of the Royal College Owing to the
outbreak of war the actual reading of the lectures never took place,
but Dr Malloch has now placed the lectures under the title of
in his debt by publishing an enlarged version under the title of
*Medical Interchange between the British Isles and America before
1801* In this monograph is included a vast store of information
about the early pioneers of medicine and surgery in the American
and Canadian colonies, and about occasional cases where the com-
pliment was returned The labour involved in this task has obviously
been enormous, but the spirit in which it has been carried out
clearly shows it to have been a labour of love How many people,
one wonders know that the introduction of the monkey puzzle
tree into England (from Chile) was the work of Dr Archibald
Menzies, surgeon to Vancouver's expedition? or that Thomas Dover
of Virginia met Samuel Johnson in London and wrote home a
most exact description of the Great Pyramids? Such and many
more queer and curious items the reader will find in this mine of
recondite information about some hundreds of old time medical
men

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TOWARDS DISCUSSION

A Special Representative Meeting was held on Tuesday of this week at B.M.A. House to consider the resolution of Council which was passed at its meeting on Jan 15 in response to the letter of the Minister of Health to the three Presidents of the Royal Colleges. Before this, it may be recalled, the Council, on the basis of the plebiscite returns, had passed a resolution recommending the Representative Body not to enter into negotiations with the Minister on the Regulations of the National Health Service Act. After a long discussion of various amendments the Representative Meeting passed by 252 votes to 17 the Council's resolution, as follows

That the British Medical Association, having considered the final results of the plebiscite and the Minister's letter of Jan 6 to the Presidents of the Royal Colleges and desiring to secure for the people the best possible Health Service, is willing that discussions be entered into with the Minister to that end, provided that such discussions are comprehensive in their scope and that the possibility that they may lead to further legislation is not excluded, and that after the conclusion of these discussions a second plebiscite of the profession be taken on the issue of entering the Service

Mr Bevan's letter was correctly interpreted as a conciliatory gesture. The Council showed its wisdom in responding in the same manner without abandoning the principles for which it and the profession stand. It therefore recommended the Representative Body to enter into discussions with the Minister, "provided that such discussions are comprehensive in their scope and that the possibility that they may lead to further legislation is not excluded." There is no point in reiterating here what the fears and the objections of the profession are. The Minister of Health and the public generally do not seem to us yet fully to have understood the reasons why so many thoughtful members of the medical profession criticize the present Act and are apprehensive because of its implications. What these criticisms and fears are was set forth in the closely reasoned article by Mr Reginald Payne which was published in the *Journal* of Jan 18. That this article has struck a ready response in the minds of many thoughtful doctors is clear from the letters reaching the *Journal*.

The report of the Special Representative Meeting is published in the opening pages of this week's *Supplement*. The report was received shortly before going to press, and comment on it in detail is therefore not possible. It is, however, clear that the representatives, coming from all parts of the country to give voice to the views of the doctors in their divisions and branches, were fully seized of the gravity of the present position, fully deter-

mined not to yield on principle, and quite clear about what is meant by the endorsement of the Council's recommendation to enter into discussions with the Minister. If Mr Bevan rejects the Association's offer then a complete deadlock will be reached. This would be a state of affairs which neither he nor the profession nor the public would welcome. If we are to be just, we must as a profession recognize the fact that Mr Bevan has already made compromises which are not wholly acceptable to his own Party. We must recognize, too, that if the Minister agrees to include clauses of the Act in the scope of further discussions he will probably have to face opposition from his own side of the House of Commons. Nevertheless, this is what the profession is asking him to do and asking the public, through Parliament, to do. This request comes from men who are proud to call themselves workers and who at the moment differ from many other groups of workers in this country in not asking for restricted hours of work at a time when necessity demands the highest output of labour, mental and physical, so that the fruits of victory shall not be bitter. We therefore appeal to the Minister of Health to show high political courage by accepting with all its implications the invitation now extended to him by the Representative Body as the mouthpiece of more than three-quarters of the doctors of this country.

OUR WANING INTELLIGENCE

The distant prospect of a "galloping plunge to intellectual bankruptcy" has prompted the Eugenics Society to publish an "occasional paper" by Sir Cyril Burt on intelligence and fertility.¹ In this admirable booklet are set out the experimental results which strongly suggest the possibility that, if present population trends continue, this country faces a progressive decline in the level of our national intelligence.

The basic facts are clear. The results of intelligence tests which purport to measure the standard of mental ability show a negative correlation ($r = -0.20$) between the intelligence quotient of a child and the size of the family to which he belongs. This means that members of larger families have on the average lower test scores, conversely only children tend on the whole to do better in these tests than those from larger families. The precise nature of the quality of the mind measured by the tests applied by educational psychologists is still not clearly defined, but there seems to be some general factor of cognitive ability which is tapped by all well-constructed tests of intellectual skill. Whatever its precise nature, there is ample evidence that intellectual ability of this type is heritable from parent to child. The correlations between test results in members of the same family are similar to those for height and weight. Between identical twins the correlation coefficient $r = +0.86$, between siblings $r = +0.50$. In fact about 75-80% of the variability in intelligence quotient between individuals can be explained by heritable factors. Further

¹ The Eugenics Society and Hamish Hamilton Medical Books 1947

there is no reason to suppose that high intellectual endowment in this sense and specialized skills or desirable social virtues are mutually exclusive in the same person. Distinguished musicians and artists, talented in the fields of imagination and manipulative technique, are seldom subnormal in general intellectual ability. As might be expected from all this, the children of the professional classes are found to be on the average (but only on the average) more intelligent in this sense than the children of, say, unskilled labourers. In other words, since like breeds its intellectual like, the maintenance of a steady level of the national intelligence depends upon the more intelligent parents contributing enough to the next generation to balance the quota added by parents at the other end of the intellectual scale. This is the crux of the matter, and the serious potentialities of present trends are seen in a comparison of the fertility rates in the different social and intellectual groups in the population. It is evident enough that at the present moment professional families have a net reproduction rate well below that of the working classes. To some extent the negative correlation between intelligence quotient and size of family in a heterogeneous sample from all social classes may be due to the higher average endowment of the small professional families. But there is more to it than that. The same negative association is seen even in a socially homogeneous group like the Yorkshire miners.² This implies that it is the more intelligent parents in every social class who tend to have smaller families. The existence of such a trend in the more numerous working class is the most ominous portent of all.

What then are the social and national implications of these findings? Prognostication in population statistics is notoriously difficult. Much depends on the continued presence of those factors which make for relative infertility—for example, in the professional classes, late marriage, lack of domestic help, anxiety about educational commitments. If, however, the stability of present tendencies be assumed a statistically legitimate forecast of the trend in the average level of intelligence can be made from the results of a sample survey of children in the present generation. There is more than one method of arithmetical approach,² but the results are essentially the same: a maintenance of the present drift will result in a drop of nearly two points on the Binet I.Q. scale between the average of one generation and the next. In a child of 15 a difference of four months in mental age, such as this drop would entail, would hardly be appreciable. But if we consider the extremes and not the average of the frequency distribution along the I.Q. scale a continuation of present trends will result, after a period of fifty years, in a halving of the proportion of scholarship-standard students in our schools and a doubling in the incidence of feeble-mindedness.

These dire prophecies are of course largely based on indirect evidence, of a type which appeals more to the arithmetician than to the administrator. Yet such direct comparisons as have been made between intelligence tests repeated in successive generations have tended to support

the general argument. These surveys may be criticized on social grounds. Burt points out how his own finding among London children of a drop of 0.87 in the measuring scale in twenty years, which is equivalent to 1.3 points in a generation, may be explained in part by the migration of the better stocks and extensive resettlement. Similarly, the rise in the incidence of mental deficiency from 4.6 per thousand to 8 per thousand between 1904-7 and 1925 reported by the Joint Committee on Mental Deficiency³ in 1929 was thought by their medical investigator, E. O. Lewis, to be partly due to better methods of assessment and a reduction in mortality through better care. Burt discounts the possibility that the observed slight diminution of intelligence between earlier and later arrivals in a family explains the association between intelligence and size of family. At the recent meeting of the Eugenics Society (reported elsewhere in this issue) Prof. Penrose made some more soothing comments on the possibility of restitution factors beyond our present ken which tend to maintain the stability of the intellectual mean like other statistical averages such as stature. He pointed out the results of studies among Toronto children, where stature had previously been shown to be negatively correlated with family size—i.e., families large in number tended to be small in average height, yet a survey, made a generation later showed an increase in mean stature. Nutritional improvement in the last few decades has no doubt had its effect. If the analogy be extended to intelligence it seems less safe to assume that improvements in the cultural and educational backgrounds will entirely compensate for the threatened fall in intellectual standards. Indeed, home environment at present accounts for perhaps less than 20% of the variability in test results. It is true that there are still untapped reservoirs of intellectual ability among poorer families, and we must hope that the educational facilities offered by the new Act will ensure opportunities for gifted children irrespective of social class. But as Sir Alexander Carr-Saunders said in this context, it is little consolation for the inhabitants of an island whose shores are being rapidly eroded by the sea to know that they still have some untilled fields.

In Burt's words, "as a nation we should know our resources in mind-power as accurately as we do in man power, iron, and coal," and it is clearly essential to know not only our present assets but also the direction of the trend in our national intelligence. To do that will need large-scale direct comparisons between the results of intelligence tests of children of one generation and the next. Some studies on these lines are already under way, the first very tentative results obtained are certainly not very reassuring. The problem demands for its solution what was pressed for by every speaker at the Eugenics Society meeting—an intensive, large-scale study undertaken by a team drawn from psychologists and psychiatrists, sociologists, and statisticians. The subject is one which engenders considerable emotion, and an accurate and objective assessment of the facts will need the combined endeavour of men trained in all the social sciences.

² Thomson Godfrey. *The Trend of National Intelligence*. Eugen Rev 1946 38 9

³ Joint Committee on Mental Deficiency Report Part II Chap 2 pp 37 f and Appendix B

INFANTILE GASTRO-ENTERITIS A VIRUS INFECTION

The idea that viruses play a part in the aetiology of certain outbreaks of acute gastro-enteritis of infants is by no means new, for it was investigated nearly twenty-five years ago at the Sick Children's Hospital, Great Ormond Street, by a small team of workers under Dr Mervyn Gordon. For lack of clinical material no definite conclusions were then reached. Some evidence has since been brought forward from America that a virus may be responsible for cases of acute gastro-enteritis in infants. More suggestive evidence that infantile gastro-enteritis is merely a symptom of a generalized virus infection has, however, recently been given by Christen and Biering-Sorensen.¹ Since December, 1943, they have been able to investigate some 500 cases of a particularly virulent form of gastro-enteritis which have occurred in paediatric wards and in asylums in Copenhagen. The disease is characterized by its great infectivity for infants under 3 months, premature and debilitated children being especially liable, while no certain case has been observed in children older than 9 months. In several instances the outbreaks have been explosive in character, all the inmates in a children's home having acquired the infection within a week. The incubation period is short, usually from 3 to 5 days. The mortality has been high, and often over 50% of those affected have succumbed. At necropsy the main finding has been fatty degeneration of the liver, associated with a terminal bronchitis or bronchopneumonia. Unfortunately no attempts seem to have been made to transmit the disease to animals, but in 32 fatal cases the central nervous system was carefully examined. In 21 of the fatal cases the cerebrospinal fluid was also investigated. While the protein content was invariably within normal limits in all, in 14 children an excess of round cells was present. Cultures from the cerebrospinal fluid and brain were all bacteriologically sterile.

Histological examination of the brain showed that in 8 cases there was well-marked meningo-encephalitis, in 18 cases there was meningitis without any inflammatory changes in the brain, while in 6 children congestion and oedema of the brain were noted. In those cases which showed meningo-encephalitis, in addition to perivascular infiltration, degenerative changes with neuronophagia were seen in ganglion cells, especially round the floors of the third and fourth ventricles and to a less extent in the cortex. In one case the leucocytic infiltration was so pronounced that in the hypothalamic region it caused large perivascular nodules. Small perivascular haemorrhages were present in all cases examined, whether the associated lesions were those of meningo-encephalitis, meningitis, or merely oedema. No perivascular demyelination was noted. Good photomicrographs illustrate the lesions found. The most extensive meningo-encephalitic changes were present in the youngest age group, whose average age at onset was 14 months, with extremes of from 3 weeks to 2 months. Meningitis or hyperaemia and oedema were found in groups averaging 7 and 5 months.

In searching for previous accounts of brain lesions in association with acute infantile gastro-enteritis it may be noted that a number of observers have recorded changes in the central nervous system. The earliest account of cerebral lesions in association with an epidemic of infantile gastro-enteritis is by Duzar and Balo.² In 7 children they found in the brain oedema, congestion, petechial

haemorrhages, early thromboses, degeneration of ganglion cells, glial proliferation, and in one instance extensive perivascular infiltration extending from the region of the corpora quadrigemina to the medulla oblongata. In 1926 Ribadeau-Dumas and Debray³ described "haemorrhagic meningo-encephalitis" in the brains of infants with severe gastro-enteritis, but as round-celled infiltration was absent it is doubtful whether the lesions can really be termed encephalitic. In sporadic infantile gastro-enteritis Eckstein⁴ described three children with encephalitis, of whom only one was an infant. Goldzieher⁵ reported three cases in infants, Schiff⁶ one case, while Schaferstein and his collaborators⁷ carried out 9 necropsies in one year and found encephalitis in three. More recently Lyon and Folsom,⁸ during an outbreak of epidemic diarrhoea of the newborn recorded oedema, haemorrhages, and perivascular round cell infiltration in the brain substance in two infants.

There is thus considerable evidence that in both sporadic and epidemic cases of infantile gastro-enteritis the changes found in the brain are those characteristic of an infection due to a virus with neurotropic potentialities.

TWO ASPECTS OF MENINGITIS

The prevention and treatment of meningitis are the themes of two papers in this issue of the *Journal*. On page 179 C. A. Vuylsteke, of Louvain, contributes observations on an entirely preventable meningeal infection of which four cases have come under his care. The history of its study may not yet be quite familiar. It goes back to the earliest days of spinal anaesthesia, since when a small proportion of patients given spinal anaesthetics have subsequently developed signs of meningitis, with pleocytosis and increase of albumin in the cerebrospinal fluid, but usually without evidence of bacterial infection as revealed by conventional culture. This was generally regarded as a response to the anaesthetic substance itself, and consequently described as 'aseptic' or 'chemical' meningitis. Whether such a condition really occurs is disputable, but it is now well recognized that a similar spinal meningitis may follow lumbar puncture alone without the injection of any solution, and that both these and at least most if not all of the post-anaesthetic cases are infective. The organism concerned is almost always a Gram-negative bacillus, either *Ps. pyocyanea* or a nondescript *Achromobacterium* of the sort commonly found in unsterile water. Supposedly sterile water obtained from a defective theatre filter was the undoubted source of the organism in the Sheffield series of cases, the reports on which by Barrie⁹ and by Smith and Smith¹⁰ did more perhaps than any other contribution to this subject to clarify it. Subsequent writers whose work is referred to by Vuylsteke, have accepted the view that the rinsing or "dishing-up" of lumbar puncture needles, syringes, or other apparatus used for lumbar puncture or spinal anaesthesia in distilled water is an exceedingly dangerous practice unless the water is autoclaved and from a previously unopened properly sealed bottle. The common assumption that water is necessarily sterile because it is distilled is completely false. It is certainly far better to eliminate the use of such fluids altogether, and it is imperative that all apparatus used should be efficiently heat-sterilized. This includes the manometer if

³ *Bull. Soc. Pédiat.* 1925 23 68
⁴ *Erg. inn. Med. Kinderheilk.* 1929 36 494

⁵ *Amer. J. Dis. Child.* 1930 40 446

⁶ *Jhrb. Kinderheilk.* 1931 132 129

⁷ *Ibid.* 1933 138 95 1935 145 210

⁸ *Amer. J. Dis. Child.* 1941 61 427

⁹ *Lancet* 1941 1 242

¹⁰ *Ibid.* 1941 2 783

¹ *Acta path. microbiol. scand.* 1946 23 393
² *Jh.b. Kinderheilk.* 1922 99 209

this should be used in connexion with diagnostic lumbar puncture, it is the passage of cerebrospinal fluid into and back from this tube which probably often accounts for meningitis of this type following lumbar puncture alone. It only remains to add that the failure to demonstrate organisms in cerebrospinal fluid from these cases may often have been due to the inappropriateness of ordinary methods of cultivation. These organisms grow best in very simple media and at a temperature below that of the body. In each of Vuylsteke's patients a *Pseudomonas* was concerned, *pyocyanea* in one, and the rare and unfamiliar *melanogenes* in the remaining three. Intensive sulphonamide treatment produced the only recovery. When available in the future streptomycin will have to be considered as an alternative or in addition. Penicillin is useless for this type of infection.

There is some evidence that *Ps. pyocyanea* meningitis has occasionally been produced by intrathecal instillation of penicillin. The introduction of any fluid into the theca is a proceeding calling for the strictest of all asepsis, and the extensive lavage recommended for the treatment of meningitis by J. A. Nissim in his paper on page 176 is certainly no exception to this. Nissim contends that the two-needle method, whereby fluid is passed from, for example, the cisterna magna to the lumbar region, is less effective for clearing away purulent exudate than repeated flooding and withdrawal through a lumbar needle. By doing cell-counts on the products of these repeated wash-outs he has been able to calculate the equivalent in terms of the original fluid of the pus so removed, and it amounts to a large volume. It is also of much interest that the final instillation after such wash-outs, apparently owing to an osmotic effect, is followed by a fall of pressure. These facts, and the encouraging results in the eight cases treated, should certainly ensure that the method be given a wider trial. Obstruction by the accumulation of thick exudate is the main cause of failure in the treatment of purulent meningitis even when effective chemotherapeutic agents are available, and this appears to be a promising method of obviating it.

FOOD IN GERMANY

All recent reports from the British Zone in Germany emphasize the mounting despair and hostility felt by that underfed, ill-clad, embittered population towards the British. Resentment flourishes and is watered by the tears of self-pity that the Germans so easily shed, criticism of the British has greatly increased recently in cellars, on public platforms, and even in the German Press. One might say that the breaking-point is being approached were it not that there is nothing left unbroken. A recent nutrition survey carried out by a combined British, United States, and French committee reports that "while part of the population of the cities of the three Zones of Western Germany is in a fairly good nutritional state, a significantly large proportion is in an unsatisfactory condition, and of those an increasing number show signs of severe under-nutrition." The purpose of the survey was to compare the nutritional state with that existing in August, 1946, to estimate the effect of the authorized ration allowances on the state of nutrition, to assess the quantity and effect of available unrationed food consumed in the three Zones, and to determine the extent to which available food is allotted in accordance with nutritional requirements. We append a table of the calorie value of the official daily ration scales current in November, 1946.

In August, 1945, this committee expressed their opinion that the minimum food allowance which could safely be

issued if malnutrition was to be avoided was the equivalent of 2,000 calories daily. This has often not been obtainable, and the weights of German adults are now significantly lower than they were a year ago. Hunger oedema, though mild, has increased, and cases are occurring in younger age-groups than formerly. The only group relatively unaffected by the food shortage is that of children under 7, partly because their ration approximates more closely to their requirements than does that of other groups, partly

Calorie Value of the Official Ration Scales Current in November 1946

Category	Calories
Normal consumers	1 557
Children under 1	1 138
1-2	1 211
3-5	1 507
6-9	1 771
10-19	1 944
Pregnant and lactating women	2 567
Workers	
Moderately heavy	2 035
Heavy	2 513
Very heavy	2 883
Miners	
Surface	3 274
Underground	3 966

because their mothers share their own rations with them. The committee recognized that the 2,000 calories recommended would not immediately be available, and they set the figure of 1,550 calories as the lowest at which life could be maintained. Experience during the last year has proved that this recommendation was fairly correct, nevertheless, the provision of 1,550 calories is not in itself sufficient, and severe malnutrition has been avoided only by recourse to unrationed foods and the black market. It was found that this basic ration, when supplied to prisoners, whose physiological needs are probably less than those of men leading a free life, was insufficient to prevent the effects of starvation, and it is necessary to allow men in gaol to receive food parcels from outside. The seriousness of the present position is in part due to the depletion of goods suitable for bartering on the black market.

The ration of underground coal miners provides approximately 4,000 calories, but, though this is theoretically sufficient and though they have opportunities for bartering coal, malnutrition has not been prevented. The miner is part of a family group, and much of his ration goes into the family pool—a fact borne out by experience in the French Zone, where the provision of additional food for miners' families has resulted in improved nutrition in the miners and an increased output of coal. The population as a whole is remarkably free from the observable effects of vitamin deficiency diseases, and the unsatisfactory state of nutrition is due almost entirely to lack of calories and associated protein, with consequent loss of body weight, weakness, and ready fatigue as the commonest manifestations. The committee recommends that, in addition to increasing the ration scales, school-feeding programmes should be extended to include all children, that the British authorities consider giving more food to the families of coal miners, that calcium carbonate be added to flour in the proportion of 1 part in 280, and that, in view of confusion over the computation of calories, a uniform scale be implemented as soon as possible.

Sir James Walton will deliver the Hunterian Oration on "Hunterian Ideals To-day" before the Royal College of Surgeons of England (Lincoln's Inn Fields, WC) on Friday, Feb 14, at 5 p.m. Fellows and Members of the College are invited to attend.

Nova et Vetera

SIR THOMAS MORE AS HEALTH REFORMER

SIR ARTHUR MACNALT, in a Chadwick Lecture given on Oct 8 at the Royal Society of Tropical Medicine and Hygiene, said that Sir Thomas More was a great forerunner of Edwin Chadwick in public health reform. Renowned as saint and martyr, he was an eloquent orator, an eminent statesman and legislator, Speaker of the House of Commons, royal ambassador and Lord Chancellor, a master of English prose, and a classical scholar. These great gifts united in one man had obscured his teaching and work in public health and social medicine.

Thomas More (1478-1535), son of Sir John More and Agnes Grainger, was educated at a City school, and brought up in the household of Thomas Morton, Archbishop of Canterbury and Lord Chancellor. He was an undergraduate at Canterbury Hall, Oxford, where he came under the influence of the humanists Linacre and Grocyn. In 1496 he became a member of Lincoln's Inn and was called to the Outer Bar in 1501. He met Erasmus in 1499, the beginning of a lifelong friendship. Thomas More learned much from Linacre and his teaching led him to become a pioneer in public health administration. Reference was made by the lecturer to More's interest in medicine, as exemplified in his writings and to his friendship with physicians, notably John Clement. In 1510 More was appointed one of the Under-Sheriffs of the City of London, which gave him opportunity to advise the Corporation on sanitary reform. This interest in public health was further shown by his appointment in 1514 as one of the Commissioners of Sewers along Thames Bank between East Greenwich and Lambeth. He worked for the improvement of England's water supplies and refers to London's water supply in *Utopia*.

Utopia was partly written at Antwerp when More was ambassador to the Archduke Charles, afterwards Charles V, in 1515 and was completed in England. *Utopia* is the imaginary Commonwealth of the Renaissance idealists. It advocates many social reforms, in addition it devises a most complete system of health reform which was greatly in advance of his time, and in some respects in advance of our own time. Illustrations were given by Sir Arthur MacNalty of More's interest in the sick, infirm, aged, and destitute. He hired a house in Chelsea for infirm, poor and old people, and maintained them at his own expense. In 1518 both plague and sweating sickness were rife in Oxford. King Henry VIII appointed More to supervise the health measures to be taken. He controlled the outbreak by notification and segregation, and the first plague order issued in 1545, codified his previous regulations and instructions. It contains the germs of all subsequent preventive practice.

More was an advocate of hospital reform which he outlines in *Utopia*. In his *Supplication of Souls in Purgatory* (1529) he opposed the folly of abolishing the English hospitals. Henry VIII ignored More's advice and the 'Five Royal Hospitals' of London were only preserved by the action of the City Corporation. More succeeded Wolsey as Lord Chancellor, but resigned in 1532, as he disagreed with the King's ecclesiastical policy. In 1534 he was imprisoned in the Tower, indicted for high treason in 1535, found guilty on perjured evidence and executed on Tower Hill—the blackest crime ever perpetrated in England under the form of law.

BERNARD (1813-78) PASTEUR (1822-95)

Claude Bernard ou l'Aventure scientifique By Raymond Millet
Illustrations by G. Bourdier (Pp 312, illustrated) Paris
Les Editions de la Nouvelle France

Pasteur By Henri Mondor (Pp 189 illustrated) Paris
Editions Correa et Cie

During the nineteenth century France was fortunate in having such outstanding, able scientists as these men, whose brains were pregnant with original speculations and who were making discoveries on correlated lines of thought. They encouraged each other. Thus in 1867, Louis Pasteur wrote to Claude Bernard: "I have felt such a lively and true satisfaction about your work that my admiration is confirmed and increases to such an extent that I cannot resist the desire to write my impressions. In seeing so much enduring progress unrolled before my eyes, with such certainty of method, I feel the sacred fire of science burning within my heart." To this Bernard replied that such praise from Pasteur, a savant who was such a leading experimentalist in science, made him proud and happy. What physiology owes to Bernard, pathology and bacteriology owe to Pasteur.

The life of Claude Bernard was written in 1899 and there have been several biographies of Pasteur. A lively interest in them is maintained in France, as shown by these two books, both of which have a popular aspect while paying much attention to the physiological and biological epochs through which Bernard and Pasteur led their country in each instance in spite of much opposition.

Claude Bernard made valuable researches on secretions of the alimentary canal, the pancreatic juice, and kindred subjects. His *Lessons in Experimental Physiology Applied to Medicine* (1855-66) is still a standard work. In the early stages of Bernard's career, while still working as a writer of dramatic plays, he was fortunate to come under the influence of Prof. François Magendie, a leading French physiologist and member of the Academy of Sciences. Magendie told his young student to found all his knowledge on experiments and not to believe in theories but only in facts. M. Millet's memoir of Bernard is a study of an acute mind and how it evolved many valuable deductions from practical observations. The author traces the steps of Bernard's laboratory experiments, showing how he did not cease to develop his hypotheses till they had become certitudes. Bernard and Pasteur followed the same rules of work—keen observations, closely reasoned experiments and clear conclusions from brilliantly conceived premises.

Dr. Henri Mondor's *Pasteur* is a review of the savant's life. He describes the various steps in research made by Pasteur, beginning with isomerism and the discovery of the left-hand tartrates, which made him the leading chemist of his time. Soon afterwards he was made professor of physiology at Dijon and published his famous *Traité on Lactic Fermentation*. Using Lister's aseptic and antiseptic methods, he turned his attention to the study of infectious diseases, isolating and cultivating bacilli by immunization. In 1882 he first cured hydrophobia by inoculation with an attenuated virus; he could not isolate the organism, though he was successful in locating its position in the nerve centres. In the latter pages of his book Dr. Mondor tells of the quarrel Pasteur had with Liebig over the role of yeast in alcoholic fermentation. Throughout his life Pasteur had to combat a crowd of sceptics and adversaries, but his end was crowned with universal acclamation in the opening of the Pasteur Institute in 1888 as a world centre for the cure and prevention of disease.

The importance of these two men of science, and the clarity of expression used in depicting their work and lives, make these books on Bernard and Pasteur more than ordinarily instructive and pleasant to read.

Garrison characterized PIERRE FAUCHARD'S *Le Chirurgien Dentiste* (1728) as one of the three most important books in the history of dentistry, and Mrs. LILIAN LINDSAY has now put all English-speaking members of her profession under a debt by translating the second edition (1746) with the title *The Surgeon Dentist or Treatise on the Teeth*. That edition gave the first account of pyorrhoea alveolaris, and Fauchard was also the first to employ orthodontic procedure in the treatment of malocclusion. Mrs. Lindsay's version, published by Butterworth and Co., Ltd., at £2 2s., appears as a sumptuous volume. It is printed in this form as a tribute to her from the British Dental Association in commemoration of fifty years' membership of that body and of her devoted work as honorary librarian (1920 to 1946). It is adorned with reproductions of a portrait of Fauchard and of the original plates which accompanied the two volumes of the second edition. Recalling that this book has held the first position among dental literature for over two centuries and that its author has been acclaimed as "the father of dentistry" for almost as long a period, she comes to the conclusion that Fauchard either came or was the first to use the term "chirurgien dentiste." At the date of the second edition he had become the leading dentist in Paris. The manuscript of his book was discovered by Dr. George Vau in 1892 in the library of the Faculty of Medicine in Paris. One of the most valuable parts of this work, the case records with Fauchard's reflections upon them, give the reader an insight into his movements and his method of practice as well as the standard of the practice of dentistry accepted at the time. This is the first time the entire text has been translated into our language and Mrs. Lindsay's endeavour throughout her pious task has been to preserve as much as possible the style of the original. Fauchard emerges to the reader of these pages as a man of the highest character, inventive, disinterested, and resourceful, dedicating himself to the advancement of dental knowledge and craftsmanship.

Reports of Societies

INTELLIGENCE AND FERTILITY EUGENICS SOCIETY SYMPOSIUM

A meeting of the Eugenics Society was held in the Royal Society's rooms on Jan 21, with Lord HORDER in the chair, to discuss the relation of intelligence to fertility.

SIR ALEXANDER CARR-SAUNDERS, who opened, said that at the time the Eugenics Society was founded by Galton nothing was understood about the mechanism of intelligence. It was suspected that there was differential fertility and that social groups with varying reproduction rates were differently endowed, but it was largely guesswork. That phase of guesswork had now passed. The evidence which pointed to a decline in national intelligence rested on two series of observations. The first was that all social groups did not make equal contributions to future generations and that differential fertility rates existed within and between social groups. The second was that different social groups were differently endowed. It was sometimes suggested that the intelligence which was taken into account in tests was only one of several valuable mental qualities and that these others might be unaffected by differential fertility. This assumed that valuable mental qualities were not correlated, but if he was correctly informed the evidence was the other way about, persons who were knowledgeable in musical, artistic, or literary directions, for example, usually had also a degree of general intelligence above the average.

Some people declared that there was no need to be alarmed about the downward trend disclosed by some investigations, seeing that there was a large amount of unused or inadequately used intelligence in the population. It was true that there was a reservoir of insufficiently trained or utilized intelligence, but he doubted whether islanders who saw the constant erosion of their coast would be comforted by the reminder that they had some undeveloped hinterland. A decline in national intelligence was an actual loss, irrespective of whether full use was being made of the intelligence available. There were many aspects of this matter which needed most careful scrutiny. A difficult inquiry was only at its beginning, but it was a happy circumstance that universities were now equipping themselves with psychologists, geneticists, statisticians, and sociologists, for in the investigation of such a problem, which was liable to arouse emotion and therefore prejudice, it would be valuable to have contributions from as many independent centres of research as possible.

Declining National Intelligence

SIR CYRIL BURT said that forty years ago this subject would have aroused deep controversy, to day there was a converging agreement, chiefly for the reason that psychologists were no longer content to offer mere opinions but based their conclusions on objective methods. Nevertheless, the conclusions still rested largely on deductions which there had been very little direct evidence to confirm. The deductions were founded on two premises: (1) that tested intelligence might be assumed to be more or less innate and inherited, and (2) that tested intelligence was negatively correlated with fertility. Most psychologists would agree that for practical purposes there was a common factor of intelligence. The second step was to prove that this common factor was inherited. A good deal of evidence for this was available along different lines of approach. All practical psychologists checked their methods of test by other study, and it was a very reliable estimate that at least 50% of the variants found in the tests were due to inheritance. If some parents were more intelligent than others, and these parents were, on the average, producing smaller families, it followed that the intelligence in each successive generation must be slowly declining. The important thing was the rate of decline, and here was another difficulty: that the tests for the most part had been done on children—not on their parents.

Sir Cyril Burt mentioned some investigations of his own which seemed to indicate a loss of about two points I.Q. on

the Binet scale in a generation, and very much the same figure had been reached by Prof. Godfrey Thomson and other investigators. A loss of two I.Q. points might not seem very much. It meant that the children at a given age would be about four months retarded as compared with their parents at the same age—a difference which might be elicited in tests but hardly observable in practice. The important thing, however, was the tail ends of the distribution—the numbers of very defective and dull children on the one hand and those with high intelligence on the other. If this rate of decline continued for fifty years the number of feeble minded would be doubled and the number of scholarship winners halved. But this prediction rested on an inference from certain premises, and so far there had been no direct verification of the result. In some London areas tests of intelligence had been carried out at intervals, and a slight decline had been found, but the size of the decline was nothing like that he had just mentioned, and London with its migrant population was a bewildering area in which to carry out such researches. He could not help thinking that if there had been this alteration in the number of defectives on the one hand and the number of scholars on the other it would not have escaped the notice of education officials, school medical officers, and teachers, many of whom had had in their schools in years gone by the parents of the children they were now teaching.

But these criticisms, while they bore on the calculated size of the decline, did not prove that no decline had taken place. He thought there was a high probability that an important and serious decline of some sort had occurred, and, if so, no time should be lost before investigating it. What was needed was further research by a co-operative team of psychologists to advise and apply the tests, statisticians to decide the best methods of statistical analysis, geneticists to correct any crude notions of heredity, and experts trained in social field work to save psychologists from the pitfalls to which they were liable when interpreting social data.

Restitution Factors

Prof. L. S. PENROSE said that differential fertility was probably not a recent phenomenon, and if it had gone on unmodified for a great length of time it would mean that the race was becoming progressively less intelligent. But it seemed reasonable to suppose that there were restitution factors which tended to keep intelligence more or less at the same level. Some investigators had suggested that the firstborn in the family was likely to be the most intelligent; the level of intelligence decreasing as the family grew in number. If that was so it would mean that in an era of large families the general intelligence would fall, but when, as now, families tended to be smaller very often restricted to one child, the result would be to raise the level of intelligence. It was quite possible, again, that there were a number of recessives responsible for high intelligence as well as for low. After all, the high intelligence was equally a deviation from the mean. In showing how confusing these estimations were he mentioned that in Toronto a number of biometricians had measured the stature of 10,000 children (the hereditary factor was supposed to determine stature up to 90%), and it was found that the average stature diminished with family size. It was inferred from this investigation that in consequence of differential fertility in one generation in Toronto the children on the average would be 1.9 cm. shorter than their parents. On the other hand, also in Toronto, though on smaller samples, children had been measured over a period of 15 years, and it had been found that during that time there had been a gain of 3.8 cm. in stature.

Lord HORDER found the data on the objective side very meagre and mentioned various pitfalls and fallacies surrounding the whole subject. He hoped that a proper distinction was being made between fertility and fecundity.

The discussion was wound up by Prof. GODFREY THOMSON who delivered the Galton lecture on the subject a year ago. He pointed to the necessity of bearing in mind that any decline in intelligence in the members of larger families might be due not to inherited characters but to relative lack of cultural opportunity. Another reassuring point was that, although at least 50% of the variants might be due to inheritance (indeed, the figure was generally acknowledged to be higher, even 60 or 70%), it was still possible that the remaining 30 or 40%

due to educational, environmental, or nutritional factors might have a decisive influence

Families of the Famous

One speaker in the discussion, Mr BRAMWELL said that he once took the trouble to study the family history of the small group of distinguished individuals who had at various times received the Order of Merit (Civil). They came from Victorian families having an average of 5.5 children, but the average size of their own families was only 1.5, and among these persons, of course economic causes could not be invoked as an explanation of family restriction. An investigation had also been made into the families from which bishops came. About eighty years ago these families also consisted of an average of 5.5 children, but the later years of the nineteenth century saw a decline and at one time the figure fell to 1.7, though it had since risen.

CORD ROUND THE FOETAL NECK

Mr JOHN HAMILTON read a short paper on this topical subject at a meeting of the North of England Obstetrical and Gynaecological Society held in Manchester on Dec 6, 1946. This condition could be diagnosed before and during labour by the marked slowing of the foetal heart rate when the foetal head was pushed down into the brim of the pelvis. With the presence of this sign, the life of the child would be seriously jeopardized if delivery were allowed through the natural passage and it was suggested that this should be an indication for Caesarean section. In three cases delivered abdominally and where this sign was present he had confirmed the shortening effect of the cord, which was wound many times round the infant's body at the time of the operation.

Mr A GEMMELL described an unusual case of adherent placenta which he was unable to separate at an operation performed six weeks beyond term for the removal of a dead full term foetus from a uterus which could not be made to evacuate itself. The placenta was left *in situ* and gradually became absorbed enabling the patient to become pregnant again two years later. This second pregnancy was concluded with success at the thirty-fifth week by Caesarean section, performed because the baby was presenting as a breech and because of the strange conditions found at the previous operation.

Dr R M CORBET described two cases of melanoma of the vulva and Dr S B HERD the case of a woman who died of fits of uncertain causation in early pregnancy.

CARDIAC PROBLEMS IN RECRUITS

At a meeting of the Manchester Medical Society on Dec 4, 1946 Prof CRIGHTON BRAMWELL referred to the importance of murmurs in the diagnosis of heart disease in recruits. There was still a difference of opinion on the significance of apical systolic murmurs, but all cardiologists were agreed that a patient's activities should not be limited merely on account of such a murmur unless there was other evidence of heart disease. He outlined a working hypothesis for classifying by auscultation cases of mitral stenosis in three groups—severe, moderate, and slight. There was a difficulty in differentiating between the murmur of slight mitral stenosis and the roughened and accentuated first heart sound heard in conditions such as thyrotoxicosis, in which that organ was overactive. When the diagnosis by auscultation was in doubt x-ray examination of the heart was very helpful.

Members of medical boards often had difficulty in differentiating between a systolic and presystolic murmur. In this matter the character of the murmur was helpful, as was the fact that the presystolic murmur was always associated with an accentuated first heart sound. Duplication of the second heart sound at the apex used to be regarded as evidence of mitral stenosis, but out of 835 consecutive cases examined during the war this sign was present in 19% most of these men appeared to be perfectly healthy. In a consecutive series of 39 cases referred by medical boards on account of cardiac enlargement for which

there was no obvious cause, x-ray examination failed to confirm the presence of enlargement in 26. In seven of the remainder cardiac enlargement was trivial. Of the other six, in whom enlargement was more pronounced, two were youths of 19 and 20 who enjoyed perfect health and whose heart rate at rest was 50. Evidence from comparative physiology suggested that in these two cases the bradycardia and cardiac enlargement were related and that the latter was not pathological.

Prof H S RAPER referred to the striking finding of very high pulse rates in small compared with large animals, and suggested that the conclusion might be drawn that small animals were more dependent on a rapid action of the heart to maintain their blood pressure than larger animals, which obtained the desired result by the stabilizing effect of their comparatively larger arterial tree. Dr M C G ISRAELS suggested that the recruits sent from the medical boards were not really representative of all the problems with which medical officers in the Services had been faced after the increased popularity of mass radiography. He exemplified the radiological finding of a prominent pulmonary conus or enlarged heart in recruits with no other evidence of past or present heart disease, and in others the finding of definite diastolic murmurs of aortic incompetence with no signs of heart failure.

Symptomless Cardiac Murmurs

Dr W A RAMSEY described cases of student nurses with systolic murmurs over the cardiac apex who completed the whole of their strenuous training without showing any signs of cardiac decompensation. Dr S ALMOND referred to young recruits who presented loud systolic murmurs at the apex and other areas. Haemoglobin estimations on these cases often showed values below 60%, the heart murmurs disappearing after the anaemia had been corrected. This should not be ignored by those examining otherwise healthy recruits.

TRICHOMONAS VAGINAL INFECTIONS

On Dec 19 1946, Mr PATRICK RUSSELL discussed trichomonas infections before the Devon and Exeter Medico-Chirurgical Society. The disease was primarily one of the vaginal walls—a granular vaginitis—and a watery, offensive, bubbling vaginal discharge was often accompanied by oedema and congestion of the vulva. It should be borne in mind that the infection often coexisted with a chronic cervicitis or gonorrhoea. Diagnosis depended on identification of the parasite. Smears should be taken by inserting a glass pipette or bakelite spoon into the vagina, and be examined directly in a wet film. Neither a speculum nor a finger should be passed into the vagina beforehand. The parasite had been found in the prostate, the bladder, and (doubtfully) in the Fallopian tubes. It was possible that the trichomonas harboured in the intestine was identical with that found in the vagina, and might account for recurrences. Although the infection occurred in virgins, he thought it should be regarded as a venereal disease. The parasite might be found in the male, when it occurred in bulls it was apparently incurable, and the bulls had to be slaughtered.

Local treatment with such preparations as "devegan" or "SVC" in tablet form was fairly satisfactory, but it was better to swab the vagina dry and insufflate it, under direct vision, with the chosen medicament used in powder form. Two treatments a week without intervening douching should be carried out. Oestrogens might have an adjuvant action in these cases. Virgins were best treated by irrigation with weak acriflavine solution. Great care must be taken not to insufflate under pressure because of the very real risk of fatal air embolism. Three negative wet films taken in the post-menstrual phase might be regarded as proof of cure, but recurrences are frequent.

The *British Dental Journal* is now issued in a new and enlarged format. Future numbers will include articles not only of scientific interest but also on topics arising from dental practice, as well as general dental news. In the issue of Jan 3 an interesting summary of the journal's history is followed by articles on 'Dental Disease in Animals,' by Sir Frank Colver, and on 'Penicillin in Maxillo-facial Injuries' by Mr N Holland.

Preparations and Appliances

THE TRAP-JAW PRINCIPLE IN SURGICAL FORCEPS

SIR HENEAGE OGILVIE, K B E, M Ch, F R C S, writes

Forceps intended to take a firm hold of tissue, whether dissecting forceps, haemostats, holding forceps of the Ochsner type or gall-bladder forceps, depend for their security on the forcible apposition of two parallel surfaces. Since the blades are hinged, the surfaces of the jaws are parallel in one position only, usually the completely shut one when they are not in use, when they are applied, the blades are forced apart to the extent of the tissue compressed between them in a gap which is wedge-shaped, holding the gripped tissue firmly at the hinge

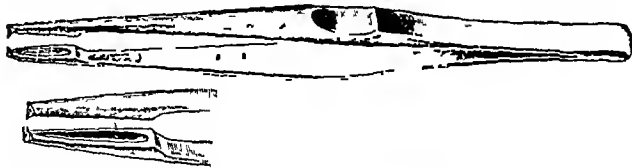


FIG 1—Lane half toothed dissecting forceps

end, less firmly towards the points. Many mechanical devices have been introduced to prevent slipping: the surface of the jaws are roughened, usually by a transverse ridge and furrow pattern, the blades are arched to provide a spring pressure throughout their length or in-toed to make a contact at their points first, or they occlude at the tip only as in the Joll haemostat. All these devices fail to hold a tube such as a large vessel, the duodenum, the appendix, the ureter, the cystic duct or the colon if it is cut across flush with the blades



FIG 2—Lane non-toothed dissecting forceps

only when a flange of uncrushed tissue is left protruding beyond them is the hold a safe one.

The instruments I am describing have hollow blades with a narrow, rounded rim. The rim holds a strip of tissue in compression, while the hollow accommodates an uncompressed part that prevents slipping in the same way as does a projecting flange of tissue in the usual design. The pattern has four advantages over the usual compression type. The blades can be made narrower while giving equal security: the tissues

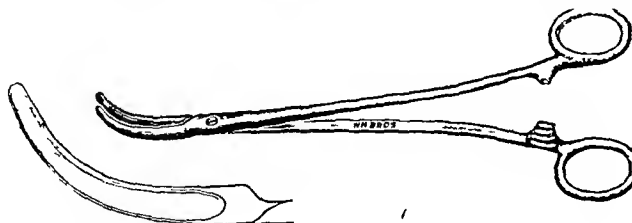


FIG 3—Modified Moynihan cholecystectomy forceps

held can safely be cut flush with the blade (an advantage in the case of infected portions of the alimentary canal), the hold of tissue, even when cut flush, is more secure, and less devitalized tissue is included in a ligature.

Of the instruments illustrated, the dissecting forceps and the Mayo Ochsner forceps differ from their normal prototypes in the design of the jaws only.

The gall bladder forceps have been modified in three particulars, they are half an inch longer, they are lighter, and they are narrower in the blade than the standard Moynihan pattern. I use these forceps in operations of every type when working in the depths of a wound, both for blunt dissection round a

corner, as when clearing the ureter, the lateral attachments of the rectum, the biliary ducts, the left gastric artery, the oesophagus, and for catching any deeply placed vessel previous to ligation. The added length gives better access, the narrow blades improve them as dissectors, and the hollow jaws give that security so essential in situations where a second grab at a cut vessel or duct is an experience to be avoided.

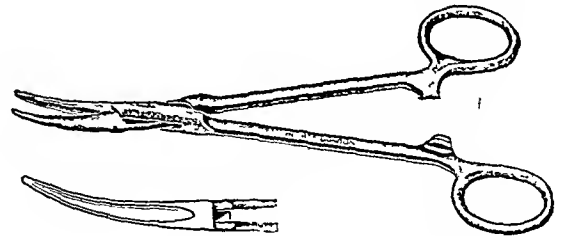


FIG 4—Curved on flat haemostat

The haemostats have hollow blades, and the narrow bite and added security this allows. They have two further advantages over any other pattern I know.

First, they have a 30° curve on the blade to fit them for the two uses of a haemostat, a picker up of small bleeding points or a compressor of wide oozing surfaces. The first task requires the application of the points only at right angles to a surface, the second uses the blade applied parallel to a surface. Straight haemostats are wrong for both purposes, as

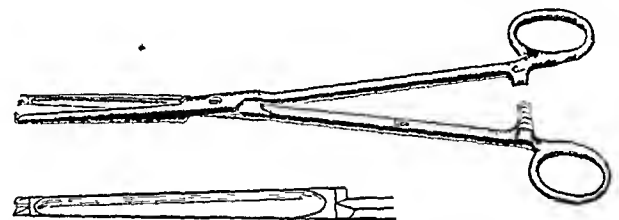


FIG 5—Straight Ochsner forceps

illogical as any straight tool. Man naturally uses precision tools in front of his body and below his eyes, that is at a point about 30° in front of and below his elbow. Tools meant to work in the horizontal plane, such as golf clubs, hockey sticks and spoons, are therefore curved to allow their working surfaces to lie horizontally, those used either horizontally or vertically, such as forks or ink erasers, are similarly sloped and used either way. The only straight tools are those driven by

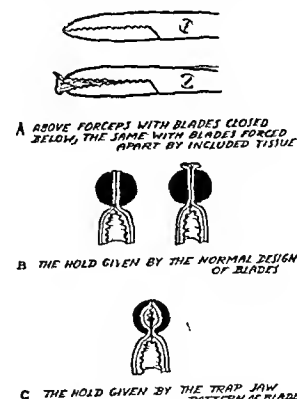


FIG 6

a hammer or by the weight of the foot, the sternum, or the shoulder. These haemostats, like forks, are right in either plane.

Secondly, their whole construction is flat and light, to allow up to two dozen to be stacked on one peg of any instrument rack.

These instruments are made by Down Brothers.

Correspondence

The Plebiscite

SIR—We personally do not approve of the Health Service proposed by the recent Act of Parliament and accordingly voted against negotiating with the Government.

We have now seen the result of the plebiscite, which shows that the younger members of the profession wish for negotiations. We are young doctors ourselves and feel strongly that it is the opinion of the younger members which will eventually determine if the Health Service is going to function. We do not consider the majority against negotiation sufficient to warrant refusal to negotiate.

We have our livelihood as well as our principles to consider, and shall have to join the Service if other young doctors are going to do so. We now feel negotiations should be made to obtain the best conditions for the Service.

A further plebiscite can be made when details of service are available. Only the refusal of an overwhelming majority can render the Health Service unworkable—We are, etc.,

JOAN WAGSTAFF
HELEN WAGSTAFF

Chingford Essex

National Health Service Act

SIR—The *Journal* of Jan 18 contains three notable contributions on this vexed and much argued subject. I feel that pride of place must be accorded to Mr R T Payne's article (p 102) which is a very masterly account of the position at the present time, not only in regard to the Act but also to legislation in general. This article deserves the closest attention of all affected by the Act—both practitioners and students—for it places the onus where it ought to be namely, on the shoulders of the Minister, and not where he is apparently trying to place it by offering to negotiate now within the principles of the Act—namely on ours. Mr Payne has established the fact that bureaucracy is here and therefore that our liberty as citizens is in danger. I would add that, if a halt is not called now then the Gestapo is not far off. It is happening here.

The letters of Dr Doris M Odum (p 109) and Dr A E Moore (p 110) point the way to calling a halt, at any rate in so far as this piece of legislation is concerned. I should go further however, and after adding one point to theirs—that representatives on central and other councils must be elected, and not appointed by the Minister under any circumstances—would suggest that we stand firm against any coercion or other onslaught and give an uncompromising and unyielding No until these objections are met in full. I believe that the Minister must heed us but only if we are resolute, for I cannot see that he can do otherwise. Without us his Act must fail, and if we really do disagree with it let us say so clearly. This opportunity of rendering public service is a great one, and we ought to grasp it—I am, etc.,

Bakewell Derbyshire

HUGH G WATSON

SIR—There seems to be much muddled thinking and shilly-shallying about this Health Act and what we are to do about it. Therefore I believe it is worth while to clarify the issues (in spite of the intervention of the three Presidents, who are not leaders of the profession and have no mandate from their own colleagues). First the majority of those voting No is a greater majority of the profession than the Government enjoys of the electorate. Secondly there is about the same percentage of non voters in the profession as in the electorate. Thirdly, the majority of the No voters believe for various reasons that the Act is a bad one (though parts are good) and the bad is so bad that it nullifies the good and will inevitably lead to evil. Fourthly this is certainly a political issue though not a party political issue, as far as the doctors are concerned, as the No voters would resist such evils imposed by any Government of Right Left or Centre. Fifthly, if, as I believe, we desire a good and worthy comprehensive service, we must

fight for our beliefs and principles and not negotiate on details and mere regulations and so cast our principles away. Only by so doing will we be able to give to our patients the best service.

Finally, a personal note. It seems that someone must be prepared to nail their colours to the mast, so here goes: (a) I deny the right of the Minister to prevent me from recourse to the courts of law. (b) I deny the right of the Minister to appoint my medical representatives on local, regional or central committees. (c) I deny the right of the Minister to direct me or anyone else either negatively or positively. (d) I deny the right of the Minister to abolish my ownership of goodwill in my practice. (e) I deny the right of the Minister to hold such dictatorial powers as he has under the Act, so that he can turn innocent men and women into criminals without proof of evil intent, and such powers that enable him to alter as and when he thinks fit all rules and regulations and financial arrangements by Order in Council. To join the Service while he has this power is futile even if all else appears to be conceded, as any agreements reached on regulations mean nothing and are valueless. (f) I deny the right of the Minister to withhold the annual report of the Central Health Council. (g) I deny the right of the Minister to confiscate property either of hospitals, nursing homes, or private individuals, because all these things mean the negation of freedom and democracy and will lead to a form of National Socialism very soon.

Therefore I will not join the Service until or unless these objectionable portions of the Act are repealed by an amending Act. I hope and pray that my colleagues who voted 'No' will do the same and those who voted 'Yes' will think again—I am, etc.,

Reading Berks

S F LOGAN DAHNE

SIR—The controversy between private practice as we have it now and State medicine as it is in process of being born goes on. May I put the point of view of a doctor who has had experience in many forms of medical practice? There are advantages and disadvantages in both 'private' and 'State' medicine and to rush enthusiastically but blindly into a new method or to cling unprogressively to an old method is asking for trouble. We want evolution and must have it, but revolution is fraught with dangers.

The new Health Act contains great possibilities for increased happiness to the people, and our own Association should use its influence in filling the framework with Regulations to form a measure of the utmost benefit. If each individual doctor eventually considers that his conscience will not allow him to work under the Act he can refuse, and it is his right to form an opinion both in regard to the ultimate good for the people and his own welfare. For after all the best work is done by the worker who is satisfied with his wage. We should surely see how the Act is going to work in practice, and give our help in making the Regulations before blindly refusing to have anything to do with a measure which has been passed by Parliament on behalf of the people—I am, etc.,

London NW 11

L STUART WOOLF

SIR—My statement 'We are citizens even before we are doctors' (Dec 7, 1946, p 874) meant simply that our civic duty—e.g., to obey the law of the land—is even more elemental than our medical duty, and the construction put on my words by Dr Alan Maberly (Dec 28, p 1002) is pure fantasy. His imputation of fanaticism, of inability to think clearly, to observe with detachment, or to foresee, to supporters of the Act is obviously bred of fear and mistrust of Socialism. How can he possibly know that Members of Parliament who passed the Act knew nothing of its ultimate implications?

I agree however, that 'this is a moral and ethical issue of the first importance,' and this is the issue. Shall the patient—the most important person concerned—choose the type of medical service he wants or shall the doctor impose on him the type of service he thinks he ought to have? Shall Parliament decide or the medical profession? Is it morally right to ask the patient to 'pay the piper' without allowing him to 'call the tune'? Drs D H Russell and J S Laurie (Dec 28, p 1002) respectively overstress and 'overr'

significance of the last sentence of my letter. It was obviously an afterthought with only an incidental bearing on the main argument—I am, etc.,

Wallasey

LENNOX JOHNSTON

A Medical Charter

SIR—In 1941, when this country was fighting for its life and for the destiny of mankind, our great leader, Mr Winston Churchill, together with the President of the United States, made an eight-point declaration of certain common principles of national policy. This declaration became known as the Atlantic Charter. It seems to me that our profession is passing through a somewhat similar period in its history and it might be equally opportune for it to declare now what are its fundamental ideals and principles. I would suggest that a professional charter should be drawn up which would embrace these and which could be understood by the public as a whole. Such a charter would have the support of the whole medical profession, and it would form the basis for examining, without prejudice, the National Health Service Act.

At present the profession is split into leaderless factions which show evidence of political bias in voicing their opinions upon the Act. Our profession should be above the political arena, and its attitude should be based on the principles of a charter and not on party politics. Let the brains of our profession get together now and put forward a charter which sets forth these ideals for which we will fight, and let only these be the means of deciding the terms under which we will serve.

I would suggest that the charter should include some of the following declarations:

(1) That the medical profession desires to serve the nation with the greatest possible efficiency and that it is agreed that some form of national health service is essential for the future welfare of our countrymen.

(2) That the profession expects the terms of service to allow full scope for its established ideals.

(3) That the service should give patients free choice of doctor and should be comprehensive. The profession recognizes the need for, preventing as well as curing disease, and in this it must be associated with the social services.

(4) That members of the service should be recruited voluntarily and that they should be free to practise their skill without fear of bureaucratic interference; that resources should be made available to them for this end.

(5) That the patient should receive primary consideration in all matters concerned in the setting up of the national medical service.

—I am, etc.,

Petersham Surrey

JOHN M JACKSON

The BMA and Mr Bevan

SIR,—The BMA should refuse to negotiate with Mr Bevan unless he first scraps the present Act, which is unacceptable to the profession and harmful to the best interests and welfare of the public, whose guardians in health matters we are. This Act was drawn up by the Minister to ensure that he, and he only, should enforce it as absolute dictator and executioner of any doctor who might incur his displeasure—and that without right of appeal.

We all know that our representatives were shamefully and contemptuously treated when they attempted to discuss the Act with him, and he had the bad taste to describe ours as a 'very corny profession' when addressing medical students a few months ago, many of whom, as sons of doctors, were well able to sum him up on that occasion. I say that Mr Bevan would not have formed this impression about our profession if he had not been guilty of attempting to trample roughshod over us and our patients' interests by means of the Bevan plan. The Minister has stated that because public money is to be used there must be public control, and that he abhors loading the young doctor with debt. I consider there is no justification for using public money in this way, and his statements are only political eyewash to cover the fact that we should become Civil Servants if we were to sign on the dotted line.

We will work a good Act but not a bad one, and this Act is a very bad one. No self-respecting doctor could bring himself to take service under it and become a cog in the State machine,

which would in time crush the life and initiative out of him. We have had enough warnings: the Willesden "closed shop," and the stoppage of essential foods for the dying by "remote control" from Whitehall overriding local specialists—truly a foretaste of things to come. So let us stand firm and demand that the Act as it stands be scrapped absolutely and a completely new one built up in consultation between the Minister and the medical profession, as it should have been in the first instance. If this is refused let us remember the Minister's statement that "no one is obliged to enter the Service unless he wishes," and stay outside. The general public are alarmed and daily ask us to stand firm and refuse to throw away our freedom to treat them in the best way—which would certainly not be under Mr Bevan's present scheme—I am, etc.,

Burton on Trent

J R SALMOND

The Presidents and Mr Bevan

SIR—The strategic letter of the Presidents of the English Colleges (Jan 11, p 66), in referring to the question of basic salary, contains the statement "There is general agreement that there are circumstances in which a basic salary or a guaranteed minimum may be necessary." Surely this difficulty could be dealt with by the grant of larger capitation fees for such areas. Once a basic salary is agreed to for any area it might be readily taken as a precedent and by Regulation imposed on other areas.

In the Minister's reply, referring to interference with liberty of movement of general practitioners, he states "There is a provision in the Act the sole object of which is to avoid an undue concentration of doctors in any one area. Clearly the more doctors are practising in any particular area the better for the public, as it gives greater freedom of choice. As to this question of liberty of movement on the part of general practitioners, it would be well for specialists to consider carefully whether eventually their own freedom in this respect may not be endangered, as it very definitely will be if they consent to payment on a salaried basis—I am, etc."

St Mawes Cornwall

B H SHAW

The Appointed Day

SIR—When the flag of the National Health Service waves over our hospitals, when the last beauty queen has been kissed and the captains and the kings have departed, then perhaps the tumult and the shouting will begin. The principles upon which the BMA are taking their stand may be unexceptionable, but they have little application to hospitals staffs, whose interests are threatened in other ways. The word "strike" may be banned, but is there not some question of a possible back out? The flow of contributions and legacies to the voluntary hospitals has not been the result of charity acting in a vacuum: it has been stimulated by results, and the public have recognized and supported going concerns which have paid dividends in health and efficiency. Thus, over a fairly recent period of years, our hospitals have transmuted the skill and devotion of their staffs into bricks, plumbing, and equipment. The staffs however, in the process have lost control of these tools of their trade, so, on an "appointed day," these magnificently equipped factories may be closed to them except on terms which may not be acceptable. It would be interesting to know up to what point the Boards of Management and the British hospitals are prepared to defend the interests of their staffs, or will the keys be handed over unconditionally?

Has it been sufficiently realized that, on an 'appointed day,' the space-time factor will be suddenly altered? In many hospitals it would be impossible to find one vacant session for an extra clinic, or one vacant room. Staffs will have to be rapidly multiplied. Are the Royal Colleges prepared to accept the logic of the situation, and, without further delay to lower their examination standards in order to provide consultants? There is no evidence of this in the recent pass lists but the whole scheme may break down unless the men are ready at their posts.

The normal speed of working will be automatically reduced as the rapid and accurate, but almost intuitive clinical acumen resulting from experience is replaced by wholesale tests and documentation necessary to provide the Minister with material

at some question time' years hence X-ray plant and laboratory equipment will have to be found, elaborate filing systems installed, new wards built and equipped laundries enlarged, more porters stokers, clerks, stenographers, ward-maids, nurses—the list could be prolonged indefinitely. Is it possible on any appointed day" suddenly to establish a contractual obligation with the whole population of the country? Has any business ever been raised to this vast size by a stroke of the pen? It is a long time since Goethe said that such a feat would be impossible without turning the whole State into a nursing home. But the Minister knows better. He has a plan no doubt but can it be co-ordinated with all the other plans of all the other Ministries?

I suggest that we should now see this plan (if it exists) with all its details completed down to the last ward-maid. Time is short, and the public will soon be having their contributions deducted as in Germany they were deducted for the 'people's car'. The Minister has stated that it will take years for the Service he envisages to be in full working order. He has stated that he has a skeleton which must be clothed with flesh and blood. But whose flesh and blood, or is it our blood, sweat, and tears? And, in the meantime, what about the 'appointed day'? I suggest that the profession should adopt a helpful but waiting attitude emphasize its evolutionary principles, and neither by negotiation nor implication allow the Minister to 'pass the buck'. The 'appointed day' will be a Day of Judgment for somebody—let it not be ourselves—I am, etc.,

Bournemouth

T R AYNLEY

The Negotiators

SIR—I believe Dr Emid A Hughes (Jan 11, p 71) is right in thinking that members had not all the same reason for voting 'No'. My own chief reason was that I disagreed with the Negotiating Committee's points. I feel strongly that payment by capitation fee is a bad thing. This is partly because I shall personally suffer financially if it is adopted—my practice being completely non-panel pre-war and having dwindled while I was in the Army to what is called a 'nucleus' in the advertising columns—but it is also, and more, because I have had experience of practices with a maximum panel, where the proud boast of the principal has been how many patients he could dispose of in the hour, and the surgery has resembled nothing so much as the local fuel office. If private practice is practically abolished and the universal capitation fee instituted, we, who like to have time to examine our patients, shall be dragged willy-nilly into the competition for more and more numbers to the detriment both of our patients and of our own professional consciences—I am, etc.,

Bradford Yorks

KENNETH M M SHELDON

Paying the Doctor

SIR—Dr J Harris (Jan 11, p 71) says. I suggest, therefore that we should endeavour to persuade the minority not to accept service. How may I ask, is he going to persuade the minority not to join the new National Health Service? In the *Journal* some few weeks ago there was an advertisement for the F.R.C.S. (must be England) and the hospital concerned were offering the ridiculous salary of £250. When one sees many similar advertisements one realizes what one is up against. Now unless I mention it it will obviously be pointed out to me by someone that such a post carries a great deal of experience. This may be true, but once a medical student always a medical student. Why is it essential in gaining more experience to serve humanity to combine the experience with poverty? Any doctor however qualified deserves after one year's qualification to earn at least £500 per annum. Obviously a man with a higher qualification deserves more. The doctor should be well paid no matter where he offers his services—whether as an assistant in a hospital or in a laboratory or in any other post.

Unless and until the B.M.A. demand a minimum adequate salary to be paid to doctors then and only then will you get them to stick together. This is not my sole opinion but that of a number of colleagues who are in agreement with me. Therefore the B.M.A. must now act quickly and courageously

and fight for a decent salary, otherwise we have lost the fight, because the many doctors (with and without higher qualifications) who are poorly paid now are sure to join a Service which gives them a far better financial deal.

This has also applied to general practitioners in the past with their inadequate remuneration from the panel, etc. Therefore if the B.M.A. are prepared to face up to the truth and admit what is uppermost in most doctors' minds their only hope of unity is to see that doctors are adequately paid immediately—I am, etc.,

London N.W. 11

D V MORGAN JONES

The B.M.A. and Public Relations

SIR—Dr A Henry Gregson has to my mind made a most important point in his letter (Dec 21, 1946, p 961) under the above heading.

We have had in the main a bad Press. Because the voting on the plebiscite is so close we are described as a profession "split from top to bottom," etc., and all kinds of small unions burning with zeal for our welfare would take over the function of our own organization, and their statements, delivered with great weight and gravity, are given considerable publicity.

Little publicity has been given to the fact that our right of appeal to the courts in certain matters is being stripped from us. Yet so much could be made of this and its implications. The British working man, so aggressive in the defence of his own fixed hours and remuneration does not know that we still have no idea of our terms of service or pay in the Service into which we are to be "recruited." He thinks that this Act to a big extent is going to alleviate the lot of the doctor. If he knew these other things he might think differently.

We cannot stop this Act. To attempt to do so would be futile. The Bill has many good points, for ourselves and for the public, but it has as many ominous ones, and these it is our duty to fight.

Why should we not negotiate? Parliament passed this Act. We cannot dismiss the Government. If we refuse to negotiate we will be publicized as obstructionists, reactionaries, and capitalists of the worst kind. But if we do negotiate and the terms are dictatorial, then surely we can, in our just wrath, refuse to be enslaved.

I do not think then that we would lack the support of the population of whatever political creed they might be—I am, etc.,

Hull

WILLIAM GIBSON

A Foretaste of Control?

SIR—It is doubtless known to you that there are those who assert that the *British Medical Journal* is a poor journal because your columns never contain reports of important advances in our art and science. The number dated Jan 11 should make these malcontents hide their heads with shame, for you publish two reports of outstanding significance—one in the field of general medicine and one in that of medical practice. The former is, apparently, a discovery of those "eminent high-minded men, widely respected by their professional colleagues" (vide p 60), who act as medical advisers to the Minister of Food. These savants have informed Dr Foxell that "the [sic] pernicious anaemia is completely controllable by modern therapy and further that the achlorhydria can also be effectively treated."

It is of course, known to those experienced in these matters that most cases of pernicious anaemia can be controlled by proper treatment, but it is most emphatically untrue to assert that all can be. And, Sir, if there be, in fact, a successful treatment for the achlorhydria of pernicious anaemia, why are these 'high minded men' holding back the information? I find it easier to believe that they have said that which the Minister wished them to say.

The second advance that finds publication is that of Dr Wilfred Harris, who discusses (p 69) another of Dr Foxell's patients—the now famous one who died of carcinoma of the oesophagus. Of him Dr Harris says that as "the patient was suffering from inoperable cancer of the oesophagus and that he was bound to die shortly, I think most sane people would agree that it would be a serious waste of six persons' weekly fat ration for a very doubtful and temporary benefit."

CORRESPONDENCE

BRITISH
MEDICAL JOURNAL

Dr Harris does not go on to draw the obvious inference that is entailed by his statement—viz, that it would be a serious waste of rations to give this patient any at all, and even less does he go the whole logical hog and assert that the saving of food would be very great if all those suffering from incurable maladies were denied their rations. If Dr Harris's contention be accepted there is no logical stopping place before we draw the inference that we should not "waste" our substance on the incurable, the objectionable, the hereditarily inferior, and, of course, the racially unsatisfactory.

Sir, our duty as doctors is to our patients, but it may be that as they have, they are the less doctors, and not only that they have started down the slope, so easily descended, that ends in totalitarianism. The flower of our youth laid down its life for freedom and decency, the least we old buffers can do is to refrain from advocating the doctrines of their (and our) enemies—I am, etc.,

London W1

we give to the dying the less we give to the living. Is it then to be a principle that we feed the dying at the expense of the living?—I am, etc.,

Leeds

R A MURRAY SCOTT

**We regret that Dr Murray Scott appears to have missed the point of the leading article he so severely, if not melodramatically, criticizes—Ed BMJ

Curare

Sir—I should like to endorse the remarks of Dr Massey Dawkins (Jan 18, p 111) in respect of the use of curare. Although I am unable to cite the use of curare in a large series of cases, my experience of some of the after effects of curarization has already led me to express the opinion that curare is not without its dangers. Upon two occasions I have met the post-operative condition which Dr Massey Dawkins attributes to shock, in each case the operation, although abdominal, was neither extensive nor prolonged, and I do not think that shock could have ensued. My impression in each case was that the patient was in a condition of profound central depression resulting in prolonged unconsciousness and requiring active resuscitative measures. Neither patient received more than 15 mg of curare, each received 0.5 g of "pentothal," followed in one case by nitrous oxide, oxygen (30%), and minimal triline, in the other by light cyclopropane. Both were fit adults.

It seems that in some patients curare effects the cerebral synapses, that this action is prolonged and does not respond to physostigmine. I have not met paralytic ileus, but this seems analogous to the condition I have described and may well occur alone or in conjunction with the central depression I have met. This central depression appears to be unpredictable, it therefore behoves the anaesthetist to bear in mind the possibility of its occurrence and to make an early post-operative visit to those patients to whom he has administered curare—I am, etc.,

Bournemouth

S F DURRANS

Sir,—It is distressing to read the views of two of your correspondents in the *Journal* of Jan 11 (p 69) in letters arising out of the action of the Ministry of Food officials in refusing extra food to a dying patient of Dr Foxell's. One writer observes that as the patient was bound to die shortly most people would think that it would be a serious waste of six persons weekly with the preservation of the scheme and official forms. This outlook is contrary to established medical usage and Christian civilization. It is surely the ideal that the strong should sacrifice for the weak.

One hopes that this age will not become progressively utilitarian. There are many examples, both in the case of doctors and laymen, of lives being lost in an endeavour to save the dying.

Three small quotations from the last letters of Capt Scott, of Antarctic fame, seem appropriate. "Subsidiary reasons for our failure to return are due to sickness of different members of our party." "If this diary is found it will show how we stuck by dying companions and fought the thing out well to the end." "We have done everything possible, even to sacrificing ourselves in order to save sick companions. I think this makes an example for Englishmen of the future." Scott and his comrades gave their lives for the work, as have many others—an innumerable company. Officialdom appears to grudge a little butter for a dying patient. Is this the kind of attitude we are to expect under the national health scheme?—I am, etc.,

The University of Sheffield

ELIZABETH COWPER EAVES

Sir,—Dr Wilfred Harris's suggestion (Jan 11 p 69) that a man who is not expected to have much more of life should not be allowed some of the food which he needs is surely contrary to medical tradition and practice. Such a cruel decision could only be justified in a population where deaths from starvation were imminent.

Surely also is implied a great misjudgment of the sane and generous people of these islands. Millions would willingly give up a minute fraction of their fat ration, and many would give the whole, to comfort the last weeks of an afflicted man. Those who doubt the extent of such generosity must have failed in observation or memory even of the years of war—I am, etc.,

Birmingham

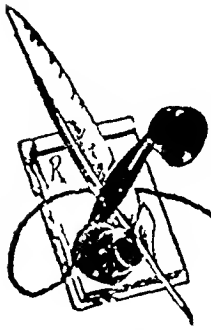
CRANSTON WALKER

Sir,—It would be impossible for anyone to disagree more thoroughly than I do with your melodramatic leader (Jan 11 p 60) with the above heading. You infer that when the country is short of some food, which has therefore to be equitably rationed, it is interfering with the doctor-patient relationship if that ration cannot be altered to suit each individual case. Surely, Sir, consideration of each individual case by Whitehall or a committee of experts would be chaotic and bureaucratic in the worst sense, and so to be avoided at all costs. Nor would it be feasible to allow doctors to order what they thought fit for the good of the individual when by so doing they might jeopardize the adequate supply of essential foods to the community. While food is in short supply the more

Sir—Dr Massey Dawkins's letter on this subject (Jan 18 p 111) cannot be allowed to pass without comment. Opinions whether based on the impressions of the nursing staff or on statistical results, as to the post operative effects of general anaesthesia alone, contrasted with general anaesthesia plus curare, are valueless unless the nature of the general anaesthetic is stated in each case. Assuming that Dr Dawkins is considering cases in which the general anaesthetic employed, with and without curare was the same it is still only too plain that he is comparing a well-given (say) cyclopropane alone with a badly given cyclopropane plus curare administration.

To take his three points in turn. First, the question of shock and "insufficient anaesthesia" surely the use of curare has at last invalidated the old theory, meticulously copied from textbook to textbook since it was propounded by Crile in 1920 that the fall of blood pressure during the effect of which could be minimized by deep anaesthesia (or better, the less toxic light anaesthesia, to ensure unconsciousness, plus curare) allows the surgeon to be as gentle as possible and thereby cause less trauma.

Secondly, "marked respiratory depression" may be caused post-operatively either by central depression as a result of relative overdosage with morphine and the more powerful anaesthetic drugs, or by muscular paralysis with curare. The first cause should not be effective if properly light anaesthesia is given with the curare and to eliminate the second correct dosage at the proper time is all that is required (last dose being given not less than fifteen minutes before the peritoneum is closed). If for some reason the operation finished more quickly, or the curare is eliminated more slowly than anticipated, then muscle tone is readily restored by intravenous administration of a suitable dose of prostigmine. Finally the factors predisposing towards post operative are (1) local, that is peritonitis whether traumatic, or bacterial and (2) central that is, broadly speaking, produced. The use of curare and the resultant relaxation of



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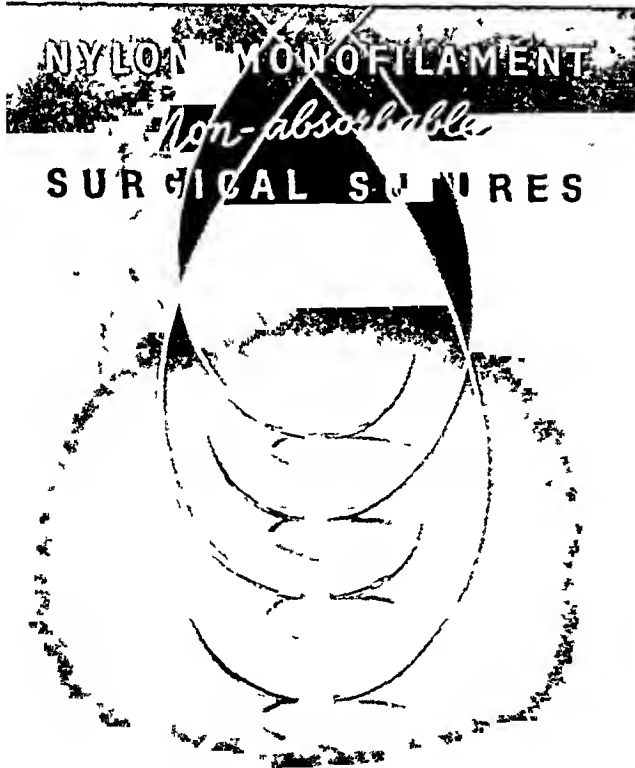
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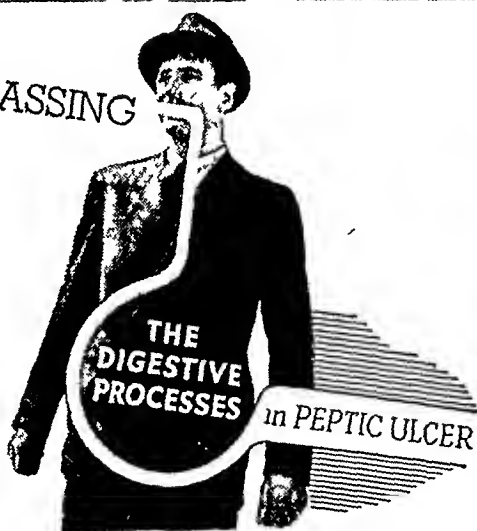
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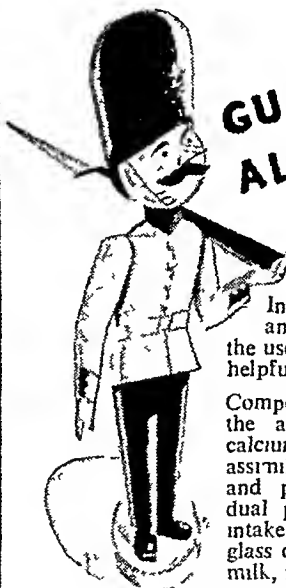
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much to reduce the need for severe mechanical traumatization while it is the fact that ether and to a smaller degree the other claving inhalational anaesthetics are potent agents in predisposing towards ileus from the second cause. Here again the use of curare by permitting the administration of reduced quantities of inhalational intestinal depressants should lessen the chances of development of post operative ileus. The effect of curare itself on the gut was at first claimed in the U.S.A. to be parasympatheticomimetic. Workers in this country, possibly because of the greater purity of the product used, have been unable to confirm this but as far as I know nobody has yet considered it to have the reverse action and until some experimental evidence is produced that it does have any such adverse effect I see no reason why such a disadvantage should be imputed to it—I am etc.

Preston Lancs

A J GRAY

Curare or Magnesium Sulphate?

SIR—The danger of curare lies in the fact that relaxation of the muscles may be too extensive, it also appears that the action may continue and increase after the operation. It is surprising therefore that use is not made of a drug which gives relaxation to the same extent, and though it has the same possible danger of respiratory failure this can be countered immediately so also can its effect be annulled when the operation is over. I refer of course to injections of magnesium sulphate (0.5 to 1 ml of 25% solution). Its action is countered immediately by calcium salts, though I am not sure of the appropriate dose. In practice, then, it should be absolutely safe—I am, etc.

Kings Norton Thames

W F COOPER

Penicillin Pastilles

SIR—Dr G I C Ingram (Jan 4 p 31) discusses the possible causes of stomatitis following the use of penicillin pastilles. In the final paragraph of his letter he suggests that the base in which the penicillin is included may be of importance in the causation of this stomatitis.

In the original work by Long and myself on the use of penicillin pastilles in oral inflammatory conditions we made use of penicillin in a simple gelatin base to which only nipagin had been added as a preservative. The results that we published both in this Journal and in the *British Dental Journal* were obtained with this type of pastille, and we found that when fresh they were most effective. In over 600 patients who were treated with these pastilles we occasionally saw some discoloration of the tongue, but the stomatitis which occurs so frequently with the modern commercial pastilles did not apparently occur. The disadvantage of these gelatin pastilles was of course that owing to the comparatively high water content they did not remain stable for long periods and had to be made up frequently in fresh batches. We regard the base, however, as of considerable importance.

In a further publication on the spread of drugs in the oral cavity we showed that with a gelatin base the spread backwards along the mucous membrane appeared to be very much more efficient than when a solid and non glutinous base was employed. For this reason again therefore we advocated the use of gelatin as a base for the penicillin.

We have been most disappointed with the modern commercial pastilles. It is true that their keeping qualities are good, but in our experience they are not normally as effective as our original gelatin base type. We do not know the composition of the modern commercial types but we feel that the frequent appearance, which arises from their failure to achieve successful results, and the very numerous cases of stomatitis following their use that we have seen would appear to be due to the base employed. We would strongly advise those who have the facilities wherever possible to get their penicillin pastilles made up in a pure gelatin base according to the method that we originally described—I am etc.

ALEXANDER MACGREGOR.

Use of Penicillin Pastilles

SIR—Having some experience of the manufacture of troch penicillin B.P. may I be permitted to reply to Dr G I C Ingram's letter (Jan 4, p 31). Penicillin is rapidly destroyed in aqueous solution, and for this reason the B.P. requires the lozenge to be prepared dry by compression.

Stomatitis after oral penicillin may be due either to the penicillin or the sucrose base. This sucrose base involves a number of technical problems if the resultant lozenge is to be smooth and is to dissolve easily in the mouth but, having solved these problems and having used this method of preparation for a number of years and for a number of different lozenges, no instance of stomatitis from their use has come to our notice. In conclusion, may we have our terminology correct? Lozenges are prepared with a sugar base, pastilles with a gum or gelatin base—I am etc.

Ashton-under-Lyne Lancs

T H MANNERS KERFOOT

A Method of Giving Penicillin

SIR—Herewith we wish to offer you a summary of the preliminary report to the Society of Clinical Studies, Havana Cuba made at its session of Nov 14, 1946, referring to a new slow absorption method for penicillin injections. The method consists in mixing a penicillin solution with whole blood using as a solvent of the drug a solution of neutral sodium citrate (2%) and procaine (2.7%) in triple-distilled water. We (Machado Espinosa and Ramirez Corria) have used the following technique:

(1) We take 5 ml of the solvent and add to it the quantity of penicillin we wish to give in one injection—for instance, 500 000 or 600 000 units—shaking until the drug has been dissolved. (2) We then introduce the solution into a 10-ml syringe, preferably into a safety syringe (Luer-Lock). (3) With the syringe thus prepared we make a venous puncture in the patient who is to receive the injection, or in another person, and we extract a volume of blood equal to that of the solvent—i.e., 5 ml. (4) We shake the mixture in the syringe vigorously for not less than two minutes. If so desired the mixture of solvent, penicillin, and blood may also be introduced into an empty penicillin flask and be shaken there instead of in the syringe for two minutes.

(5) We now administer the total amount of the mixture in one deep intramuscular injection with an appropriate needle, preferably in the gluteus region. (6) The injections must be given at the rate of one injection every 24 hours, or according to the criterion of the physician. (7) The dose our experience has shown us to be optimal and which we recommend is one of 500 000 to 600 000 units for an adult weighing about 70 kg. For lower weights doses of 100 000 units for every 10 kg of body weight should be given.

We have been using crystalline penicillin, which in experiments with human volunteers, after injection in the above-mentioned amounts, has proved to be present in the blood at an exceptionally high concentration for adequate bacteriostasis as long as 48 hours after one injection—I am etc.

Havana Cuba

M MACHADO ESPINOSA

Behcet's Syndrome

SIR—I was interested in Dr E W Prosser Thomas's case (Jan 4 p 14) because thrombosis of the inferior vena cava occurred. Furthermore a section of the curious erythema-nodosum like lesion seen in these cases showed the pathology to be that of an acute inflammation and thrombosis of a vein. In one of the cases I reported in 1934 thrombosis of the deep veins of the thigh occurred. I do not think the ulcers of the genitals are always small and discrete. Some of the vulval ulcers are large, and repeated attacks cause considerable loss of vulval tissue. These genital ulcers also occur in the vagina and on the cervix, and can be of some size in these situations. Fortunately in the vast majority of cases the lesions are confined to the mouth, and aphthous ulcers in this site are of course exceedingly common. The syndrome can however, be very widespread and suggests multiple perivascular lesions because of this the syndrome falls into many specialized branches of medicine and its study suffers thereby. Some cases get no eye changes but I believe that many of the cases get acute ulcers of the stomach and that this accounts for the dyspepsia so often occurring with the mouth ulcers. If I

remember rightly, gastroscopy has been reported as confirming this supposition

In view of the utter uselessness of all treatment up till now any therapeutic measure would be welcome. The peculiar sensitivity of the skin would suggest a trial of "benadryl". This might be a valuable measure in those cases with eye lesions where any decrease of inflammation would mitigate the cumulative and recurrent damage to these organs—I am, etc.,

Oxford

G WHITWELL

Endocrine Receptors

SIR,—Mr Aleck Bourne's admirable survey of the endocrines in gynaecology (Jan 18, p 79) deserves high praise, and he is right in drawing attention to that neglected aspect of hormonal physiology, the reacting tissues, though whether the hypothesis of the "endocrine receptor" is necessary or not is another matter. That the question has not escaped the attention of all endocrinologists may be illustrated, for example, by the emphasis which H Zondek (*The Diseases of the Endocrine Glands* London, 1944) has placed on the importance of variability in the responsiveness of reacting tissues in bringing about some of the results observed in certain endocrinopathies. Cases such as that of Mr Aleck Bourne in which vaginal but not uterine responsiveness to oestrogens occurred are not so rare nor so exclusive as may be imagined, Zondek, for instance, describes a number of cases of undoubted Graves's disease which were accompanied by obesity, either generalized or localized, while the instances of localized gigantism and the very common occurrence of wide variations in the degree of development of different secondary sexual characters in individuals (males, perhaps, more than females) may also be cited as examples of localized hyper-reactivity or unresponsiveness of certain tissues to various hormones.

The variation in responsiveness of certain tissues to hormonal influences is, indeed a matter of everyday occurrence in the case of the alteration of sensitivity of the uterus during pregnancy to the oxytocic fraction of the posterior pituitary, and it is difficult to see here how the postulation of a receptor substance, or its presence in altered amount, can help to explain the observed phenomena. By all means, then, let due and increasing attention be paid to the question of the responsiveness of tissues to hormonal action, but let us at the same time avoid, as far as possible, complicating the already complex by the postulation of nebulous substances whose existence may well be impossible to prove—I am, etc.,

London NW 3

G I M SWYER

Endogenous Depression in General Practice

SIR—The letter (Jan 18, p 111) by Dr A Lionel Rowson should not, I think, pass without comment. Has he ever worked in a mental hospital? If so, it is difficult to understand the language of his first two paragraphs which is both diffuse and I submit inaccurate—certainly not helpful.

Dr Rowson does not take count of the constructive side of the problem. Patients are as a rule sent to mental hospitals because their relatives and/or their doctor have not the necessary facilities for adequate treatment. Nowadays the average mental hospital is staffed by intelligent medical officers who are keen on the curative side of their work, and in addition run clinics for out-patients to which the general practitioner brings or sends his patient for consultation. Moreover, in the hospital itself much use is now being made of many modern methods of treatment. I would mention electroconvulsion therapy as an example. It is not quite clear what Dr Rowson means by endogenous depression—i.e. whether manic depressive psychosis or anxiety neurosis. ECT cures a large number of the former, and the consultative clinic of the latter. But they are quite different conditions.

Everyone who has worked in the larger mental hospitals would welcome improvements such as smaller wards and more female staff for the chronic cases, but those patients with acute depression are nowadays customarily treated in the admission or "acute" wards which are well equipped both for diagnosis and therapy. For those who can afford a moderate inclusive charge a private institution is often very suitable for

cases of anxiety neurosis. I have myself worked in both types. Additional facilities for the cure of depressed cases are to be found in occupation therapy and the services of a good hospital chaplain—I am, etc.,

Cambridge

A KNIVETT GORDON

Protein Requirements of Adults

SIR—With reference to the leading article on the above subject (Jan 4, p 19) I should like to point out that all protein requirement values based on balances are quite unreliable. Everything being equal, the requirement varies in inverse ratio to the length of the period during which the subject has become used to a low protein intake. With a protein intake which even for three months may give a negative balance, if the experiment is continued long enough, an equilibrium is frequently obtained. It is quite impossible to say what the minimum protein requirement is. Moreover, it varies considerably from individual to individual, depending as it does on the function of the thyroid, etc. (*High Blood Pressure* 1937).

In the treatment of high blood pressure we found it was desirable to obtain requirement values for each individual. But it is not generally realized that the availability of other substances, such as a large intake of inorganic bases, influences protein requirement (Harris, I, Ireland, J T, and James, G V, *J Physiol* 1941, 99, 370). Apparently the substances which are available in large quantities are more readily utilized. This has the force of a physiological law (Harris, I *et al*, *Studies in Hypertony and Prevention of Disease*, 1946). Requirement value of protein not only depends on the protein intake but on the availability of other substances. Balances are clearly no evidence at all of requirement. The minimum protein requirement is unknown, and it is difficult to discover what the optimum protein requirement is. It is equally possible to obtain an equilibrium on a 25-grammes-of-nitrogen intake and on a 5-grammes intake per day. The question arises, Which represents the optimum requirement? We do not know. The only way to find out the optimum requirement of protein and of many other substances is by prolonged clinical observation. A number of high blood pressure cases on low protein have been under my observation for some time, and at the Institute of Research for the Prevention of Disease a number of normal cases are kept on low protein diet, and from time to time their intake of nitrogen is checked by the determination of urinary nitrogen. Only in this way will it be ultimately possible to find out which is the optimum protein requirement. It would be very valuable if all workers interested in the subject would co-operate in this most valuable experiment, pooling resources, for it is necessary to have a very large number of cases under observation for a very long period before a definite conclusion can be arrived at—I am, etc.

Liverpool

I HARRIS

Secondary Abdominal Pregnancy

SIR—An account of a case of this rare condition may be of interest.

CASE REPORT

The patient was a Bantu woman aged about 25 or 30. She stated that her husband had had syphilis, untreated except by native medicine, and that of her three children the first was stillborn, the second died at the age of 5 months, and the third died at 2 years. The causes of death were unknown—presumably syphilis.

She was admitted here at full term on June 15, 1946, and antisyphilitic treatment was begun. The abdomen was the size of a nine months pregnancy and the child lying as a breech presentation. No abnormality was suspected at this time. On June 25 of ricin and an enema were given to try to induce labour, and this was repeated the next day and on July 4. On June 30 the child was found to be lying transversely, it was turned to a breech presentation and a binder applied. On July 2 the presentation was difficult to define, the limbs were felt near the umbilicus. For the next three days the woman had intermittently what appeared to be labour pains but on vaginal examination there was no "show" and no dilatation of the cervix which was noted to be firmer than usual for full term pregnancy. The presenting part could not be clearly felt. On July 5 the "labour pains" began again, and the patient's general condition began to deteriorate. To our surprise she not only consented to operation but asked for it. The women here are often reluctant to undergo operation.

The abdomen was opened by a median incision. The incision of the peritoneum also opened the child's sac, and at once rather foul-smelling yellowish fluid escaped and the child's foot presented. The child was lying transversely, it was alive. The placenta was thin and friable and its edges difficult to define. As much as possible was removed. There was surprisingly little haemorrhage. On exploring the abdomen it was found that the uterus enlarged to the size of a three months pregnancy, was lying towards the left iliac fossa and that the tube and ovary of the left side were normal. The right tube and ovary could not be found. The child had been lying in a thin walled sac, apparently of peritoneum whose attachments were to the right side of the pelvis and right iliac fossa. The placental connexions were entirely within this sac. There were no adhesions at all to bowel but a few tags of membranous exudate were on the abdominal surface of the sac. There was no connexion between the uterus and the sac the thinnest part of which was excised and the gap sutured. The abdomen was closed without drainage. At the end of the operation a large dilator was passed through the cervix, and on the day after the operation there was very slight blood staining of a vulval pad but no other discharge at any time before or after operation.

The child had no obvious abnormalities: it cried well and took fluids the first day, but died on the second day. No post-mortem examination was possible.

A report (for which I am indebted to the Pathology Department of Witwatersrand University of Johannesburg) states: 'The section showed no sign of tubal tissue. There was a large amount of blood clot and chorionic villi pregnancy. From the sections it is difficult to determine whether pregnancy was tubal or intraligamentous. On questioning the woman afterwards I tried to find if there had been any symptoms of tubal pregnancy in the early months, but could get no clear history from her. She made a good recovery and the wound healed well in spite of her being found sitting on a bed pan on the floor on her first post-operative day and having an epileptic fit on the third day.'

The probability in this case is that there had been a tubal pregnancy followed by intraligamentous rupture of the tube with the survival of the membranes as the sac appeared to consist of broad ligament and there were no placental adhesions to bowel. Unusual features of the case are that the child was alive after three days "spurious labour" and that there was no decidua cast or other discharge from the uterus—I am etc.

Brynne Nyasaland

R. GWYN DABB

Trilene in Labour

SIR—Trilene has been recommended as a suitable anaesthetic for women in labour. No one will deny that it can be dangerous and there is evidence that it delays coagulation time, affects the conduction in the heart and may damage the nervous system and liver. When it is used as an analgesic in normal labour the risk is probably small but until a sufficiently large series of cases has been observed and recorded its safety should not be taken for granted.

As an anaesthetic for instrumental delivery it is doubtful if it has any advantages over other available means and it appears to be definitely dangerous for caesarean section. It was used in 82 cases in a continuous series of 272 caesarean sections during 7 years and 9 months to September 1946. Five of the mothers who received trilene collapsed and died within 6 days of the operation. Neither the clinical condition of the patient nor post-mortem examination revealed any cause for the death. Only one death occurred among the 190 cases not receiving trilene. In the absence of further evidence trilene should never be employed for caesarean section—I am etc.

D. M. STERN

D. M. STERN

Rubella and Pregnancy

SIR—I venture to send you a personal experience on this subject and propose of your leading article (p. 778 No. 23 1946). I have a second daughter aged 6 years who is a deaf-mute. Her mother (my daughter-in-law) had German measles in the third month of her pregnancy.

An excellent little school was found at Cuckfield in Sussex, in which there are 15 deaf-mute children—all the same age and all apparently victims of an epidemic of German measles which occurred in 1940. In 17 out of the 15 children there is a defi-

nite history of the mother having had German measles in the early months of the pregnancy.

This is strong evidence on the question of aetiology. The occurrence of deaf-mutism is such a domestic catastrophe and permanent sorrow that I advocate inducing abortion, as I understand is being done in Australia. But I am in my ninety-second year and unable to take active steps in any cause, I therefore hope that you can—I am, etc.

Lancing Sussex

ROBERT SANDERSON

Surgical Aspects of Roundworm Disease

SIR—The interesting article on "Surgical Aspects of Roundworm Disease" by Capt F. Barber (Jan 11, p. 49) prompts me to make a few comments. In West China we have also been impressed by the great variety of symptoms produced by roundworm infestation. I have no clinical records of these cases with me and so can only write from memory.

A Chinese girl of about 16 had attacks of very severe abdominal colic, a tentative diagnosis was made of intestinal volvulus and strangulation—we had seen a case recently that proved to be that at operation. At laparotomy of this girl the small intestine was found to be a mass of knotted worms. The abdomen was closed, the patient was treated with anthelmintics and made an uninterrupted recovery.

Another case was a European boy of about 4. He was not well for 1-2 days, ova of the roundworm were found in the faeces and he was treated with santonin. Next day the condition did not improve but developed into a more typical case of appendicitis with local signs. At operation the appendix was removed, it was definitely inflamed and there was a roundworm occupying the whole length of the lumen. The sequence of events in this second case is very much open to discussion. Was it appendicitis in the first place? Or did the santonin cause the worm to take refuge in the appendix and secondarily set up inflammation in that organ?

I would like to add a few comments on treatment. In the type of case illustrated by the first case above and Capt Barber's Case 1, I wonder why he recommends removal of the worms surgically. Capt Barber says: "Medical anthelmintic measures are not advisable for at least two weeks after incision and suture of the gut." This seems to me a contraindication to taking the unnecessary risk of opening the gut. Most of these cases are children who have a general anaesthetic which itself is an anthelmintic and some worms are subsequently passed and vomited when the gut has not been opened. Ordinary anthelmintic measures can be instituted 2-3 days after operation. At laparotomy for other conditions I have not infrequently seen knots of worms in the intestines but have never removed them surgically.

In the type of case illustrated by Capt Barber's Case 2 I would favour laparotomy if there is serious question of appendicitis, the danger of delay and purgatives especially in children is a real one. I can remember three Chinese children whom I lost with perforated appendicitis, one of whom had orthodox Western treatment for worms the day before I saw it and the other two had had a few days' treatment with Chinese medicine, which was probably herbal anthelmintics and purges. I should add that these three certainly had worms—I found them loose in the abdomen—I am, etc.

Alderley Edge, Cheshire

F. CHRISTOPHER MADDON

Osteomyelitis of the Spine

SIR—Articles have recently appeared in the *Journal* by Mr Harry Freeman (Oct 26, 1946 p. 610) and Mr Peter Martin (Nov 9, 1946, p. 688) dealing with pyogenic osteomyelitis of the spine. May I be permitted to draw attention to a case which I described in detail in 1935 (*J. Bone Jt. Surg.* 1935 17 468) as having some interest in connexion with this condition?

A female patient aged 20 was admitted to the Royal Sea Bathing Hospital for surgical tuberculosis on Aug. 22, 1932, with a chronic osteomyelitis of the lower third of the right femur. While awaiting an operation for saucerization and skin grafting of the diseased area in the femur (after the method devised by Dr Basil Arlidge, medical superintendent of the hospital) she developed a spastic paraplegia which was complete—with involuntary spastic muscle contractions occurring in flexion, complete loss of sensory perception up to the fifth rib, and loss of control over micturition—by October 1932. A ray of the spine revealed no abnormality.

X-ray examination following injection of 'lipiodol' into the anterior margin and into the lumbar region of the subarachnoid space with inversion of the patient revealed an extramedullary block extending from the body of the second thoracic vertebra to the lower border of the fourth. Laminectomy was contemplated, but by Nov 10 slight objective sense perception was demonstrated and some control over micturition was evident. Steady improvement occurred and normal function and normal signs in both lower limbs were established by May 15, 1933.

On July 12, 1933, an abscess made itself evident at the vertebral border of the right scapula. This was incised, and the subsequent sinus healed in six weeks. A pure culture of *Staph. albus* was grown from the abscess pus. There were no signs or symptoms referable to the back prior to the development of the abscess. Examination as an out-patient in May, 1934, showed the femoral lesions to be completely healed and epithelialized, and the spine and back seemed perfectly normal.

It remains a matter of speculation whether the above sequence of events was due to a metastatic abscess unrelated to a focus of bone infection, or whether the abscess developed secondarily to a 'minimal' bone lesion too small to be detected by X-ray examination, as occurred in Case 1 of Mr Martin's series (Nov 9, 1946, p 688)—I am, etc.

Cleveland Ohio U.S.A.

T FRANCIS JARMAN

Air Crashes and Fractured Spines

SIR—The development of civilian flying seems to be causing an increase in the number of fractured spines, and their treatment may now have to be undertaken by those inexperienced in the application of hyperextension plasters. Serious sores may be easily caused, and yet they can almost always be avoided if the two following precautions are taken.

(1) A strip of adhesive felt 6 in (15 cm) wide and about 36 in (0.9 m) long is fixed down the centre of the back over the spinous processes and smaller strips of the same material cover the iliac crests, symphysis, and umbilicus. Stockinette or an old bathing costume may be put over this, but no cotton-wool should ever be used.

(2) The first plaster of Paris applied to the back of the hyperextended patient must be a 6 in longitudinal slab from the base of the neck to the sacrum. This is held in place by circular 6 in plaster bandages, supplemented of course by additional slabs and in particular by the all-important anterior strut, which takes its bearing on the umbilicus, sternum and symphysis pubis. The common mistake is to start with circular bandages round the lumbar region (which is of course in marked lordosis), with the result that they tend to slip down into the lowest part of the hollow of the back and make a sharp transverse ridge which can and does cause disastrous plaster sores.

Every orthopaedic and fracture department has of course the necessary equipment, but it is my firm belief that even the smaller hospitals should always have a stock of 6 in plaster bandages and adhesive felt—I am, etc.

London W 1

ERIC I LLOYD

Eye Surgery

SIR,—It is not my desire to counter any criticism in your review of my book *Eye Surgery* (Dec 28 1946 p 989) but I feel unable to allow your reviewer's statement about Kronlein's operation to pass unchallenged, for if this is accepted by your readers it will give a wrong impression of a valuable operation. The comment in your review is thus:

Few surgeons who have tried it will agree that a Kronlein's operation is particularly valuable for the removal of retro-ocular new formations." All the cases which I have done of Kronlein's operation for an orbital neoplasm have recovered visual acuity in some instances from perception of light to 6/6 (partly), and the visual field has improved very appreciably. In two of these cases orbital exenteration had been advised by more than one surgeon. In one case transfrontal craniotomy had been done at Oxford where the report was that "the orbital neoplasm was not seen." Nine months later I removed it by Kronlein's operation: the patient was spared exenteration, the optic nerve which was stretched over the neoplasm recovered almost entirely, save for a small defect in the visual field.

Another point made in the review concerns the use of two needles for dividing thick capsule remnants. The reviewer writes "Whether one needle bent at an angle should be used

in operations with two needles seems a moot point. Most surgeons prefer to avoid angled instruments since direction is less certain than with straight instruments." He will have read earlier in the book my comments about straight instruments making precision work easier than is the case with angled instruments. The latter are, however, necessary in entering the eye from the nasal side, as in capsulotomy with two needles and in using a keratome on a deep set eye with prominent supra-orbital margin. It is quite impossible to use anything but an angled instrument under these circumstances, the nose and brow forming obstacles.

Another comment which I think is likely to mislead is "The author likewise probably takes an extreme view in believing that malignant melanoma of the choroid are not so radiosensitive as glioma of the retina." Although I have had success in irradiating malignant melanoma of the choroid with radon seeds sutured to the sclera, it is a fact that these neoplasms are not so radiosensitive as glioma of the retina.

I express my grateful thanks and appreciation of your reviewer's generous remarks elsewhere in his review—I am, etc.

London W 1

H B STALLARD

Defective Colour Vision in Industry

SIR—In the opening sentence of the leading article (Dec 21 1946 p 948) you make an excellent point when you say "Defective colour vision, more commonly and less accurately called colour blindness." That you should emphasize the frequency of terminological inexactitude in this connexion is of great importance at the present time when the role of colour vision in industry is receiving greater attention. So many of the so-called anomalous trichromats declare most emphatically that they are not colour-blind, and their contention is undoubtedly correct. The explanation of the defect as a faulty colour appreciation is well received, and now is the time to urge very strongly that the term colour blind should be replaced by the term colour-defective.

The time is also opportune to suggest that the presence of defective colour vision is only in a limited number of cases a bar to the efficient performance of many of the tasks mentioned in your article. As is well known, the R.A.F. had many colour-defectives who as members of aircrew played an important role in all commands, and the salvage of manpower achieved by the use of the colour-defective safe category was considerable. This "safe" category has, however, been subjected to much criticism—perhaps the most important being that the personal equation of the examiner was too great. During the war much work was done in this country and in America to work out the permissible degree of colour defect for certain tasks. Clearly there is a great field for the salvage of colour-defectives in industry just as in the Services but it is now realized by all who have been asked to do colour vision testing on a large scale that the problem is exceedingly complex and admits of no easy solution. Difficult borderline cases will always appear.

Later in the article you are on less sure ground when you state that the mothers of male colour defectives are not themselves affected. It is probably true to say that these relatives are not so grossly affected, but by more accurate testing methods—anomalousoscope or colorimeter—quite a number of these women show a definite deviation from normal. Pickford has investigated this problem and he found among the female relatives of colour defectives a considerably higher incidence of colour defects than the expected. I have seen one or two families where the sister of colour defective brothers has had a marked degree of colour defect—I am, etc.

Dundee

JOHN GRIEVE

REFERENCES

- 1 *Nature* 1946 157 376
2 *ibid* 1944 153 409

Diet and Canine Hysteria

SIR—As a member of the sister profession may I be allowed the courtesy of the use of your columns to comment upon the report (Dec 14 1946 p 885) of Sir Edward Mellanby's feeding experiments? This piece of work has aroused lively interest in the veterinary world and we would all most heartily welcome a final elucidation of the aetiology of canine hysteria.

While of course according the greatest respect to the work of so eminent a scientist as Sir Edward, I feel, as a clinician, that his findings do not quite fit in with all the known facts concerning hysteria as it occurs in the field. In the first place Sir Edward stresses the occurrence of epileptiform fits among the symptoms, unconsciousness lasting sometimes half an hour up to 36 hours, yet I must say at once that such fits are not a prominent feature of canine hysteria in the field. Is the condition produced by Mellanby that which a veterinary surgeon recognizes clinically as hysteria, or is it some other condition?

I personally have always held that canine hysteria had an alimentary aetiology and I favoured a toxic rather than a deficiency factor. The recent experiments appear to confirm the first belief and incriminate treated wheat flour as the actual cause. It is alleged that dogs fed on a diet containing agenzized flour will contract hysteria while control animals fed on the same diet but with the cereal portion not agenzized will not do so. It is said that 90% of the flour consumed in the country is agenzized and it is scarcely conceivable that animals, whether consuming bread or biscuits can avoid consuming agenzized flour. The racing greyhound, of which there are many thousands is normally fed (in times of abundance) upon stale bread soaked in gravy, mixed of course, with other foodstuffs. The majority of this must have been agenzized.

It is pertinent therefore to ask why all these animals up and down the country have not been in a perpetual state of hysteria. Yet the occurrence of hysteria is comparatively rare and very sporadic. Can it be contended that an immunity is acquired from the consumption of bread? If so, why are only some and not all immunized? It is certainly true that recurrence in the same animal is most unusual.

It has been my experience, and that of many others, not excluding Sir Edward that to change the food or its source has been practically all that was needed to abort an outbreak in a kennel or stop an attack in an individual. This must have meant in innumerable cases changing from one make of bread or biscuit to another make in effect to feed on food made from an entirely different consignment of flour. This led to my strong belief that the aetiological factor was possibly a parasite of wheat or a mould on the stale bread, especially as Russell Greig had proved (in 1922) that what he then called epileptiform convulsions could arise from the presence in the alimentary tract of a wheat parasite—*Tilletia tritici* (hunt or stinking smut). Such a theory is not yet disproved.

Although it is claimed that the real incidence of hysteria occurred at about the same time as the introduction of the agenz process yet there are in the literature references to hysteria made earlier than this, and I have known of the disease almost as long as I have been in practice—now 35 years. It is open to doubt if hysteria has really increased from the very early days when it was first reported since it may only be that the diagnosis has been more complete. In the kennel of some 300 greyhounds over which I have veterinary control I have not had to report a single case of hysteria for more than a year. The last attack—in about half a dozen dogs—occurred about two years ago. I have seen about seven cases in private practice during the past year. In the meantime I am making inquiries in other countries which may throw light on the subject. It would be enlightening to know the total number of dogs employed in Mellanby's experiments and what was the actual percentage which contracted hysteria.

There are other issues too which could be raised if space would permit. Anxiety has been expressed in the lay Press and elsewhere that humans should be obliged to consume food which is proved to be unsafe for dogs. Is it assumed that such food would produce hysteria or epileptiform fits in man? So far as I am aware there seems as yet little evidence that the general health of mankind has suffered in consequence of the fact that I am not aware that either of the above conditions has been produced in man—I am, etc.

HAMILTON KIRK

Mental Deficiency

SIR—Dr Mary M. Paulin (Jan 4 p 31) in drawing attention to the case of a man under the Mental Deficiency Act (Dec 14 1946 p 929) herself states that she had hoped that, by this time, some one else would have drawn attention to the case, but as they seem to be likely to be passed unheeded I feel I must do so as failure to

realize their significance may cause distress to many parents. The question is somewhat complicated so that for the sake of brevity I shall mention only the main points. Dr Paulin states that the Education Act of 1944 gives to local authorities the power to order special educational treatment for mentally deficient children. [The italics are mine.] It should be noted that the phrase "mentally deficient" has been abolished from the educational world by the Act and should not be applied to educable children. Those who are backward but educable are now known as educationally subnormal.

Referring to the original question (Dec 14, 1946), I have difficulty in understanding it. If the child is an "idiot" as stated in the question he is ineducable. The local education authority cannot send him to a special school. It is their clear duty to refer him to the local (mental deficiency) authority. If he is educable he is certainly not an "idiot" (An idiot is a person who is unable to guard himself against common physical dangers). Referring to your answer (Dec 14, 1946) I again find a difficulty. If a child is certified as a mental defective under the Mental Deficiency Acts of 1913 and 1927 he is beyond the jurisdiction of the local education authority and cannot be sent to a school ordinary or special. The local (mental deficiency) authority can send him to an institution at the instance of the parent or guardian or under certain other conditions such as neglect.

If the word "idiot" is used inadvertently in the question and should be replaced by the words "educationally subnormal" then it is the duty of the local education authority to provide special treatment in an ordinary school or, if they think desirable, in a day or residential special school (unless the parent makes other suitable arrangements). If the child is ineducable it would be not only illegal but also most undesirable in the interests of other children to allow him to attend school. If he is educationally subnormal it is essential that he should have appropriate educational treatment, and, if the backwardness is very marked, it is unlikely, as is suggested in your answer, that such education could be provided in a village school.

The Education Act of 1944 allows for appeal by the parent to the Minister of Education against the decision for special educational treatment or for reference to the local (mental deficiency) authority. It should be realized that in this and various other ways the interests of the child and the rights and feelings of the parents are very carefully protected by the Acts. Various circulars issued by the Ministry have emphasized this. For the educable there is in many areas a shortage of accommodation in day special schools, and throughout the country there is very serious lack of accommodation of residential special schools, and for the ineducable there is gross lack of institutional accommodation. Hence it is in only very clear-cut cases that an educational authority is likely to want to send an educable child to a special school or a local (M.D.) authority to want to send an ineducable child to an institution—I am, etc.

Nottingham

A. A. E. NEWTH

Age Limit in Advertisements

SIR—I was interested to read the letter from Dunmar (Dec 28 1946 p 1007) on the age limit for whole-time posts under the various ministries. There appeared a short time ago an advertisement for a regional medical officer under the N.H.I. Having reached the ripe old age of 50 in March I found I was six months too old for it. The fact that I was too old was due entirely to the four years I spent in the Army 1914 to 1918 before beginning my medical training. I was then, in common with thousands of others, labouring under the delusion that in fighting for my country I was more fitly serving it.

In the 1920s a similar post was advertised for Scotland the age limit then being 35 again debarring ex-Service men. Last year there was a vacancy in Scotland again the age limit being raised to 45. This still excludes men like me, but also proves that the age limit is capable of adjustment.

I sent for an application form for the posts advertised in November and was much interested to read that not only did my old age count against me but the disgrace of never having been captain of the school never having been even a prefect had put me beyond the pale. I received my early education among the very men who are patients under the N.H.I., and

presumably should know them. Alas, no old school tie was ever issued or thought of, and in the few intervals between having the fear of God and the love of the three Rs drilled into us, we kicked a ball about the playground and imagined this Sport. Now although I have over 20 years' experience of working the NHI Act, I am evidently unfit, thanks to my war service and my background, to apply for posts where knowledge of and experience with the worker is so desirable. I am sending a copy of this letter to the Minister of Health for his consideration—I am, etc.,

BLACK WATCH

Future of the Colonial Medical Service

SIR—The Report of the Harragin Commission to West Africa on proposed revision of salaries has done nothing but cause further discontent, and if put into effect will seriously influence recruitment and, perhaps, lead to many resignations from serving members, particularly those who are at the beginning of their career. I wonder if those members of the profession who intend to answer the 'Utopian advertisement' inserted in the *Journal* and perhaps join the Service, really know how the salary offered to doctors compares with that of other members in the Colonial Service. Would they join if they knew that, for instance, a cadet in the Administrative Service, average age 21 to 23, is to be offered £535 per annum and makes just on £100 per annum in allowances, bringing his total income to £635 per annum? The proposed salary for the medical officer is £680 per annum—and without the possibility of private practice, which it is proposed to abolish, or the opportunity of claiming allowances. This amounts to downgrading the status of the doctors, because cadets are to have their initial salary increased by £135 and the doctors by £20. The cadet has no qualifications or expensive training, only undergoing a short "Colonial course" at the university, and commences to earn his pension when he joins at the age of, say, 23. Compare this with the doctor who has five years' training and two years' earning little money (house appointments and DTM and H course) and joins at the average age of 27 thereby 'losing' four years on his pension as compared with the cadet.

If you knew that a layman four years younger than yourself, who had no special qualification for his job, was earning only £45 less, would you accept the post on the salary offered? If £850 per annum were the salary offered I think there would be little cause to complain. Furthermore, while nearly all other departments have had an increase in the region of £200 on their maximum, the medical officers' maximum remains the same (£1,200) while senior medical officers have a miserly increase of £35. Further downgrading of the status of the profession is shown by the fact that nursing sisters, who must possess both SRN and CMB, are to be graded below secretary-typists.

The fact that Africans' salaries have been raised, although disguised as a cost-of-living award—and it is proposed to increase them still further—is too preposterous to comment upon. For those who think of entering the Service it is as well for them to consider the above facts in relation to the apparently rosy prospects offered in the advertisement—I am, etc.,

DISILLUSIONED

History of Arab Medicine

SIR—Permit me to make the following comments in reply to a statement made in a letter by the late Dr A. R. Neligan (Dec 14 1946 p 919). Dr Neligan writes 'The Arabs avid of knowledge and industrious translators of Greek medical and other texts, produced few physicians of note. Arabian medicine was largely the work of Persians, Jews, and Syrians.' This statement is as misleading as it is incorrect, and reveals little familiarity with the history of medicine in general and the history of Arab medicine in particular, as recorded by Arab historians (in Arabic) and other western scholars of Arab and Islamic culture of the period in question. However, it is impossible here to more than just point out a few features of major Arab contributions to the sciences and medicine. From the standpoint of history "transmission is no less important

and essential than origination, and the line between both is often hypothetical'. In the words of the eminent scholar Prof P. Hitti, 'Had the researches of Aristotle, Galen, and Ptolemy been lost to posterity the world would have been as poor as if they had never been produced'.

The Arabs are the people of the Arab, and later Islamic, Empire, of which Persia—the fertile crescent—Egypt, and later Spain formed part, and in which the Arabians were the inhabitants of the peninsula. Arab civilization embraced the Arabian, with which it was connected by linguistic and later to a lesser degree, by religious ties and throughout the period of the Caliphate the Arabs (Arabians, Syrians, Persians, Egyptians, and others, Moslems, Christians, or Jews) were the foremost bearers of the torch of enlightenment and learning (with special stress on the humanities), and in Arab-Islamic civilization as such the cultural unity of the Mediterranean basin found its final culmination. As a result the world remains indebted to the legion of Arab stars in the firmament of science, culture, and medicine, of which Al Razi and Ibn Sina were two. As late as the 14th century Christians stood helpless before the 'black death' then ravaging Europe, and considered it an act of God. However, the Arab Moslem physician Ibn Al Khatib, of Granada, held that infection and contagion spread the disease, and thus anticipated Pasteur by five centuries. Here is a passage of his treatise 'To those who say, 'How can we admit the possibility of infection while the religious law denies it?' we reply that the existence of contagion is established by experience, investigation, and the evidence of the senses, and trustworthy reports. These facts constitute a sound argument. The fact of infection becomes clear to the investigator who notices how he who establishes contact with the afflicted gets the disease, whereas he who is not in contact remains safe, and how transmission is effected through garments, vessels, and savings'. This could have been written only yesterday, except that when made such heretical statements in Europe might have brought on the vengeance of the Church and perhaps cost the life of such a heretic.

May I mention one or two names that stand apart as great beacons in medical history? First, the Arab surgeon Abu Al Quasim Al Zahrawi (fl 1013) who in his voluminous works summarized the surgical knowledge of the period and introduced new ideas—as the treatment of wounds by cautery, the crushing of stones inside the bladder, and the necessity of vivisection and dissection. His illustrations of instruments influenced Arab doctors and helped lay the foundation of surgery in Europe. Secondly, Ibn Zuhr (1091–1162), of Seville, was as outstanding in medicine as Abu Al Quasim Al Zahrawi was in surgery, both being prolific writers. Ibn Rushd, writing of him, says, 'Ibn Zuhr is the greatest physician since Galen and the greatest clinician since Al Razi'. He was the first to discuss feeling in bones and to describe the itch-mite scabies (*jarab*), though Al Tabari (10th century) anticipated him in its discovery.

The list of great names is too long. I would conclude by pointing out that a perusal of medical history would disprove any such statements as those made by Dr Neligan, and a little study of the subject in review would be amply rewarding both in revelation and interest—I am, etc.,

Jerusalem

I B GEORGE

The twenty-third annual report of the Ella Sachs Plotz Foundation for the Advancement of Scientific Investigation records that during 1946, the year covered by the report, grants were made to twenty institutions and investigators to aid research. Grants are given in the sciences closely related to medicine, without reference to special fields and to the end of 1946 the Foundation had distributed 551 to scientists throughout the world. Applications for grants to be held during 1947–8, which must reach Dr Joseph C. Aub, Massachusetts General Hospital, Fruit Street, Boston, 14 Massachusetts, U.S.A., by the beginning of April, must state the qualifications of the investigator, give an accurate description of the research, state the amount of grant requested and describe the specific use to which the money will be put. Applicants should also state whether or not they have approached other foundations for financial assistance and what other sources of support are relied on for research. Letters of recommendation from directors of the departments in which the work is to be done should be included if possible.

Obituary

Dr CHARLES WILLWOOD RUBIDGE died at his home in Graaff-Reinet, Cape Province, South Africa, on Dec 8, 1946, at the age of 52. Dr Rubidge was the only son of Dr John I. Rubidge, who started the first medical practice in Murrumbidgee. Dr Charles Rubidge began his education at Selbourne College, East London, where his father was then in practice. Later he joined the first batch of students at the Grootfontein Agricultural College in 1910. He completed a two-year course and took over a farm just north of Graaff-Reinet. Then the outbreak of the first world war prompted an appeal for more medical men. Dr Rubidge responded by entering Edinburgh University with his sister. He qualified M.B. Ch.B. in 1920. Returning to South Africa, he married Dr Anne Macdonald, a fellow student at Edinburgh, and for the next twelve years they carried on a large practice at Willowmore. Unfortunately, Dr Rubidge's health was not good, and so in 1932 he left Willowmore for a much less strenuous life in practice at Graaff-Reinet. His wife died some six years ago, and Dr Rubidge, whose death is a great loss to the profession in South Africa, is survived by his father and by his sister, Dr Louie Rubidge, who practises in Salisbury, Rhodesia.

DAVID JOHNSON SCOTT, who died on Dec 9, 1946, on his way home from Australia, was a notable son of a West of Scotland man. His boyhood, as the third son of a family of boys and girls, was spent at Crug near Montrose in Angus, where his father had become the parish minister. He was educated at Montrose Academy, and graduated M.B. Ch.B. with honours at Edinburgh University in 1903. During his student days he was a keen member of the old Volunteers, and in 1900 he enrolled in the Edinburgh and East of Scotland Hospital, serving with that unit in the South African War. On the termination of hostilities, he came back to Edinburgh and resumed his medical studies. In 1905 he obtained the D.P.H. of St. Andrews, and in the following year the Edinburgh M.D. After completing a term as house surgeon at Dundee and carrying out several appointments as locum tenens in industrial districts in England, he finally settled down in a country practice in the Cotswolds. Here, as a much loved and respected family doctor, he was able to develop his natural ability for combining work with play. Regularly he turned out with the hounds, becoming quite an authority on beagles as his handbook, *Beagles for Beginners*, will testify. For some eight years he practised successfully before moving to London with the intention of taking the F.R.C.S. and devoting himself to surgery. The war of 1914 intervened, and he found himself mobilized as an officer in the R.A.M.C.(T). He served with much distinction with the British Expeditionary Force on the Continent as lieutenant-colonel in command of the 1/2 Lowland Field Ambulance, being twice mentioned in dispatches and awarded the Military Cross. The French nation acknowledged his service to the cause by the award of the *Médaille d'Honneur avec étoile en vermeil*. On returning to civilian life, once more he found an outlet for his restless energy in the study of law, and in 1922 he qualified as barrister at law of Gray's Inn. About this time he joined the staff of the Ministry of Pensions, and it was here, as an established Civil Servant, that he spent the remaining years of his professional life till his retirement in 1942. In the 1939 war, advancing years compelled him to limit his role for leave service to the Home Guard, with which he served as medical officer. Johnson Scott's essentially tidy and unassuming manner were tempered by a pawky Scots wit. He was a timekeeper and quite at home in any corner. His kindly sympathy for the disabled ex-Serviceman was proverbial. A man of liberal outlook and a favourite with his colleagues, his untimely end is a loss to the

of health in the area. Marked improvements in housing conditions in the Durham rural districts can be largely attributed to his activities, which were essentially directed towards the relief of overcrowding and provision of new houses. In this particular area over 2,500 council houses had been erected when the recent war put an end to building operations. The sympathy of all who knew Dr Falconer and admired his achievements in Durham will go out to his widow. Their only son, Andrew, lost his life in 1941 when the ship in which he was serving in the Merchant Navy was torpedoed off the West Coast of Africa. Dr Falconer had been a member of the British Medical Association for over thirty years and he was also a Fellow of the Society of Medical Officers of Health. His chief interest was always in his work, but he was an active gardener, a keen angler, and was interested too in the cleaning of old pictures.

Dr MICHAEL WALTER WEST, of Earl's Court Road, London, was found drowned on Jan 1. Dr West, who was only 27, had been a student at St. Mary's Hospital and he qualified in 1942. He had been resident medical officer at the Shadwell Branch of the Queen Elizabeth Hospital for Children, and had served as a surgeon-lieutenant in the R.N.V.R. He was demobilized about a year ago and his tragic accidental death will be deeply regretted by all who knew him.

WILLIAM OSBORNE GREENWOOD died at Harrogate on Jan 8 at the age of 75. He was both a doctor and clergyman, being ordained to the curacy of the parish of Spofforth in 1930, but continuing his medical work at the same time. Dr Greenwood was a student of Leeds University. He took the L.S.A. in 1901, the M.B., B.S. of London in 1903, and the Leeds M.B. Ch.B. in 1905. He began his medical career at the Leeds General Infirmary, where he was house-surgeon to the late Lord Moynihan. From that time onwards he took an increasing interest in obstetrics and received the F.R.S.E.d. for his early work in connexion with scopolamine-morphine semi-narcosis during labour. Dr Greenwood, who in later years was an invalid, was well known for his lectures and treatises, many of which combined the subjects of religion and medicine. Two of his more important works were *Biology and Christian Belief*, which appeared in 1938, and his 1941 essay *Christianity and the Mechanists*.

Dr MICHAEL DEENY died at his home in Lurgan on Jan 10 at the age of 69. Dr Deeny was a native of Dungiven, Co. Derry, and was educated at St. Columba's College, Derry, and the Royal College of Surgeons, Dublin. He qualified in 1903 and was elected F.R.C.S.I. in 1933. After a brief period as house-surgeon in the Mater Hospitals of Belfast and Dublin, Dr Deeny went into general practice in Lurgan. He had been a member of Armagh County Council and in that connexion took a particular interest in the work of its Asylum Committee, of which he was still a member at the time of his death. He was also a J.P. and a large property owner. Dr Deeny was one of Lurgan's leading practitioners, and he had been a member of the British Medical Association since 1904. He is survived by two sons and a daughter, all of whom are members of the medical profession. The sympathy of all who knew and liked him in Lurgan will go out to his widow and to his children.

BRICE COLLYER of Croydon passed quietly away in his sleep on Jan 13. He was 77 and was working right up to the end. Brice Collyer went up to St. Bartholomew's Hospital in 1890 after a brilliant career at the Whitgift School, Croydon, where he was a contemporary of the late Sir James Berry. He qualified in 1893 and took the London M.D. in 1895. He filled in succession at Bart's the posts of house-physician, house-surgeon, and resident anaesthetist. He was invited to join the staff, but he preferred clinical work and went to Croydon, joining Drs. Duncan and Philpott as a junior partner. He became the senior partner in 1922 and continued his work in this Croydon practice until his death.

Sr Ernest Cowell writes: Brice Collyer's friends mourn his loss but will envy his end. It is as he wanted to die in harness. He belonged to a vintage period. Horder, Gow, and Landon Down were fellow students and remained lifelong friends. Collyer was a great clinician and he kept abreast of the times. He did a heavy round on Jan 12, rested in bed and died in his sleep in the early hours of the 13th. As a young man he acquired a reputation for sympathy which lasted throughout his long career. This began in Gloucestershire when he was doing a locum and was asked to visit a farmer to express his chief's condolences on the death of the farmer's wife. Collyer was a victim of hay fever, and when he reached the house after passing through several hayfields, his eyes were streaming. The farmer had never before seen such a sympathetic young man. Collyer used to tell this story with a chuckle.

Dr KENNETH FALCONER, for the past twenty years medical officer to the Durham Rural District Council, died at his home in Harrogate on Dec 27 at the age of 55. Dr Falconer was a graduate of Glasgow University. He took the M.B., B.S. in 1912, and for some years he was in private practice. He then joined the Durham Rural District Council and took the D.P.H. of Oxford in 1922, proceeded M.D. a year later. He was then appointed as an assistant school medical officer to the Oldham Education Committee. Then he was appointed as the Doncaster Urban Council, near which he remained until he occurred the post that he was to be medical officer for the appointment of M.O.H. to the Durham Rural District Council. He took over from the late Dr. [Name] in 1922 and became the first full-time medical officer

Although a staunch supporter of the British Medical Association, of which he had been a member for over fifty years, he never took an active part in affairs because of his deafness. He was a great lover of books, read wisely and well, and could always produce an apt quotation for any occasion. He will be greatly missed by many patients, to whom he was much more than a doctor. He was a true friend of many loyal admirers, down to the third or fourth generation. May he rest in peace. His name will be lovingly remembered by many of us for the rest of our lives.

Universities and Colleges

UNIVERSITY OF LONDON

The honorary degree of D.Sc. of the University was conferred on Sir Henry Dale, O.M., G.B.E., M.D., F.R.S., F.R.C.P., and Prof. E. D. Adrian, O.M., M.D., F.R.S., F.R.C.P., at the Foundation Day celebrations on Nov. 28, 1946.

Mr. John B. Hunter, M.Ch., F.R.C.S., has been re-elected Dean of the Faculty of Medicine in the University for the period 1946-8.

Geoffrey Bourne, M.D., F.R.C.P., has been appointed to the Readership in Histology tenable at the London Hospital Medical College from Jan. 1.

W. J. Martin, Ph.D., has been recognized as a Teacher of Medical Statistics at the London School of Hygiene and Tropical Medicine.

The title of Prof. Emeritus of Morbid Anatomy in the University has been conferred on Hubert Maitland Turnbull, D.M., F.R.S., F.R.C.P., who held the Chair of Morbid Anatomy at the London Hospital Medical College from February, 1919, until his retirement in September, 1946.

David Waldron Smuthers, M.D., has been appointed to the University Chair of Radiotherapy tenable at the Royal Cancer Hospital from Oct. 1, 1946.

The title of Reader in Anatomy in the University has been conferred on Richard Wheeler Haines, D.Sc., M.B., B.S., in respect of the post held by him at St. Thomas's Hospital Medical School.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

The Huntarian Oration entitled "Huntarian Ideals To-day" will be delivered by Sir James Walton, M.S., F.R.C.S., at the College (Lincoln's Inn Fields, W.C.) on Friday, Feb. 14, at 5 p.m. Fellows and Members of the College are invited to attend.

Medical Notes in Parliament

Applications for Special Diets

Sir Ernest Graham-Little, on Jan. 22, put a series of questions about special diets (annotations on this subject were "It Can Happen Here" (Dec. 28, 1946, p. 995) and "A Foretaste of Control?" (Jan. 11, p. 60)) letters on the same theme appeared in the *Journal* of Dec. 28, 1946 (p. 1001), Jan. 11 (p. 69), and (p. 157) Jan. 25.

Mr. Strachey told Sir Ernest that during the six months to Dec. 31, 1946, 235 applications which had been individually referred to the medical advisers of the Minister had been refused extra supplies of rationed foods as the result of the advice that was tendered. On the Special Diets Advisory Committee one member was under 40. Six members were in active practice as consultants. There were no general practitioners. The schedule of ailments was constantly under their review.

Sir Ernest then asked whether Mr. Strachey knew that the average age of these ten persons was 55 plus and that no member of the Committee had any acquaintance with general practice or personal experience of the doctor-patient relationship.

Mr. Strachey said he took the opportunity to inform the House of the system under which special allowances of rationed foods were given. In 1940 the Medical Research Council, at the instance of Mr. W. S. Morrison, set up a Food Rationing (Special Diets) Advisory Committee. The function of the Committee was to advise the Minister how best to dispose of the very limited amount of extra food available for invalids. This independent, honorary, and authoritative Committee advised the Minister of Food what categories of illness required special rations and established scales of the additional foodstuffs needed for each category. A list of these categories was circulated to every medical practitioner in the country. This admirable system was continued by successive Ministers of Food, and Mr. Strachey said he had every confidence in it. He paid

the warmest possible tribute to the eminent medical men who through all these years, carried out these arduous and difficult duties. He added that the Committee also considered applications from medical practitioners for additional foodstuffs for patients who would be excluded on a strict application of the scales of allowances laid down for each type of illness or condition. The Committee, therefore, acted as a court of appeal on borderline cases.

Sir Ernest inquired whether Mr. Strachey knew that the withdrawal from a patient, in the care of certain doctors in Birmingham, of an allowance of fat essential to the maintenance of the patient's life was followed by his death within a few days. He asked if Mr. Strachey would take steps to prevent a recurrence of this overriding of the opinion of doctors in actual charge of a patient.

Mr. Strachey answered that the certification from the practitioner that the patient suffered from the illness specified was always accepted without question. It was so accepted in this case, and the official concerned had to inform the practitioner that in such cases two pints of milk daily and three eggs a week were allowed, but not additional butter. The lay official transmitted an incorrect reason for refusing the butter. The practitioner then appealed, but, there being no reason given for regarding this case as in any way different from others in this category, the Committee confirmed the refusal, giving the correct medical reasons for doing so. In this sad case the patient died of inoperable cancer. Mr. Strachey's medical advisers informed him that the grant or refusal of an extra fat ration could have had no influence whatever upon the course of this disease. Extra milk and eggs were granted on medical grounds to this patient, and an allowance of butter was in fact granted, after being discontinued for only two days on compassionate grounds.

Mr. Churchill asked if there was any reason to believe that doctors had been abusing the right of giving advice as to extra diet to their patients in the past few years, and had this abuse amounted to such dimensions as to make an appreciable effect upon the general problem of food supplies.

Mr. Strachey said he would not like to accuse the medical profession of abuse in the matter, but the amount of extra milk given on medical priority grounds had caused concern to him and, on other occasions, to his predecessors, and to this medical Committee. The Ministry of Food had asked doctors, through the medical press, to have regard to the need, particularly in the case of milk, for restricting the extra amount granted on medical grounds.

Colonel Stoddart-Scott asked how frequently the Committee had met and why it took from Aug. 3 to Dec. 20 to get them to agree to provide white flour for a man who died on Dec. 23.

Mr. Strachey could not say whether the meeting was weekly or was arranged with regard to the business in view. The Committee had, voluntarily and in an honorary capacity, performed arduous and invidious functions as well as they could be performed. The average time taken to decide appeals was nine days.

Mr. Logan asked Mr. Strachey to give power to medical men to prescribe extra diets. Lives were saved by medical men and not by committees. Mr. Strachey said he could not possibly change the system. In the case of milk it certainly appeared that there must be some eminent and independent medical authority reviewing these cases.

Mr. Churchill suggested that if a doctor attended a patient and certified that the matter was urgent the diet should be given pending reconsideration by higher authority. Mr. Strachey said that would be good if it could be done. The medical Committee had laid down the categories of illnesses, ailments, and conditions which qualified for an extra ration. If a doctor certified that a patient was suffering from a condition which, on the scales laid down by the Committee, carried the extra ration, then the patient automatically and immediately received the ration.

Mr. Bower inquired whether Mr. Strachey knew that at least two persons had recently died after being refused additional quantities of rationed foodstuffs recommended by their medical advisers, and if he would now alter the present system in such a way as either to allow additional rations on the certificate of a registered medical practitioner or alternatively to ensure that the patient was seen personally by at least one member of the Special Diets Advisory Committee before additional ration were refused. Mr. Strachey could not accept the implication that deaths had resulted from the refusal of applications for additional rationed foods. He reaffirmed his confidence in the present system of dealing with these applications and said he proposed to continue it.

Sir Ernest Graham-Little asked Mr. Strachey to review the case of a patient discharged from hospital after a severe operation before convalescence, owing to shortage of beds, at

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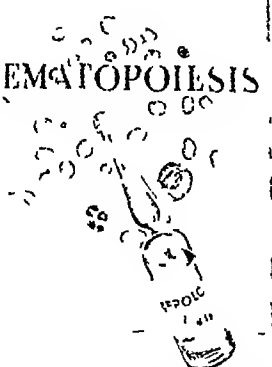
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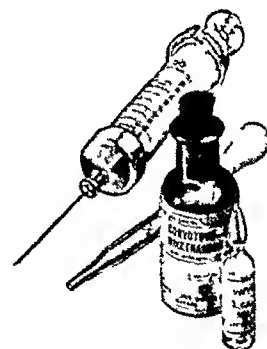
References — Shortage of space precludes list of references, but full documentation may be obtained on application to Clinical Research Dept. 4A



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placed under the care of a general practitioner who applied for special dietetic allowances and was refused by his Department. Mr STRACHEY replied that in this case a doctor asked that a patient who was discharged from hospital after operations for general peritonitis, and already receiving extra milk and eggs, should also receive extra meat, cheese, sugar, butter, bacon, and bread. The application was refused as the Special Diets Advisory Committee recommended that the ordinary rations of foods other than milk and eggs were sufficient for convalescence from any illness. A review now would be inappropriate as the doctor had recommended the additional rations for six weeks from July 25, 1946.

Sir ERNEST GRAHAM-LITTLE further pressed Mr Strachey to review the decision on a case where a radiologist, to carry out a test for bile function on one of his patients, required to give a diet of eggs beaten up with milk, and was refused the grant of the eggs by the medical advisers of the Department who had no knowledge of the case. Mr STRACHEY said an application was made in June 1945, by a doctor for supplies of eggs for six unnamed patients to determine the function of the gall-bladder. The application was rejected because the Ministry's medical advisers considered that the same purpose would be served by other fats.

Mr STRACHEY furnished the following list of members of the Food Rationing (Special Diets) Advisory Committee of the Medical Research Council:

Sir Edward Mellanby (Chairman), Prof L S P Davidson, Sir Francis Fraser, Lord Horder, Dr R D Lawrence, Prof R A McCance, Dr M L Rosenheim, Dr Norman Smith, Prof J C Spence, Prof H P Himsforth, Lord Dawson of Penn, then President of the British Medical Association was an active member of the Committee until the time of his death.

German Doctors on Trial

Mr SOMERVILLE HASTINGS inquired on Jan 22 whether permission was given to Dr Kenneth Mellanby to travel to Germany in the uniform of a British war correspondent to talk to German doctors on trial at Nuremberg about their experiments on human beings, and what use would be made of his report.

Mr JOHN HYND replied that Dr Mellanby travelled as an accredited representative of the *British Medical Journal* and was given the usual facilities afforded to a Press correspondent. The use made of his report was a matter for the editor of the paper concerned. (See "Medical Experiments on Human Beings in Concentration Camps in Nazi Germany" in the *Journal* of Jan 25, at page 148.)

National Food Supplies

In the House of Lords on Jan 22 Lord DE L ISLE AND DUDLEY called attention to the food situation. He said food in greater quantity and variety was needed for the nation's energies.

Lord HENDERSON, replying for the Government said that during 1946 the world food situation deteriorated further, but in the British national diet the overall average intake of calories continued at only 5% less than it was before the war. Acute shortage in the world supply of major foodstuffs would continue throughout the crop year 1946-7. Some improvement was expected in oil and fat supplies. A reduction in the United Kingdom bread ration might be inescapable. In meat supplies it seemed likely that the Government would be no more than able to maintain in 1947 the same ration that had been issued last year. Egg and dried egg supplies would almost certainly be maintained at 1946 levels. Fish landings in the spring might become an embarrassment. There might be difficulty in maintaining the 2 oz ration of bacon. There was practically no hope of restoring the 3 oz ration during 1947. There was a prospect of 7 to 10% more sugar and of a small increase in the butter ration. He hoped no further cut would be necessary in the rations of soap or edible fats.

Lord CHERWELL said that at the end of the first year of peace the consumption of meat was down by 15%, of bacon by 33%, of cooking fat by 8%, of jam and marmalade by 16%, and of dried fruits by 15%. Lord Henderson's forecasts implied a further reduction of 100 calories or so a day in the British ration. The vast majority of the nation had a great deal more to eat before the war than they got now. Lord Addison as a medical man would not put forward the claim that the national health had never been better. Gastric ulcers and other gastric troubles were on the increase as were diseases of the nervous system and the cardiovascular system. The rising incidence of tuberculosis since the food had been reduced was unmistakable.

Lord ADDISON said restrictions had continued in the post war period because the needs of the world had been focused through the International Allocation Board. In Britain more milk was being produced this year than ever before in the winter months and a much larger quantity was consumed as

liquid milk. Adult consumption of milk had increased by 30%. Mothers and children had a priority allowance or seven pints a week, against a pre-war average of about half a pint. In three or four years a supply of groundnuts from Africa might relieve many anxieties with regard to fat supplies.

Lord CHERWELL expressed surprise that the Ministry of Food had made no statement on a disquieting paper published in the *British Medical Journal* by the Secretary of the Medical Research Council ('Diet and Canine Hysteria,' by Sir Edward Mellanby—Dec 14, 1946, p 885). Apparently 90% of the nation's flour was bleached by nitrogen trichloride. Examination of hysteria in dogs seemed to have proved conclusively that this was caused by bread bleached by the same process. Whether human beings were affected in the same way had not been proved but was not unlikely. In the first stage the dog got listless, apathetic, and averse to exercise. If this form of diet had the same effect on human beings it would not be conducive to increased production.

Notes in Brief

British Zone Rations—In the British zone of Germany for the period Jan 6 to Feb 2 of this year the weighted average of rations, including those of normal consumers, heavy workers, nursing mothers and other special classes is about 1,750 calories per day. This figure excludes the extra rations of children attending school in certain areas who receive a supplementary meal assessed at 300 calories daily up to 12 years and 490 calories daily over 12 years of age.

Medical News

Mr A. Dickson Wright will deliver the second of two Cantor Lectures before the Royal Society of Arts (John Adam Street, Adelphi, London, W.C.) on Monday, Feb 3, at 5 p.m. His subject is "Applications of Recent Physical Discoveries in Medical Diagnosis and Treatment." Mr Wright's first lecture, on the advances of modern surgery, was delivered on Jan 27.

A clinical meeting of the Scottish Group of the Association of Industrial Medical Officers will be held at the Pathology Museum, Glasgow Royal Infirmary, on Wednesday, Feb 5, at 3 p.m., when Dr J. Ferguson Smith will show a number of cases, some of which will have an industrial bearing, followed by a short talk on skin conditions. Time will be given for discussion and questions.

A meeting of the London Association of the Medical Women's Federation will be held at B.M.A. House on Wednesday, Feb 5, at 8.30 p.m., when Miss D. J. Collier, F.R.C.S., will speak on "The Influence of War Experience on Everyday Ear and Throat Treatment."

A meeting of the Society of Public Analysts and Other Analytical Chemists will be held at the Chemical Society's rooms (Burlington House, Piccadilly, W.) on Wednesday, Feb 5 at 6 p.m., when papers will be presented and discussed.

There will be a clinical meeting of the Medical Society of the L.C.C. Service on Thursday, Feb 6 at 3 p.m. at Sutton Hospital (Neurosis Centre), Brighton Road, Sutton, Surrey.

During February Sir William Fletcher Shaw will conduct examinations for the Royal College of Obstetricians and Gynaecologists in Sydney and Melbourne, Australia.

Postgraduates desiring courses at the Institute of Child Health, The Hospital for Sick Children, Great Ormond Street, London W.C.1, for three to six months or for shorter periods are asked to apply for reservations as early as possible before the date they wish to begin their studies, as vacancies are being filled well in advance.

The National Coal Board announces that Cuthbert Leslie Cope, D.M., F.R.C.P., First Assistant to the Nuffield Professor of Medicine, Oxford, has been appointed Director of Research (Human Problems) under the scientific member of the Board, Sir Charles Ellis.

An arrangement whereby the many thousand German scientific and technical documents held by Britain and the United States may be scrutinized in either country has been completed. Microfilm copies will be made available on an exchange basis to representatives of each nation. The responsible body in Britain is the Board of Trade, German Division (Documents Unit) and in America the Office of Technical Services, Department of Commerce.

Dr Carlos Chazariun, director of the Institute of Biophysics, University of Brazil and a specialist in metabolism, is on a visit arranged by the British Council, to this country to study medical developments. He is to meet British medical authorities in London, Oxford, and in Cambridge, where he will deliver a paper to the Society of Experimental Biology on "Some Aspects of the Discharge of the Electric Eel."

At a meeting of the directors of the Society for Relief of Widows Orphans of Medical Men, held on Jan 8, with Dr R A Young, president, in the chair, one new member was elected £1 815 was voted for the payment of the half-yearly grants to the widows in receipt of relief, those 65 years of age and over receiving £37 10s each and those under 65, £25 each. The question of the society's holding in railway debentures was discussed and will be raised again at the April meeting. Members who have been serving in H M Forces and who are now demobilized should notify the secretary of their present addresses, as unless the arrears of subscriptions are paid, membership is suspended. Membership is open to any registered medical man who at the time of his election is residing within a twenty mile radius of Charing Cross. Full particulars may be obtained from the secretary of the society, 11, Chandos Street, Cavendish Square, W 1.

The *British Journal of Nutrition* is another quarterly journal to make its appearance for the first time. It is not, perhaps, entirely new because it is replacing the *Proceedings of the Nutrition Society* and comes out under the same auspices. The Editorial Board under the Chairmanship of Dr S K Kon of the National Institute for Research in Dairying at Reading will consist of the following members: D P Cuthbertson, J N Davidson, R C Garry, G Graham, J Hammond, E M M Hume, I Leitch, W C Miller, B S Platt, J A B Smith, F Yates. The first number of the journal will appear during the first half of this year and we wish it every success.

Sir John Fraser, Principal of Edinburgh University has consented to become honorary president of the Scottish Association of Occupational Therapists. Lt Col Cunningham, of Edinburgh, has accepted the office of honorary vice president.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* infectious diseases were less prevalent than in the preceding week. There were decreases in the incidence of measles 600, scarlet fever 103, whooping-cough 102 and diphtheria 10. There was an increase in the notifications of dysentery 22.

Although the total number of cases of measles declined, an increased incidence was recorded in several counties, notably Staffordshire 143, Nottinghamshire 103, and Yorkshire North Riding 72. The largest falls were recorded in Warwickshire 155, Yorkshire West Riding 114 and Hertfordshire 85.

Slight decreases in the incidence of scarlet fever were general and no large local fluctuations were reported. The decrease in cases of whooping-cough was mainly contributed by the south-western counties, where 64 fewer cases were notified than in the preceding week. No changes of any size were recorded in the local returns of diphtheria.

Two fresh outbreaks of dysentery were recorded during the week. Hertfordshire, St Albans R D 24 and Yorkshire West Riding, Rotherham C B 14. The only other large returns for dysentery were Lancashire 13 and London 11.

In *Scotland* an increased incidence was recorded for whooping-cough 397, measles 239, acute primary pneumonia 70 and scarlet fever 20. Measles appears to be most prevalent in the cities of Aberdeen and Edinburgh.

In *Eire* a large increase in cases of whooping-cough 64 was mainly due to the outbreak in Dublin C B, where there were 101 cases. The notifications of scarlet fever and diphtheria decreased by 18 and 17 respectively.

In *Northern Ireland* a further 755 cases were notified in the epidemic of measles in Belfast C B.

Quarterly Returns for Northern Ireland

The birth rate during the September quarter was 22.9 per 1 000 and was the same as the average of the three quarters of the five years 1941-5. The infant mortality was 43 per 1 000 registered births and was 20 below the average of the five preceding September quarters. Maternal mortality was 2.5 per 1 000 births and was 0.7 below the five years' average. The general death rate was 9.8 per 1 000 and was 1.1 below the average rate for the five preceding three quarters. Deaths from infectious diseases were slightly less than half of the average of the three quarters during 1941-5. Deaths from pulmonary tuberculosis and from other forms were 179 and 55 and were 25 and 9, respectively, below the five years' average.

Week Ending January 18

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,226, whooping-cough 2,192, diphtheria 256, measles 11,087, acute pneumonia 1,223, cerebrospinal fever 58, dysentery 72, acute poliomyelitis 9, paratyphoid 6, typhoid 4. Deaths from influenza in the 126 great towns numbered 85.

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Jan 11.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year for: (a) England and Wales (London included), (b) London (administrative county), (c) Scotland, (d) Eire, (e) Northern Ireland. Figures of Births and Deaths, and of Deaths recorded under each infectious disease are for: (a) The 126 great towns in England and Wales (including London), (b) The 16 principal towns in Scotland, (d) 10 principal towns in Northern Ireland. Space denotes disease not notifiable or no return available.

Disease	1947					1946 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever Deaths	56	7	34	2	1	86	93	24	2	1
Diphtheria Deaths	232	15	60	18	11	525	35	157	76	12
Dysentery Deaths	87	11	14	—	—	344	28	37	1	—
Encephalitis lethargica acute Deaths	—	2	—	—	—	4	1	—	—	—
Erysipelas Deaths	—	—	56	7	3	—	—	53	12	2
Infective enteritis or diarrhoea under 2 years Deaths	79	8	16	28	—	58	7	8	33	2
Measles* Deaths	10 223	291	445	34	755	777	86	156	153	4
Ophthalmia neonatorum Deaths	74	5	14	—	1	78	5	15	1	—
Paratyphoid fever Deaths	4	—	1(A)	1(B)	—	2	—	—	—	1(B)
Pneumonia influenzal Deaths (from influenza)	1 264	100	39	2	8	1 445	84	57	11	10
Pneumonia primary Deaths	74	14	11	—	—	165	13	21	1	4
Poliomyelitis acute Deaths	2	1	—	—	—	1	—	—	—	—
Poliomyelitis acute Deaths	14	3	1	7	—	10	1	1	—	—
Puerperal fever† Deaths	—	3	14	—	—	—	5	11	—	—
Puerperal pyrexia‡ Deaths	142	12	20	—	—	154	18	17	1	1
Relapsing fever Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever Deaths	1 058	81	266	19	33	1 355	117	226	17	25
Smallpox Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid fever Deaths	4	—	—	2	—	3	1	5	13	—
Typhus fever Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough* Deaths	1 928	132	465	128	65	1 190	91	99	42	7
Deaths (0-1 year) Infant mortality rate (per 1 000 live births)	533	62	91	—	20	460	69	62	53	14
Deaths (excluding still births) Annual death rate (per 1 000 persons living)	6 750	1 177	860	15	6 784	1 071	882	247	168	—
Live births Annual rate per 1 000 persons living	9 838	1 552	1 223	298	7 221	1 055	882	493	277	—
Stillbirths Rate per 1 000 total births (including stillborn)	272	47	47	—	211	19	39	—	—	—

* Measles and whooping-cough are not notifiable in Scotland and the returns are therefore an approximation only.

† Includes primary form for England and Wales (London administrative county) and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire. It is still not possible to publish the return of births and deaths for Eire for the weeks ended Oct 26 Nov 2 9 16 23 30 Dec 7 14 21 28, 1946 Jan 4 and 11 1947.

Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions, which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Whooping-cough Immunization

Q—What public health authorities in this country are trying immunization against whooping-cough on a large scale? Can you refer me to the latest and most recent pronouncement on this subject?

A—This question probably refers to the controlled trials of pertussis vaccine being carried out by the Medical Research Council in conjunction with certain local authorities. These trials have so far been organized and are in progress in the boroughs of Tottenham and Wembley and in the City of Manchester. Two American vaccines are in use—the Sauer vaccine, made by Parke, Davis and Co., Detroit, and the Kendrick vaccine, made at the laboratories of the Michigan Public Health Department. Further organized trials will probably be carried out with new British vaccines, inquiries should be addressed to the Medical Research Council. An up-to-date review on immunization against whooping-cough is given by Dr J. Tudor Lewis in the *Medical Officer* July 6 1946, page 5.

Penicillin Treatment of Carbuncle

Q—What is the correct modern treatment of a carbuncle? Do daily intramuscular injections of 125,000 units of penicillin in beeswax and ethyl oleate alone produce a satisfactory blood level of the drug in this condition and is there evidence that this treatment reduces the incidence of metastatic complications? Is surgical incision contraindicated for the majority of cases? Should penicillin injections be combined with sulphathiazole by mouth?

A—The advent of penicillin therapy has to all intents and purposes done away with the need for surgical measures in the treatment of carbuncles. Penicillin, if given early enough and in sufficient quantity, will abort a carbuncle, if the condition has already reached the stage of subcutaneous necrosis, sloughs will separate automatically within three to seven days and can be picked out with dressing forceps. Should the resultant cavity be large enough to warrant it, immediate skin-grafting (after removal of sloughs) can be carried out with every confidence of success. In practically all cases the rapid relief of pain and toxæmia and of local oedema and tenderness can only be described as dramatic—taking place within a few hours. Dosage should approximate to 200,000 units a day for three to four days, and the penicillin can be given by intramuscular three-hourly injections of 20,000 units, by the 'intensive' method (200,000 units given into an intravenous drip over a two hourly period daily for two to three days), or by a single daily injection of 150,000 units in a "slow release vehicle". All these methods maintain a satisfactorily bactericidal blood level. Many instances have been reported of metastatic complications being both aborted and cured by penicillin administration. Generally speaking, penicillin alone will provide the required therapy, and sulphathiazole is better avoided as in a certain proportion of cases it will produce unwanted side-effects.

Postponement of Menstruation

Q—Is there any danger in using synthetic oestrogens by mouth to postpone the onset of a menstrual period (a) once in a while (b) repeatedly? What is the most satisfactory preparation and when and in what dosage should it be given? How long may one expect to hold off the bleeding and the associated symptoms? Supposing the patient had become pregnant in the previous four weeks would the foetus be endangered? In order to ensure that the chosen preparation did not cause unpleasant side-effects what would be the best time in the cycle to make a preliminary 'blank' trial?

A—If medication is to be limited to the premenstrual phase it is easier to postpone menstruation with progesterone than

with oestrogen. If stilboestrol is to be used, give 1 or 2 mg by mouth immediately after the end of a period and continue the dose thrice daily throughout the cycle. The object of this is to inhibit ovulation, and if this is achieved the next uterine bleeding (which will be anovular in type) will probably be postponed until seven to ten days after treatment is suspended. If, however, an ovum is liberated and fertilized it is possible that the heavy oestrogenic stimulus will inhibit progesterational changes in the endometrium and so prevent implantation. Once the ovum is successfully implanted, however, say after the twenty-second or twenty-third day of the cycle, stilboestrol is unlikely to disturb it. Oestrogens do not induce abortion in the human being although they do in some of the lower animals.

One or two test doses of stilboestrol could be given without harm at any time in the cycle, but perhaps the best time is during the ten days following a period. The deliberate postponement of menstruation by oestrogen and progesterone may be occasionally justified by some very special circumstance and probably does no harm. It should not, however, be done repeatedly for fear of upsetting the menstrual rhythm more permanently. Moreover the continued or frequent use of stilboestrol would cause endometrial hyperplasia and profuse uterine bleeding as well as some inhibition of pituitary and ovarian function.

Sulphonamides in Secondary Anaemia

Q—Is there any danger in giving sulphonamides in severe secondary anaemia for an accompanying disorder (for example gonococcal arthritis) providing granulocytes are in approximately normal proportions?

A—There is little danger in giving sulphonamides in such circumstances, certainly, if the accompanying infection indicates their use, they should not be withheld. Moreover leucopenia, and even agranulocytosis are not contraindications provided that there is associated sepsis which they are likely to control and that the initial reduction of leucocytes was not due to sensitivity to these drugs. It may be recalled that one rare manifestation of sensitivity to sulphonamides is an acute haemolytic anaemia, the gravity of which, in a patient already anaemic, is obvious. Secondly, there is some evidence that a mild depression of erythropoiesis follows prolonged medication with these drugs.

Stoking as a Cause of Industrial Disease

Q—During the war a stoker worked in a hospital where the stove hole was badly ventilated owing to the blackout. He now has extreme emphysema with chronic bronchitis probably due to the fumes. Is this an industrial disease and if so what steps should be taken to contact a certifying factory surgeon?

A—The occupation is not one specified in the Compensation Schemes, either under the Silicosis and Asbestosis Act of 1930 the Workmen's Compensation Act of 1943, or the Shipping Industry Compensation Scheme of 1946. Since apparently the stoker's work was carried on in a hospital the examining factory surgeon would in any case have no jurisdiction.

Distance Vision in Presbyopes

Q—In presbyopes vision for distance is commonly blurred on removing their glasses. This can hardly be due to accommodation for it occurs in quite elderly subjects. What are the cause and the treatment?

A—The assumption that the symptom mentioned cannot be due to accommodation is not quite valid. There is very little decline in capacity for accommodation after the age of 60, and a nonagenarian has a capacity for accommodation not much different from that of a man thirty years younger. It is reasonable to assume that the symptom is an expression of loss of resilience in accommodation. In the young the ciliary muscle acts briskly and the eye rapidly adjusts itself to any distance required. With the onset of presbyopia the muscle does not function so effectively, and the sclerosis of the lens makes this structure less plastic. In consequence there is effort involved to produce accommodation, and return to distance vision is also not so spontaneous. It is as if the eye, once adjusted for near vision, remains 'fixed' for some little time in that state before adjusting itself to distance. If this is so there is little

that can be done in the way of treatment. Nothing will make a senescent muscle younger and a rigid lens more plastic. It is, however, an accepted clinical fact that after debilitating illnesses these symptoms are common. The maintenance of good health and physical efficiency would therefore seem to be the only effective means of reducing these symptoms to a minimum.

Use of Powder in Massage

Q—*The use of powder in massage seems to be unphysiological and unhygienic. Would it not be better to use some oil which might also nourish the skin? What are the advantages and disadvantages of the use of powder as compared with oil or lanolin?*

A—The advantages of powder—provided it is of good quality—as a dry lubricant are the ease with which it is applied and with which it is stored or carried about, and its general cleanliness in use. It may have its disadvantages where delicate skins are concerned or where the skin is unusually scaly or dry through deficient sebum production, when oil is preferable. Oily lubricants are undoubtedly messy, and, except for those which are readily absorbed by the skin, they have to be removed by thorough washing with soap or by means of spirits if grease stains are to be avoided on garments or bed linen. The protection against water and physical agents afforded by an oil sodden corneal layer to the skin is too well appreciated to need stressing, but whether oil inunctions have any nutritive properties is problematic.

The use of powder as a lubricant for massage is no more unphysiological than the use of graphite in bearings is unscientific, and, provided always that the powder is clean, the 'unhygienic' qualities of the procedure will be determined solely by the state of cleanliness—or otherwise—of the patient's skin and the masseuse's hands.

Two stage Prostatectomy

Q—*In cases of enlarged prostate is it safe to proceed with the second operation if the blood urea is in the region of 60/70/80 or 90 mg per 100 ml? The patient is apparently in perfect health with good appetite, etc.*

A—The indications for proceeding with the second stage of the prostatectomy will depend on many other things besides the blood urea, for example, the urea concentration test, the total output of urine, and the general clinical condition. If the blood urea does not fall further with continued suprapubic drainage, and remains in the neighbourhood of 60/70, it may be justifiable to carry out an enucleation provided that other factors are favourable. Before doing so an intravenous pyelogram should be taken as this will show whether there is any gross lesion of the kidneys. Operation on a case in which the blood urea was consistently above 60 mg per 100 ml would inevitably carry with it some risk.

Increasing Stature

Q—*Can a man of 32 increase his height? I have seen it stated that a person's height can be permanently increased by a physiological thickening of cartilage.*

A—There is no method of increasing the true height of an individual once the epiphyses have united. It is impossible to produce the physiological increase in thickness of cartilage claimed. It is possible, of course, to increase the apparent height of one whose carriage is defective, by exercises designed to produce a more erect posture.

INCOME TAX

All inquiries will receive an authoritative reply but only a selection can be published.

Holding of Several Appointments

G K holds one main appointment and several minor ones for which he is paid on a sessional basis. How should he be assessed?

** In strict law the income from each appointment is assessable under Schedule E, but we think that G K will be able to arrange with the local tax office for the main earnings to be assessed under Schedule E and the minor earnings aggregated into one sum and assessed under Schedule D—such an arrangement will obviously be convenient to both parties. G K is advised to raise the matter at once with the tax office so that the persons from whom he holds the minor appointments can be authorized to regard their payments as outside the P.A.Y.E. scheme.

Letters and Notes

Penicillin for Germany

Mr H CARTER and Dr YOLANDE FRIEOL write: Scientists particularly in the medical field have generally held to the principle that the latest discoveries for saving life or mitigating suffering should be used for the benefit of all mankind. It is therefore with grave concern that we note that owing to the completeness of the economic breakdown in Germany the patients in the German hospitals are largely deprived of some of those remedies with which their lives might be saved or their sufferings lessened. A few months ago we received a letter from Dr Ruth Smatznig of the children's hospital in Charlottenburg in the British Sector of Greater Berlin asking if we could send her even a small amount of penicillin for those cases requiring it most urgently. At that time there was, as far as she knew, apart from those hospitals receiving children under treatment for venereal disease, no children's hospital in Berlin in which penicillin was available for other infections amenable to penicillin. A little more penicillin has now been made available for other cases than venereal disease, but there is still far less than is required by all types of hospitals. We have recently sent out from the Ecumenical Refugee Commission of the World Council of Churches, in conjunction with Save Europe Now, 2,000 mega units of penicillin, which were flown across for us by the R.A.F. and which the Public Health authorities of B.A.O.R. are distributing for us among the hospitals in the British Zone and in Berlin. They would gladly receive a similar consignment from us monthly, if we can send it, and more is urgently required. Your readers are in a position to assess the seriousness of the situation and we would ask them to enable us to continue sending it. Donations can be sent to the Chairman of the Ecumenical Refugee Commission, 21 Bloomsbury Street, London W.C.1. This organization is duly registered under the War Charities Act.

Endogenous Depression in General Practice

Mr H. I. DEITCH, FRCS (Halifax) writes: Concerning the article by Dr C. A. H. Watts (Jan 4, p. 11) on the treatment of mild mental disorder and neurosis in general practice and the facilities at general hospitals, we have, attached to this hospital, a large department staffed by a psychiatrist and a physician for functional nervous disorders, which holds an out-patient session nearly every day of the week, has beds for in-patients to an unlimited extent and gives E.C.T. both to out-patient and to in-patients. The establishment of the department was easy and raised no administrative difficulties. Matron seconded members of her staff to the local mental hospital for training before treatment was commenced.

Dr P. E. F. FROSSARD (London, W.1) writes: In his article outlining "Endogenous Depression in General Practice" (Jan 4, p. 11) Dr C. A. H. Watts, while stressing the efficiency of electroconvulsion therapy and bemoaning the difficulty in persuading the mild depressive to go into a mental hospital for it, seems to be under the misapprehension that E.C.T. cannot be obtained in this country without recourse to in-patient treatment. He says: "In any case, in America (the italics are mine) E.C.T. is given to out-patients, and the majority of mild depressives could well be treated in that way" (p. 14). I would like to reassure Dr Watts that patients need not be sent as far as America for out-patient E.C.T. At the British Hospital for Functional Nervous Disorders—a clinic which has no in-patient department—E.C.T. is regularly administered to suitable cases referred by general practitioners and specialists. As in private practice, the patient is required to bring a friend to accompany him home after a short rest.

Extra Meat in Liver Disease

The Minister of Food announces that persons suffering from infective hepatitis (catarrhal jaundice), toxic jaundice and chronic hepatitis (cirrhosis of the liver) may now be allowed extra meat in addition to the household milk powder now permitted. The additional meat will be made available as follows: (1) *Infective Hepatitis and Toxic Jaundice*—Two extra rations of meat a week may be granted for a period of one month renewable on production of further medical certificates at monthly intervals. The grant will be made for a maximum period of four months. (2) *Chronic Hepatitis*—Two extra rations of meat a week may be granted for a period of three months, renewable on production of further medical certificates at three monthly intervals.

Record of Service

Mr J. ELLIOT SQUARE, FRCS (Plymouth) writes: I see in the Jan. 11 issue of your *Journal* (p. 78) that Dr C. H. Hall, of Watford, has been secretary of his medical society for 50 years. I can beat that as I am now in my 59th year as Hon. Treasurer of the Plymouth Medical Society, which was founded in 1794, and I believe the oldest provincial medical society in Britain except the Colchester Society.

LONDON SATURDAY FEBRUARY 8 1947

DUST CONTROL IN MEASLES WARDS

WITH A NOTE ON SULPHADIAZINE PROPHYLAXIS

BY

NORMAN D BEGG, MD

ELSPETH W SMELLIE, BM, BCh

AND

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(From the London County Council Eastern Hospital)

Allison and Brown (1936) showed that haemolytic streptococci may spread in measles wards as a secondary transmissible infection superimposed on the primary virus-caused disease. Their findings were confirmed by Wright, Cruickshank, and Gunn (1944), who showed in addition that dust particles are possibly an important means of streptococcal carriage in measles wards. They found that the oiling of blankets, bed linen, garments, and floors in a measles ward resulted in a 98% reduction in the numbers of haemolytic streptococci in the air during bed-making, when compared with the numbers in the air of an unoled control ward, and that the streptococcal cross-infection rate among the patients fell from 58.1% during a preliminary period with oiled floor alone to 18.6% when, in addition, oiled bed-clothes, garments, and ward linen were in use. The comparable cross-infection rates for the same periods in the unoled ward were 53.3% and 73.3% respectively. The method of laundry oiling was described by Harwood, Powney, and Edwards (1944).

Research on the control of air-borne infection was stimulated during the recent war by the occurrence of respiratory infection among men in barracks and other establishments. British workers demonstrated a great increase in numbers of dust-borne streptococci and other bacteria in the air of Army quarters and hospital wards during bed-making and sweeping, and successfully controlled dust-spread bacteria by the application of dust-laying oils to textiles and floors (van den Ende *et al*, 1940, 1941, van den Ende and Thomas, 1941, Thomas, 1941). American workers confirmed these observations and introduced new methods of oil application (Robertson *et al*, 1944, Commissions on Acute Respiratory Diseases and on Air-borne Infections, 1946, Loosli *et al*, 1946, Puck *et al*, 1946). In field trials they secured evidence that oiling floors and blankets reduced the incidence of haemolytic streptococcal infection among troops (Commission on Air-borne Infections, to be published).

Scope of the Investigation

Although the good results of dust control in a measles ward recorded by Wright, Cruickshank, and Gunn (1944) appeared clear-cut, it is notoriously difficult to make strict comparisons between one hospital ward and another. It seemed important, therefore, to repeat the experiment during another measles epidemic and in another hospital. At the same time nursing techniques and other matters, the importance of which had emerged during the first experiment, were standardized so far as possible. The investigation was undertaken during 19 consecutive

weeks in 1945 in two first-floor measles wards of identical size, design, and aspect. Each ward had a side-room for two cots. In the oiled ward (opened on Jan 28 and closed on June 7) the following dust-suppressive measures were taken. The floor of the main ward, which was of wood was treated with spindle oil immediately before the start of the investigation and monthly thereafter (the floor of the side-room, sanitary annexes, and passages could not be oiled, as they were of composition), all blankets, counter panes, sheets, pillow-slips, patients' garments, towels, and staff gowns were treated with technical white oil immediately before the start of the investigation and thereafter at each laundering. The blankets of each patient were disinfected after his discharge or transfer from the ward and were washed and re-oiled every four weeks. During the first three weeks the oiling was undertaken at the laundry of the British Launderers' Research Association, and during the rest of the investigation in the hospital laundry. The method used was that described by Harwood, Powney, and Edwards (1944). In the unoled ward (opened on Jan 25 and closed on May 31) no measures were taken against dust-borne infection. The floors of this ward and its side-room and annexes were of composition. In each ward the total bacterial and haemolytic streptococcal content of the air, and the cross-infection and complication rate due to haemolytic streptococci, were studied throughout the investigation. A third ward for the study of sulphadiazine prophylaxis was opened on Feb 14 and closed on May 19 1945. Particulars and results of this part of the investigation are the subject of a separate section of this report.

Ward Arrangements

1 The bed complement of each ward, which was normally 18, was raised to 20 (8 cots and 12 beds) during the investigation. The bed-spacing was 12 ft (366 cm) between bed centres. The length of each ward was 100 ft (30 m), the width 27 ft (823 cm), and the height 15 ft (457 cm). The ventilation turnover (between 4.30 and 6 a.m.), estimated once only, was five to seven changes in an hour. Each ward had a side-room with two cots reserved for patients with middle-ear suppuration.

2 Measles patients were allocated in rotation to the main wards, measles patients admitted with middle-ear suppuration were allocated in rotation to the side-rooms.

3 Toys and books were forbidden in the wards.

4 Mattresses, pillows, and blankets of each bed were disinfected (5 lb (2.27 kg) pressure for 30 minutes) at the start of the investigation, and thereafter on the discharge or transfer of each patient.

5 Barrier nursing was adopted for all patients with the following complications pneumonia, severe bronchitis, tonsillitis skin infection, and middle-ear suppuration

6 Patients with uncomplicated measles were discharged on their tenth day in hospital

7 Swabs for nasal toilets were sterilized in dressing drums, nurses were instructed to use a "no-touch" technique and to wash their hands in a solution of "O-syl" between each nasal toilet

8 Convalescent patients were restricted to their own bed area

Routine Procedures

Air Sampling—The bacterial content of the air was investigated by means of a slit sampler (Bourdillon, Lidwell, and Thomas, 1941) Air samples were taken once weekly in each ward during bed-making (5 to 6.30 a.m.) and during sweeping (8.30 to 9.30 a.m.) The slit sampler, on a trolley, was moved from one bed to the next as each in turn was made During sweeping the machine remained at a fixed central point in the ward The height of the slit, through which air was drawn at the rate of 1 cu ft (28.317 c.m.) per minute, was 34.5 in (87.6 cm) from the floor For measuring the total bacterial content of the air, blood agar plates were exposed in the slit sampler for one to three minutes and were incubated aerobically for 24 hours at 37° C The number of bacterial colonies on each plate was counted, though on crowded plates only an approximate count could be made For measuring the haemolytic streptococcal content of the air, gentian-violet blood agar plates were exposed in the slit sampler for 5 to 15 minutes The number of colonies of haemolytic streptococci on each plate was counted after 24 hours' incubation aerobically at 37° C

Cross-infection Criteria—Swabs were taken from the nose and throat (and from the ear discharge, if any) of every patient immediately before admission to the wards, then once weekly and on the day of discharge or transfer Nose and throat swabs were taken once weekly from the ward and laboratory staffs and from the medical officers Swabs were plated on gentian-violet blood agar plates and incubated aerobically for 18 hours at 37° C Cross-infection was judged to have occurred if a patient, between his third hospital day and the day of his discharge or transfer from the ward, was found to have in his upper respiratory tract haemolytic streptococci of Groups A, C, or G which were not present on the day of, or the day after, admission It was intended to take swabs in the receiving-room from the skin lesions of all new patients, but this was not always practicable as some patients had multiple or crusted lesions

Complication Rate—A daily round of all patients in the three wards was made and any complication or rise of temperature noted Appropriate swabs were taken, plated on gentian-violet blood agar, and investigated for the presence of haemolytic streptococci after 18 hours' incubation aerobically at 37° C

Serological Investigation of Haemolytic Streptococci—Representative colonial forms of haemolytic streptococci were picked from gentian-violet blood agar plates to blood broths, which, after 18 hours incubation aerobically at 37° C, were stored in the refrigerator for subsequent serological examination All haemolytic streptococci thus stored were tested for Lancefield group by the formamide method (Fuller, 1938) Group A streptococci were tested for serological type by the Griffith agglutination method Strains which had been derived from patients and which failed to type by agglutination were tested by the precipitin typing method (Swift, Wilson, and Lancefield, 1943) so also were representative strains from a large number of Group A

streptococci which gave agglutination reactions with type 13 and B3264 sera Strains which failed to give satisfactory reactions were recorded as "type not found"

Results of Investigation

Air Sampling

Air samples were taken once weekly during bed making and sweeping in each main ward and also in the side-room, if occupied The results in the unoled and the oiled wards are shown in Table I

TABLE I—Counts of Total Bacteria and of Haemolytic Streptococci in the Air of the Unoled and of the Oiled Ward during Bed making

UNOLED WARD			OILED WARD		
Date (1945)	Total Bacterial Colonies (approx) per 10 cu ft of Air	Total Haemolytic Streptococcal Colonies per 100 cu ft of Air	Date (1945)	Total Bacterial Colonies (approx) per 10 cu ft of Air	Total Haemolytic Streptococcal Colonies per 100 cu ft of Air
1/2	4 638	2	2/2	137	0
8/2	4 060	180	9/2	175	0
15/2	3 230	27	16/2	312	6
22/2	1 750	7	23/2	158	8
1/3	1 260	4	2/3	220	4
8/3	2 710	8	9/3	301	2
15/3	1 460	12	16/3	144	0
22/3	4 250	142	23/3	376	0
29/3	1 560	0	30/3	83	0
5/4	1 610	7	6/4	213	0
12/4	2 870	80	13/4	120	0
19/4	2 810	2	20/4	137	3
26/4	3 180	17	27/4	41	0
3/5	3 010	3	4/5	193	0
10/5	1 890	0	11/5	389	0
17/5	790	0	18/5	145	3
24/5	1 210	0	25/5	94	0
Total	42 308	491	Total	3 258	26

1 cu ft = 28.317 c.m.

The table shows that the reduction in the mean total bacterial count of the air of the oiled ward during bed making was 92.3% when compared with the figure for the unoled ward This reduction indicates that the oiling of the bed-clothes, etc., was effective in controlling bacteria carrying dust particles A striking feature of the investigation was the comparatively low counts of haemolytic streptococci in the unoled ward Only on three occasions did the counts in the unoled ward rise above a figure of 50 haemolytic streptococci per 100 cu ft (2.832 m³) of air, and in eleven of the seventeen morning samplings the counts were below 10 per 100 cu ft The two highest counts—180 and 142 haemolytic streptococci respectively—were largely accounted for by two plates on one of these 91 streptococcal colonies were collected from 10 cu ft (0.28 m³) of air, and on the other 82 from 12 cu ft (0.34 m³) Both samplings had been taken from the surroundings of patients with numerous streptococci in the nose and throat The reduction in the mean haemolytic streptococcal count during bed-making in the oiled ward was 94.7% when compared with the figure for the unoled ward

Table II shows the counts of total bacteria and haemolytic streptococci in the air of the unoled and of the oiled ward during sweeping

The table shows that the reduction in the mean total bacterial count of the air of the oiled ward during sweeping was 79.1%, when compared with the figure for the unoled ward The counts of aerial haemolytic streptococci obtained during sweeping showed the same irregularity as those obtained during bed-making On the whole the sweeping counts were low, from ten of the seventeen morning samplings no haemolytic streptococci were isolated One high count—150 per 100 cu ft of air—was obtained this occurred on the morning on which a high count was obtained during bed-making and may have been explained

TABLE II—Counts of Total Bacteria and of Haemolytic Streptococci in the Air of the Unoled and of the Oiled Ward during Sweeping

UNOLED WARD			OILED WARD		
Date (1945)	Total Bacterial Colonies (approx) per 10 cu ft of Air	Total Haemolytic Streptococcal Colonies per 100 cu ft of Air	Date (1945)	Total Bacterial Colonies (approx) per 10 cu ft of Air	Total Haemolytic Streptococcal Colonies per 100 cu ft of Air
1/2	1 315	0	2/2	125	0
8/2	2 640	150	9/2	180	0
15/2	4 035	47	16/2	480	0
22/2	1 515	5	23/2	200	0
1/3	1 410	0	2/3	455	0
8/3	1 505	0	9/3	390	0
15/3	1 150	0	16/3	155	5
22/3	1 695	5	23/3	505	0
29/3	805	0	30/3	175	0
5/4	1 075	5	6/4	213	0
12/4	1 445	25	13/4	545	0
19/4	475	5	20/4	500	5
26/4	1 380	0	27/4	480	0
3/5	1 520	0	4/5	210	0
10/5	795	0	11/5	210	0
17/5	890	0	18/5	210	0
24/5	1 065	0	25/5	95	0
Total	24 715	242	Total	5 168	10

by the disturbance for nursing purposes of the bed of a heavy carrier during the sweeping. The reduction in the mean haemolytic streptococcal count during sweeping in the oiled ward, when compared with the figure for the unoled ward, was 95.9%.

Table III shows the counts of total bacteria and haemolytic streptococci in the air of the side-rooms of the unoled and oiled wards during bed-making and sweeping. In this connexion it should be recalled that the floors of both side-rooms were of composition and that therefore the side-room attached to the main oiled ward could not be treated with spindle oil. Air samples were taken from the side-rooms only when they were occupied, this accounts for the absence of readings in some weeks.

TABLE III—Counts of Total Bacteria and of Haemolytic Streptococci in the Air during Bed making and Sweeping in the Side rooms of the Unoled and Oiled Wards

Date (1945)	Total Bacterial Colonies (approx) per 10 cu ft of Air		Total Haemolytic Streptococcal Colonies per 100 cu ft of Air	
	Bed making	Sweeping	Bed making	Sweeping
<i>Unoled Ward</i>				
8/2	—	4 490	—	0
15/2	10 000	3 060	—	40
22/2	10 000	920	13	0
1/3	10 000	2 430	20	0
8/3	10 000	—	0	0
15/3	2 100	620	0	0
22/3	2 340	1 400	0	20
29/3	3 200	2 270	75	0
5/4	2 180	1 170	10	20
12/4	1 610	2 100	38	60
19/4	270	670	20	40
10/5	2 930	540	0	0
17/5	4 000	680	0	0
Total	58 650	20 350	176	180
Average per sample	4 888	1 696	14.7	13.8
<i>Oiled Ward</i>				
9/2	—	210	0	0
23/2	595	1 210	0	30
2/3	230	550	40	0
9/3	300	640	0	0
16/3	300	350	0	0
23/3	180	610	0	0
30/3	280	420	20	0
13/4	210	115	0	0
20/4	150	360	0	0
27/4	60	1 170	0	0
4/5	220	100	0	0
11/5	130	140	0	0
18/5	210	490	0	0
25/5	100	80	0	0
1/6	130	440	30	0
Total	3 095	6 885	90	30
Average per sample	221	459	6	2

The reduction in the mean total bacterial count in the air of the side-room of the oiled ward was during bed-making 95.5% and during sweeping 72.9%. Corresponding reductions in the mean haemolytic streptococcal counts were 59.2% and 85.5%. Patients with heavy streptococcal infections of the upper respiratory tract were being nursed in the side-room of the oiled ward on the three occasions when haemolytic streptococci were recovered from the air during bed-making. It is possible that some of these streptococci resulted from droplets, as the children were apt to cough in the early morning alternatively, some may have arisen from the dressings applied to their ears.

Eighty-one colonies of haemolytic streptococci isolated from the air of the unoled ward were tested serologically. Of these, 79 belonged to Group A, one to Group C, and one to Group G. Of the Group A strains, 1 was type 1, 3, type 11, 3, type 11/28, 1, type 12, 8, type 25, 3, type "impetigo 19", and 60, "type not found". Twenty-seven colonies of haemolytic streptococci from the oiled ward were tested, of these, 23 belonged to Group A and 4 to Group G. Of the Group A strains, 1 was type 4/24, 1, type 6, 14, type 12, 1, type 25, and 6, "type not found".

Cross infection Incidence

During the course of the investigation 186 measles patients were nursed in the unoled ward. Of these, 23 became cross-infected in the upper respiratory tract with Group A, C, or G streptococci, giving a cross-infection incidence of 12.4%. Serological examination of the cross-infecting strains yielded the following results: 15, Group A (1, type 2, 1, type 4/24/29, 4, type 12, 2, type 25, 1, type 27, 1, type 29, and 5, "type not found"); 3, Group C and 5, Group G. In 20 of the cross-infected patients the streptococcus was first isolated from the throat, in 1 from the nose and throat, in 1 from the nose, and in 1 from the ear. Ten of the cross-infections were first discovered in the swabs taken on the day of the patient's discharge from hospital.

In the oiled ward 190 measles patients were nursed. Of these, 39 became cross-infected in the upper respiratory tract with Group A, C or G streptococci, giving an incidence of 20.5%. Serological examination of the cross-infecting streptococci yielded the following results: 33, Group A (1, type 2, 4, type 4/24/29, 1, type 6, 1, type 11, 1, type 11/27/28, 12, type 12, 1, type 14/R491, 1, type 22, 3, type 25, 1, type 29, 2, type "impetigo 19", 5, "type not found"), 4, Group C and 4, Group G. Double cross-infections with different serological types occurred in two patients. In 26 of the patients the cross-infecting streptococcus was first isolated from the throat, in 7 from the nose and throat, in 5 from the nose, and in 1 from the ear. Eleven of the cross-infections were first discovered in the swabs taken on the day of the patient's discharge from hospital. One small outbreak of type 12 streptococcal infection occurred in the oiled ward. The first cross-infection was discovered on Feb 6. Possible sources of infection were a child admitted to the adjacent cot with type 12 streptococci in his upper respiratory tract, and a nurse who developed type 12 streptococcal tonsillitis on the day on which the ward was opened. By the following week three other children had become cross-infected with type 12 streptococci, and by the following week three more children and one nurse.

Complication Rate

None of the 186 patients in the unoled ward developed middle-ear suppuration definitely attributable to streptococcal cross-infection. One child, admitted with non-streptococcal otorrhoea, acquired a Group G streptococcus in the ear discharge. Another child, admitted with Group

A streptococci in the nose and throat, developed left otorrhoea due to Group A streptococci since all the streptococci isolated from this patient failed to type, it was not possible to decide whether the otorrhoea was or was not due to cross-infection. Two patients in the unoled ward developed "late" middle-ear suppuration due to pneumococci.

Of the 190 patients admitted to the oiled ward, only one case of "late" middle-ear suppuration (that is, occurring on or after the sixth hospital day) could be attributed to streptococcal cross-infection (Group A, type 12). One other child in this ward developed "late" otorrhoea, also due to type 12 streptococci, but she was a throat carrier of this type on admission.

Other complications among patients after admission were also few. Those which might possibly have been due to cross-infection were as follows. In the unoled ward: mild conjunctivitis, Group A, "type not found", follicular tonsillitis, Group G, type 25. In the oiled ward: fissure in angle of mouth, Group A, "type not found", tonsillar plugs, Group C, fissure of lip, Group A, type 12, fissure of lips and cervical adenitis, Group A, type 12.

Sources and Spread of Infection among Patients

1 Unoled Ward

(a) *Carrier Rate on Admission*—Over the whole period of the investigation the carrier rate of haemolytic streptococci in the nose and/or throat of patients on admission was 19.7%. Of the 37 streptococcal strains, 26 were Group A (1, type 1, 2, type 2, 6, type 4/24/29, 1, type 8, 1, type 11, 3, type 12, 2, type 25, 1, type 27, and 9, "type not found"), 7, Group C, and 4, Group G.

(b) *Heavy Nasal Carriers*—Hamburger, Green and Hamburger (1945) stated that patients with heavy streptococcal infection of the nose are more liable than others to contaminate their surroundings and should therefore be regarded as "dangerous" carriers. In this investigation it was found that, among the 186 patients nursed in the unoled ward, only 9 were heavy nasal carriers of haemolytic streptococci, this may possibly account for the comparatively small numbers of haemolytic streptococci found in the air.

(c) *Middle-ear Suppuration*—Seven patients with middle-ear suppuration were admitted direct to the side-room of the unoled ward. Only one of these infections was due to streptococci (Group C). One patient was removed from the main ward to the side-room on the development of otorrhoea due to streptococci (Group A, "type not found"), and two on the development of pneumococcal otorrhoea.

2 Oiled Ward

(a) *Carrier Rate on Admission*—The carrier rate of haemolytic streptococci in the nose and/or throat of patients on admission was 20.5%. Of the 40 streptococcal strains, 30 were Group A (1, type 2, 1, type 4/24/29, 1, type 6, 3, type 11, 6, type 12, 1, type 14, 1, type 24, 2, type 25, 1, type 27, 1, type 29, 2, type "impetigo 19", 10, "type not found"), 9, Group C, and 1, Group G.

(b) *Heavy Nasal Carriers*—Of the 190 patients who were nursed in the ward, only 11 were heavy nasal carriers of haemolytic streptococci.

(c) *Middle-ear Suppuration*—Eleven patients with middle-ear suppuration were admitted direct to the side-room of the oiled ward. Five of these children were infected with haemolytic streptococci (Group A, 1, type 6, 1, type 24, 1, type 29, 1, "type not found" and 1, Group C). One of these patients was found not to be suffering from measles and was removed from the ward after 24 hours. Two patients who developed streptococcal

otorrhoea (Group A, type 12) were removed to the side room from the main ward.

Sources and Spread of Infection among Staff

1 *Unoled Ward*—Haemolytic streptococci were isolated from the upper respiratory tract of 6 of the 32 nurses or domestic helpers (18.8%) who worked in the ward during the course of the investigation. The distribution of the streptococci was as follows: Group A, 1, type 4/24/29, 1, type 11, 1, type 25, 3, "type not found". In addition one nurse suffered from a septic finger due to Group A, type 25, streptococci and was taken off duty.

2 *Oiled Ward*—Haemolytic streptococci were isolated from the upper respiratory tract of 8 of the 31 nurses or domestic helpers (25.8%) during the course of the investigation. The distribution of the streptococci was as follows: Group A, 2, type 2, 2, type 12, 1, type 12 and "impetigo 19", 1, type 27, and 2, "type not found". One of these nurses developed a type 12 streptococcal tonsillitis and was taken off duty.

3 *Medical and Laboratory Staff*—Of the ten members of the medical and laboratory staff who visited the wards two were intermittent carriers of streptococci (1 Group A "type not found" and 1 Group A, type 25), and 1 had streptococci (Group A, type 1) in the throat on two occasions.

Skin Conditions

If we include in the category of skin sepsis not only obvious sepsis such as impetigo, boils, etc., but also skin lesions which are commonly secondarily infected, such as burns, infantile eczema, seborrhoeic dermatitis, and so on, we find that the distribution of cases was not equal between the two wards. In the oiled ward 26 children had skin sepsis on admission and 15 developed lesions subsequent to admission. In the unoled ward the corresponding figures were 14 and 16. This may have some importance in the subsequent interpretation of results, since the bacteriological cross-infection rate for all children with skin sepsis on admission was 27.5%, which is higher than the mean of 16.5% for all cases in both wards. Individual examples presented themselves during the study which showed that respiratory infection was probably due to auto-inoculation from a skin lesion. (Example J B, aged 2 years, when admitted on April 6, 1945, the nose and throat swabs contained no haemolytic streptococci, but an impetiginous lesion had numerous type 25 streptococci. On April 12 the nose and throat swabs had a fair number of type 25 streptococci.)

The view has been expressed that the oiling of bed clothes is not free from drawbacks, as some of the oils are dermatitic (Mitman, 1945). Our experience was that among 190 patients nursed in oiled bed-clothes and garments, only 5 (2.6%) showed any evidence of skin irritation. This was mild and ceased immediately on discontinuing to wear an oiled vest. Attempts to incriminate the dermatitic element in the emulsion failed because, apart from these few cases early in the experiment, skin irritation neither appeared naturally nor could be produced artificially by the prolonged wearing of garments impregnated with various types of emulsion. It must be remembered that during the war high degrees of purity, particularly of the emulsifying agents, could not always be attained by the manufacturers. Given reasonable standards in this respect, our experience of this particular oiling method indicates that the risk of skin irritation is negligible. If any anxiety is felt on this account it may be dismissed by omitting the oiling of the inner garments such as vests which by themselves cannot contribute much to the risk of dust-borne infection.

Clinical Severity

The investigation started in late January, during a spell of old weather which was followed by a mild late winter and spring. Some of the patients admitted early in the period were acutely ill and presented the usual diagnostic difficulty between severe uncomplicated measles and early bronchopneumonia. This phase lasted for only two to three weeks. Six patients in the oiled ward and five in the unoiled ward suffered from bronchopneumonia. In the oiled ward 65 of the 190 patients received sulphonamide therapy, and in the unoiled ward 58 of the 186 patients, with few exceptions the drug used was sulphadiazine. Taken over the whole period of the investigation the patients were only mildly ill, and, latterly, very few seriously ill patients were seen. It should be noted, too, that throughout the investigation there were close restrictions on measles admissions in London, the aim being to admit to hospital only on account of severity of attack or of poor home conditions.

During the period of the investigation 151 measles patients were nursed in wards other than those used for the dust-control work. Of these, 130 were allocated to a chemoprophylaxis study ward which is the subject of a separate report, the remaining 21 were housed elsewhere in the hospital for the following reasons: 14 were male patients over the age of 7 years, 3 were convalescent on admission, 3 had both pertussis and measles, and in 1 the diagnosis was in doubt. None of these patients had middle-ear suppuration either on or after admission, two had bronchopneumonia.

Discussion

Detailed bacteriological investigation was made in two measles wards at the North-Western Hospital during the 1943 epidemic. In both wards secondary type 6 streptococcal outbreaks occurred and resulted in high cross-infection and middle-ear suppuration rates. In the air of the unoiled ward an average count of 253 haemolytic streptococci per 100 cu ft (2 832 m³) was obtained during bed-making. In the oiled ward aërial streptococci during bed-making were 98% less and during sweeping 99% less than in the unoiled ward. The use of dust-control measures was coincident with a fall in the rate of type 6 streptococcal cross-infection from 58.1% to 18.6% and of middle-ear suppuration (due to this cross-infection) from 18.4 to 2.8% (Wright, Cruickshank, and Gunn, 1944, Wright, 1945). At the Eastern Hospital in 1943 a high incidence of "late" middle-ear suppuration—21%—was also found. Bacteriological investigations were not made, but it may be reasonably supposed that the high otorrhoea rate was due to secondary streptococcal infection and that the ward epidemiology was in fact similar to that of the North-Western Hospital.

The most striking feature of the 1945 investigation at the Eastern Hospital lay in the unoiled ward, which had a comparatively low cross-infection rate (12.4%), no cases of middle-ear suppuration due to streptococcal cross-infection, and a low streptococcal content of the ward air. Aërial streptococci in this ward, even including two plates with high counts, yielded an average content during bed-making of only 29 haemolytic streptococci per 100 cu ft of air, on four occasions no haemolytic streptococci were isolated from the ward air during the bed-making period and on even other occasions counts of less than 10 per 100 cu ft were obtained. The unoiled ward therefore failed to fulfil its function of supplying a yardstick against which possible benefits of dust control in the oiled ward could be measured.

Several other differences were noted between the results of the investigation in 1943 at the North-Western Hospital and in 1945 at the Eastern Hospital. With few exceptions

the cross-infections in 1943 were due to type 6 streptococci. Mass invasion with this type occurred, as shown both in the number of patients infected and in the abundance of the streptococci yielded from the swabs. In 1945, 11 serological types of Group A and also Groups C and G streptococci were responsible for the cross-infections. Heavy streptococcal growth was obtained in 1943 from 72% of the cross-infected patients, whereas in 1945 only 25% of the cross-infections were heavy invasions and 42% were scanty. The degree of nasal cross-infection also differed. In 1943, 60% of the cross-infections resulted in a heavy streptococcal infection of the nose, while in 1945 only 8% were of the heavy nasal type.

The streptococcal cross-infection rates among patients in the unoiled and the oiled ward in 1945 were 12.4% and 20.5% respectively. Both wards had therefore a comparatively low cross-infection rate of the same order as the 18.6% rate which was regarded as satisfactory for the oiled ward in the 1943 investigation. The low degree of aërial contamination by streptococci in both wards suggests that the cross-infections were caused by a type of spread which was not air-borne. Possibly they were due to contact infection, for which there is ample opportunity in the catarrhal stage of measles. The fact that cross-infections of this type were more numerous in the oiled than in the unoiled ward could not be explained. Undetected differences in nursing technique in the two wards were a possible cause, since in field trials of this type an unavoidable variable between the experimental and the control ward lies in their different nursing staffs. In spite of careful alternate allocation of patients to the wards, two factors acting unfavourably to the oiled ward were observed: (a) it had a higher admission rate of type 12 streptococci—the only streptococcal type which showed signs of "communicability" and "virulence", and (b) it had a higher admission rate of skin sepsis and streptococcal otorrhoea cases.

Complications due to streptococcal cross-infection were exceedingly few in 1945. Only one patient out of a total of 376 nursed in the two wards developed "late" middle-ear suppuration definitely attributable to streptococcal cross-infection—an incidence of 0.27%. The safety of the measles wards of 1945 contrasted strongly with the risks in 1943, when one in every five patients contracted middle-ear suppuration. It is evident that conditions favourable to the spread of streptococci in measles wards vary considerably from one epidemic year to another. The results of the 1945 investigation need in no way discourage further trials of dust suppression by oiling. It is possible that the unfavourable conditions of 1943 may recur in subsequent measles epidemics. In such an event the introduction of dust control may again assume importance as a measure in preventing cross-infection.

Summary

An investigation into the control of dust-borne haemolytic streptococci was carried out in two identical measles wards at the Eastern Hospital for a period of 19 weeks in the spring of 1945. In one, the oiled ward all bed-clothes, patients' garments, and ward linen were treated in the hospital laundry with technical white oil and the floor of the main ward was oiled. In the unoiled ward no anti-dust measures were taken. In both wards the air was sampled for total bacteria and for haemolytic streptococci during bed-making and sweeping, and the streptococcal cross-infection and complication rates were recorded.

The oiling methods were successful in suppressing dust-borne bacteria. This was shown by the fact that the mean total bacterial count was reduced when compared with the count for the unoiled ward by 92.3% during bed-making and by 79.1% during sweeping. Counts of aërial haemolytic strepto-

cocci in the unoled ward varied considerably from week to week and in general were of a low order. On three occasions comparatively high counts were obtained 180, 142 and 80 streptococci per 100 cu ft (2 832 m³). On four occasions, however, no haemolytic streptococci were collected during a complete bed-making round and on seven other occasions the count was below 10 per 100 cu ft. The same irregularity of aerial contamination by haemolytic streptococci was found during sweeping.

The cross-infection rate among 186 measles patients nursed in the unoled ward was 12.4%, and among 190 patients in the oiled ward, 20.5%. These cross-infections the rates of which were comparatively low for such a highly susceptible group as measles patients appeared to be due to contact rather than to air-borne infection. The fact that this type of cross infection was higher in the oiled than in the unoled ward was unexplained. The complication rate due to streptococcal cross-infection was exceedingly low, only one case of streptococcal otorrhoea due to cross-infection occurred among the total of 376 patients nursed in the two wards, making an incidence of 0.27%.

Striking differences were found from the results recorded in an earlier and similar investigation at the North Western Hospital in 1943. In the unoled ward there a high haemolytic streptococcal count was found in the ward air and secondary type 6 streptococcal spread caused a cross infection rate of 72% and a 'late' middle ear suppuration rate of 18.5%. In the unoled ward of the 1945 investigation at the Eastern Hospital the streptococcal content of the air was in general low the cross-infection rate was 12.4% and no case of 'late' middle ear suppuration due to streptococcal cross-infection occurred. The unoled ward in 1945 therefore failed in its function of acting as an adequate control ward against which possible benefits of dust control by oiling could be measured.

It is evident that conditions favourable to secondary streptococcal epidemics in measles wards vary considerably from year to year. The results of the investigation at the Eastern Hospital in 1945 should in no way discourage further trials of dust control by oiling. Should the unfavourable conditions of 1943 recur in consequent measles epidemics dust-suppressive measures may again assume importance in the control of cross infection.

SULPHADIAZINE PROPHYLAXIS IN MEASLES

Large-scale studies of sulphadiazine prophylaxis of respiratory infections in the United States Navy during the war years (Cohurn 1944) encouraged an attempt to evaluate chemoprophylaxis of streptococcal cross-infection in measles. For this purpose a third study ward was set up as has been mentioned in the main report on the dust control investigation. The hope of thereby comparing cross-infection rates among patients having sulphadiazine prophylaxis with those in the control ward was prevented by differences, some unforeseen and some unavoidable between the two wards. The sulphadiazine patients had to be nursed in a ground floor ward with blast-protected windows whereas the control ward was on the first floor and had unprotected windows. The sulphadiazine ward could not be opened until three weeks after the control ward and was closed two weeks earlier. Also owing to an oversight due to changes of staff, discharge swabs from 17 of the 130 sulphadiazine patients were omitted. A further difficulty in comparison arose because nearly one third of the patients in the control ward received sulphonamides therapeutically. For these reasons the results must be regarded as quite inconclusive, but they are briefly described here since they include evidence on sulphonamide levels attainable with small doses of the drug.

The ward regimen was as follows. Sulphadiazine was given to all patients the daily dose being 0.25 g. for 0-2 years of age, 0.25 g., 3-9 years, 0.50 g., 10-16 years, 0.75 g. over 17 years, 1 g. The first dose was given soon after admission and subsequent doses between 9 and 10 a.m. daily up to and including the day of discharge. From 18 patients blood samples were taken 24 hours after the daily dose and were estimated for sulphadiazine content. The three samples from the 0-2 years group contained 2.19 and 1 mg. per 100 ml. of blood, the eleven

from the 3-9 years group contained a mean of 1.95 with a range from 0.43 to 0.6 mg. per ml. of blood, the two from the 10-16 years group, 3 and 1.2 mg., and the two from the over 17 years group 2.5 and 2.7 mg.

The following results were recorded for the ward.

Air Sampling.—During bed-making the mean total bacterial count was 3,880 and during sweeping 1,570 per 100 cu ft (0.28 m³) of air (2,360 and 1,230 respectively per 100 cu ft in the control ward). During bed making the mean haemolytic streptococcal count was 3.7 and during sweeping 1.6 per 100 cu ft (2.832 m³) of air (28.9 and 14.2 respectively per 100 cu ft in the control ward).

Cross-infection Rate.—Of the 130 patients admitted to the ward 13 (10%) became cross infected with Group A streptococci (1 type 1, 2 type 4/24/29, 1 type 11/28, 1, type 12, 1, type 22, 1, type 25 and 6, 'type not found'). None was cross-infected with Group C or G streptococci.

Complication Rate.—None of the patients developed otorrhoea or other complications attributable to streptococcal cross-infection.

Sources and Spread of Streptococcal Infection

Among Patients.—(a) *Carrier Rate on Admission.* The carrier rate of haemolytic streptococci (Groups A, C or G) among patients on admission was 10.8%. Of the 14 strains isolated 12 were Group A (3 type 4/24/29, one type 11, 1, type 12, 3 type 22, 2 type 25, 2, 'type not found'), 1, Group C, and 1 Group G.

(b) *Heavy Nasal Carriers.* Only three of the 130 patients were heavy nasal carriers of haemolytic streptococci.

(c) *Middle-ear Suppuration.* Five patients were admitted to the side room with middle-ear suppuration, one only of which was due to streptococci (Group A type 11).

Among Staff.—Haemolytic streptococci (Group A types 11 and 12) were isolated from only two of the 27 nurses and domestic helpers who worked in the ward during the investigation. The type 12 streptococcus was isolated from a domestic worker with tonsillitis.

Skin Infections

Eleven children in this ward had skin sepsis on admission in contrast to 14 in the control ward. It is interesting to note however, that in the three study wards—the sulphadiazine ward, the oiled ward and the control ward—the numbers of children admitted with frank impetiginous lesions were 8, 9, and 6 respectively and that these gave rise to 4 secondary cases of impetigo in the sulphadiazine ward, 1 in the oiled ward, and 1 in the control ward. The four secondary cases in the sulphadiazine ward were of the bullous type and occurred as an explosive little outbreak which suggested that sulphadiazine in these doses has very doubtful prophylactic value against the spread of this form of skin sepsis.

Toxic Effects

No toxic effects were noted. In this connexion it must be emphasized that owing to the general mildness of the measles attacks in the whole period of the study and the particular absence of complications in the ward the period of inpatient treatment and hence the sulphadiazine administration was short. Most patients were discharged on their tenth day in hospital and the longest stay of any patient was 31 days.

Summary

The complete absence of complications attributable to streptococcal cross infection in the sulphadiazine ward and the low bacteriological cross infection rate justify a further attempt to evaluate the difficult question of sulphonamide prophylaxis in measles. No other significance should be attached to the results of this study.

The daily ingestion of 1 g. of sulphadiazine with downward adjustments for age to 0.25 g. attained minimum and maximum blood concentrations of 0.6 and 4.3 mg. per 100 ml. respectively in samples taken 24 hours after administration.

In these doses given normally over a period of 10 days and in no case in excess of 31 days no toxic effects from sulphadiazine were encountered in the 130 patients studied.

We express our thanks and indebtedness for all the help given by the Mairon, Miss E M G Barcham, by the Sisters of the wards, Miss E M Walton, Miss M S Jennings, and Miss R E Lenion, by the nursing staff of the wards and the receiving room, and by the laundry superintendents, Miss E Dudley and her staff. We thank Mr F Courtney Harwood and his staff of the British Launderers' Research Association for their supervision of the laundry oiling. Dr A B Rosher and Dr J P Kennedy for their help and encouragement, Dr E Hardy for making the sulphadiazine estimations, Dr S D Elliott for the use of precipitin typing sera, Dr O M Lidwell and Dr J E Lovelock for measuring the ventilation rates of the wards and the Medical Research Council for a personal grant to one of us (J W).

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ADRENALECTOMY IN MENTAL DISORDER

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Although the endocrines have been largely employed in the practice of psychiatry, on the whole little progress has yet been made towards either improving the patients by their use or elucidating a relationship between glandular disturbances and mental disorders. Moreover, few of the diseases of the endocrine glands or the operative procedures connected with their relief have thrown any definite light on the relationship between psychiatry and endocrinology. At least seven cases of amelioration of mental symptoms following unilateral adrenalectomy have been reported (Allen *et al*, 1939, Allen and Broster, 1945, Greene, Paterson, and Pile, 1945). It would seem equally important to describe two cases with well-marked mental abnormalities associated with characteristic glandular changes which were unimproved by this operation, whilst other findings of some interest have emerged from the investigations.

Case 1

A 44-year-old single woman was admitted to hospital in December 1945. She was in an extremely neglected bodily state and prior to her admission she was treated by the authorities as a person wandering at large. No history was available, and she was unable to give any details of her previous life until after the operation. She was completely apathetic, dull,

retarded, and disinterested. Although she answered questions her replies were monosyllabic and hardly relevant. During the time she was in hospital before the operation she remained apathetic, and she either did not properly appreciate her position or was completely indifferent to it. It appeared that she had some intellectual impairment and at times a mild clouding of consciousness. Her physical state approximated closely to that described by Broster as 'adrenal virilism,' because it seems to have arisen in adult life many years after the development of menstruation and the female secondary sexual characteristics. She was a well-built woman, muscular rather than obese. The outstanding abnormality in the secondary sex characters was that the hair growth was male in distribution. The whole of the beard area—lip, chin, lower cheeks, and pre-auricular region—was covered with long coarse hair, the pubic hair extended up to the umbilicus, the thighs were hairy to a very marked degree. The hirsuties had been noticed for three or four years. The blood pressure was not raised 135/125/95/75. Menstruation had ceased for about two years. The history suggests that the abnormality of suprarenal cortical function did not occur until about the age of 40, so that it was not surprising to find well developed breasts and a female relationship between the respective widths of the pelvic and pectoral girdles. Preoperatively her urinary steroids measured as androsterone were 60 mg in 24 hours (normal 9–12 mg). Her blood sugar (Fig 1, curve A) showed a flat curve of the pituitary

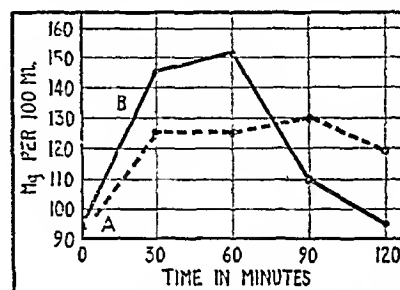


Fig 1—Case 1. Blood sugar curve before operation, A, and after operation, B.

type as found in Broster and Vines's polyglandular type 3. The blood sedimentation rate fell 8 mm in the first hour (200 mm Westergren column). The differential blood count, blood cholesterol, urea, and serum chlorides were within normal limits. Intravenous pnelography did not give any indication of unilateral suprarenal enlargement, and therefore laparotomy was performed in April, 1946. The right suprarenal was much larger than the left. Examination revealed a normal development of the female pelvic organs. When two days before the adrenalectomy, she was told that she was to have an operation in order to lose all her hair growth the only remark she made was 'Rather far-fetched to operate on the tummy to lose hair on my face.' Then she sank back into her apathetic condition again.

In May 1946 right adrenalectomy was performed by Bernard Fey's costo-abdominal approach, which gave an excellent exposure of the suprarenal. Briefly, in the Bernard Fey approach an incision is made along the upper border of the eleventh rib to the tip and continued thence towards the anterior iliac spine in the line of the fibres of the external oblique. The eleventh rib is freed subperiosteally and displaced downwards. The posterior peritoneum is incised the common origin of the diaphragm and transversalis abdominis muscle divided near the tip of the rib, and the transversalis split in the direction of its fibres. This exposes the upper pole of the kidney and leads direct to the suprarenal. Mouat (1939) wrote 'I can find no record of Fey's costo-abdominal route having been used for operations other than those on the kidney and ureter, but inspection of the surrounding structures during operation and my experience of it in the dissecting-room lead me to suggest that this route might with advantage be used for operations on the adrenals or for repair from below of the hiatus in diaphragmatic hernia.' Since 1939 Mr John Everidge has strongly recommended to one of us (E J R S) the use of this route for operations on the suprarenal and whatever its role may be in renal surgery it does appear

give an ideal approach to structures superior to the kidney on either side of the body

The operation was performed without difficulty and the blood loss was small. The patient's pulse was of good volume and between 80 and 90 a minute until the suprarenal was handled while being freed from its surrounding structures. The rate then suddenly rose to 150-160 with extrasystoles, although it was still described by the anaesthetist as a 'good' pulse. The patient did not present the picture of surgical shock in that her colour remained good, she did not become cold, and the blood-pressure reading of 125/75 was little below her pre-operative figure. The injection of desoxycorticosterone, recommended in this operation, did not affect the rapid pulse, which persisted at about 150 for eight hours, after which it fell to 80. This strange reaction in pulse rate without other signs of shock is somewhat different from the results described by Zondek (1945) and others.

She had an uneventful post-operative convalescence. Four weeks after the operation she was slightly more alert mentally, gave a better account of herself, spoke about her mother's death and her solitary life in her own house, and expressed some concern regarding her present financial condition and other difficulties. She said that she lived in a house, which she inherited from her mother, but was entirely alone, the house fell to pieces, the ruins were infested with mice, and the bank clerks told her that she had no money. The next thing she remembered was that the authorities sent her to hospital. Her mental improvement did not materially progress after this although she showed increased interests and was moderately sociable. She could not, however, fully appreciate her position, she smiled foolishly when asked questions, was hardly employable, lacked interest and initiative, and seemed to be indifferent to the operation and her future. She appeared to have a slight loss of her facial hirsutism.

Two months after the operation she asked whether she could be allowed to go out for short walks in the grounds as she felt bored. This was permitted, and on the first day she absconded. She was, however, readmitted three weeks later. When outside she was living in the ruins of her home, and as she did not have enough to eat she raided the pig-bins of the neighbours for food.

Four months after the operation it appeared that little if any hair had fallen out spontaneously, but there was the 'painless depilation' described in adrenal virilism. The long coarse hairs on the beard area could easily be plucked out without pain. The absence of complaint could not be ascribed to her mental condition, as she showed obvious signs of pain when a hair of the eyebrow was pulled out, and stated that it hurt. Also, the beard hair came out easily without causing puckering of the skin, whereas it was difficult to avulse an eyebrow, and a cone of skin was drawn up before the hair came out. At this time she was menstruating irregularly, but her breasts and bodily configuration were of course unchanged.

Although the pathological investigations were repeated at weekly intervals the results were constant after the first six weeks. The steroids had fallen from 60 to 8.4 mg of androsterone a day. The blood-sugar curve returned to normal (Fig 1, curve B), the sedimentation rate was increased to 22 mm in the first hour and it still had not changed a month later. Blood chlorides were decreased from 430 to 390 mg per 100 ml. The cholesterol, urea, and differential blood count showed no change. Histologically the excised suprarenal gland revealed very marked adenomatous changes the poncau fuchsin staining was evident, and the cortex was remarkably enlarged and of abnormal pattern.

Case 2

A 43-year-old single woman, a typist, was admitted to hospital on Nov 3, 1944, suffering from schizophrenia. The patient's paternal grandfather had died of senile dementia, he was always peculiar in his ways. The father died when the patient was quite a child. The mother dominated her. She has a normal sister. She was always a shy, sensitive child. When 10 years old she had a motor accident, when she was torn from the front to the back passage. She was in hospital

for a short time. Her mother was constantly talking about this accident, and the patient became very self-conscious of it. She was brilliant at school and read a lot of good literature. As menstruation did not commence her mother insisted on her going to various doctors. Endocrine treatments were given without result, and it was agreed that her delayed maturity might be due to psychological shock. Meanwhile she started work, and on the encouragement of her sister she left home and lived independently in lodgings. She was then obviously in a 'nervous state' and began psychoanalytical treatment. This however, was unsuccessful, and was interrupted by her progressive psychosis. She became markedly eccentric, a pacifist, a feminist, she gave away her salary to fellow workers and developed an involved teaching on sex theories. Ultimately she became progressively dissociated and had to be admitted to hospital.

One sample of the stream of talk should illustrate her mental state. "I am married to a motor-car since ages. I am as feminine as Elizabeth in Jane Austen's novel. I cannot talk to somebody who is having a stronger personality than I. I did not have sex appeal, but now I am having it. I had a car accident and my sexuality was lost, but I was pictorially guided and retained femininity. My body is feminine. When I do anything I see it pictorially, I saw myself going to school. My sex tells me that the feminine brain is different to the masculine brain. I used to have a male brain, I have been treated by women who always treated me as a male. In the factory where I was working there was a man who was my double. My mother wanted to make me into a man. I can not look into your eyes, a man's eyes magnify everything and overpower everything. I never menstruated. I don't want to menstruate, I stopped it with will power, but I still feel vibrating, the electricity is not where my feminine is, and I cannot bear it. I am vegetarian, a vegetarian can live with a man without having a child and flirting. If I don't eat I don't get sexual." During her stay the mental picture was stationary, she had a full course of electric convulsion therapy without any apparent result.

Physically she corresponded to Broster's type 1, which he calls adrenal pseudo hermaphroditism—that is, a woman in whom changes due to suprarenal cortical pathology arise before puberty and the development of the female secondary sexual characteristics. She had never menstruated. The breasts were not larger than those of a normal man. The hands were broad and bony. She was only of average height, but the pectoral girdle was wide compared with the pelvic. The hair was of male distribution and her upper lip was very hairy, but the whole beard area was not nearly as heavily clothed with hair as in Case 1. Her blood pressure before operation was 130/90.

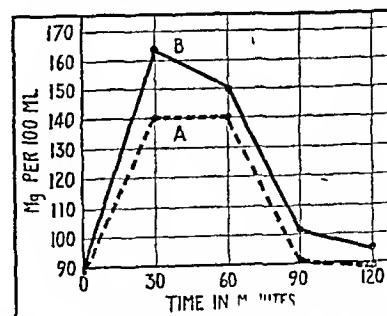


FIG 2—Case 2 Blood sugar curve before operation, A and after operation, B

The urinary steroids were equal to 20 mg of androsterone in 24 hours. Her blood sugar (Fig 2 curve A) showed an approximately normal curve, her sedimentation rate was 9 mm in the first hour, and the differential blood count, blood cholesterol, urea, and chlorides were within normal limits.

Intravenous pyelography did not reveal any asymmetry, and in April, 1946 laparotomy was performed. This showed that the left suprarenal was larger than the right although the difference between them was not as great as in Case 1. The female pelvic organs were palpated and the uterus found to

be minute. The uterine body was about 1 in (2.5 cm) long and the thickness of an ordinary lead pencil, which suggests that the endocrine abnormality began well before puberty. Five weeks after laparotomy the left suprarenal was removed by the Bernard Fey approach, which again afforded an easy and adequate exposure. The operation was completed without difficulty, and this patient did not show the peculiar behaviour of the pulse observed in Case 1 when the gland was handled, nor any signs of shock.

Four months after operation her physical condition remained unchanged, which is not unexpected, as the adrenal pathology had presumably been in operation for over thirty years, compared with three to four years in Case 1. She was completely indifferent to the operation. Her mental state remained untouched and completely stationary, and her physical condition was unchanged. The operation had, however, produced the anticipated biochemical changes. The urinary steroids had fallen from 20 to 7.4 mg of androsterone six weeks after operation. The blood-sugar curve was normal (Fig 2, curve B), the blood sedimentation rate showed a 22 mm fall for the first hour, the blood chlorides dropped from 440 to 380 mg per 100 ml and remained unchanged after a further six weeks. The cholesterol, urea, and differential blood count values were unchanged. Histologically, the cortex of the excised gland showed some enlargement, but no other change.

Discussion

In the two cases described there is evidence of adrenal dysfunction. This was shown not only by their similarity to other cases that have been found to have abnormalities of these glands but also by their raised urinary ketosteroid excretions. Both had concurrent mental illnesses, and in the first case there seemed to be a definite relationship between the time of onset of the mental and physical symptoms. Neither, however, was notably improved by adrenalectomy.

Theoretically one may postulate a relationship between abnormality of a specific gland and mental illness in the following ways: (1) The mental illness may be the direct result of the glandular dysfunction, (2) the mental illness may cause the glandular dysfunction, (3) the mental illness and the glandular changes may coexist independently, (4) the mental illness may be psychogenic in response to worry over the physical changes induced by the gland, and (5) the mental illness may be the result of secondarily induced changes in other glands. Examples which are largely attributable to one or other of these causes may easily be found, though it is not possible for any one of them to be entirely divorced from the rest.

So far as adrenal abnormalities are concerned primary mental disturbances in paragangliomata of the medulla and in Addison's disease are known, and secondary disturbance due to sexual dysfunction in virilism. Other pathological conditions, however particularly in regard to the various types of hyperadrenalism described by Broster, have not yet been associated with specific mental disturbances, although, as we have said, a number of cases of mental illness have been successfully treated by adrenalectomy. This suggests that the first form of relationship may be fulfilled, but no example of the second is known to have been cited. In regard to the fourth, severe emotional disturbances result from the growth of hair in women, and we have seen a patient other than those described in this paper in whom a very acute anxiety state and definite suicidal ideas developed as a result of her hirsuties. It is possible that some of the less successful results might be explained by the suprarenal overfunction being secondary to pituitary activity, as suggested in the fifth group. Thus an adenomatous gland (adrenal adenomata are common) might conceivably become overactive under undue pituitary influence and its removal might not be

attended by the same relief of mental symptoms as if there was a primary dysfunction.

The first of our two patients developed her mental and physical symptoms at the same time, and it was believed that she belonged to the first group and had every chance of progressing favourably. The urinary androgens were certainly increased before and fell after operation, the chlorides and sugar-tolerance curves became normal, and a tumour giving a ponceau-fuchsin stain on section was removed, yet she did not improve. The second patient, on the other hand, had very long-standing abnormalities, a schizophrenic illness which was coloured by but not necessarily due to the physical changes and polyglandular disturbances. Perhaps, therefore, it was less likely that she would show an improvement after operation. It is interesting that in this case, too, in spite of the suprarenal removal, the reduction in the blood chlorides, the alteration in the sugar curve towards normal, and the post-operative reduction in ketosteroid excretion, there were no mental changes in keeping with this evidence. The raised sedimentation rates which developed subsequent to operation in both cases are unexplained.

Summary

A case of adrenal virilism with mental changes and another of adrenal pseudo-hermaphroditism, also with mental changes are described.

Adrenalectomy (unilateral) produced the expected biochemical effects, and in Case 1 some physical change, but in neither was the mental picture materially affected.

The value of Bernard Fey's approach to the suprarenal is stressed.

A peculiar reaction of the pulse rate, apparently not due to surgical shock, during the removal of a large suprarenal is described.

An unexplained persistent rise in the blood sedimentation rate in both cases is noted.

We are very grateful to Dr W J Griffith, who made the ketosteroid estimations.

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MISS RUTH THOMAS is one of those rare people who combine the possession of deep theoretical knowledge and wide practical experience with the power of clear and simple exposition. The seven pamphlets under review are the script of a series of broadcasts and a report prepared for the Curtis Committee. It is high praise to say that they read as well as they sounded. Miss Thomas deals with the early training of the infant and young child in an eminently sensible way, but it is a matter of dispute whether she is right when she forbids "potting" the infant under a year. She is correct in insisting that the child's anal eroticism, which is normal under a year, should not be frustrated and that too early insistence on cleanliness may result in trouble later on, but, by the establishment of a conditioned reflex to the pot, need the child be deprived of its pleasure and would not this save the mother much labour? Miss Thomas's description of the tragedies of homeless children is indeed harrowing, in this respect hell is paved as much by misdirected good intentions as by downright cruelty, and it is a relief to read of the real efforts by the better homes to provide the love and homeliness which these children so sadly miss. This brings out the urgent need for properly training those whose job it is to look after homeless children. These pamphlets should be bought from the National Association for Mental Health (39 Queen Anne Street, London, W) and carefully studied by all those whether medical or lay who are concerned with children and the future welfare of the race. Their titles and prices are: *Children Without Homes How Can They be Compensated for the Loss of Family Life?* (3s 6d) *Fears and Jealousies* (7d), *Children's Fears* (7d), *Children Who Dislike Their Food* (7d), *Further Training Habits* (7d), *Habit Training* (7d) *Temper Tantrums* (7d).

NEUROLOGICAL COMPLICATIONS IN ATYPICAL PNEUMONIA

BY

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During the past few years there have been many accounts of the acute pulmonary infection which is usually called "primary atypical pneumonia." It is now generally accepted that this condition is due to infection by a virus, but attempts to identify a single aetiological agent have so far been unsuccessful. It is probable that many viruses are capable of producing the pulmonary lesions of atypical pneumonia: they have been noticed in influenza, psittacosis, rickettsial infections, and lymphocytic choriomeningitis. The present state of knowledge of the disease has been reviewed by Middleton (1945). Reports in the literature indicate that the mortality rate is low and that the disease usually runs a benign course without serious complications or sequelae. Rarely, however, serious neurological symptoms occur during the course of the disease. The purpose of this article is to describe six cases with such symptoms.

Physical signs of pulmonary disease are usually minimal, and the clinical diagnosis of atypical pneumonia depends almost entirely upon the radiological appearances in films of the chest, which reveal patchy opacities in one or both lungs. These opacities show a streaky increase in density radiating from the lung root and conforming to the general distribution of the bronchi. Superimposed upon this appearance is a mottled type of shadowing which is usually in the lower lobes. Unless serial films are taken during the course of the disease there may sometimes be difficulty in distinguishing the appearances from those of pulmonary tuberculosis. The areas of increased density are as a rule much larger than would be inferred from physical examination of the chest. On rare occasions pleural effusions and multiple fractures of ribs from severe coughing may be seen.

It is probable that much of the increase in recognition of atypical pneumonia in recent years is due to more frequent routine radiological examination of the chest in respiratory infections, particularly in the more benign cases. Little information of diagnostic value is obtained from laboratory investigations. There may be a leucopenia, and many workers have found "cold agglutinins" in the serum, but these features are inconstant and have no specific diagnostic value. The red cell sedimentation rate is usually much increased in the acute stage of the disease, and gradually returns to normal during recovery.

Case Reports

The cases here described include two cases of "acute infective polyneuritis," two cases of lymphocytic meningitis, one of "serous meningitis," and one of encephalitis. In each case the diagnosis of atypical pneumonia was based upon the radiological appearances.

"Acute Infective Polyneuritis"

Case 1—A poultry-breeder aged 65 was seen in consultation with Dr R. D. Neville on Nov. 8, 1944. For a week he had had upper respiratory infection with severe cough, dyspnoea, malaise and pyrexia of 100–101° F (37.8–38.3° C); there was no response to sulphapyridine. On Nov. 7 the patient became confused and irrational and complained of increasing weakness of both legs and inability to pass urine. On examina-

tion signs in the chest were minimal—a few basal rales—although respiratory distress was evident. There was severe flaccid paresis of both legs, and only slight toe movements could be performed. Knee and ankle-jerks and abdominal reflexes were absent, the plantar responses were indefinite. Neurological signs were not seen in the cranial nerves, arms or trunk. Sensory disturbance in the legs was minimal—impaired vibration sense in lower legs and slight loss of position sense in toes. The bladder was distended, and catheterization yielded 25 oz (0.7 l) of urine. The patient was transferred to hospital. Lumbar puncture showed clear cerebrospinal fluid under a pressure of 100 mm, cells 19 lymphocytes per cmm, protein 120 mg per 100 ml, chlorides 710 mg per 100 ml, Lange test, no change, Wassermann reaction negative. On Nov. 9 the patient became more confused and irrational, pyrexia 100–101° F. There were still only scanty signs in the chest and some reddening of the pharynx. A skiagram of the chest revealed characteristic bilateral basal mottling of atypical pneumonia, which disappeared later. Leucocytes numbered 13,000 per cmm (polymorphs 81%). Frequent catheterization was necessary. The mental confusion persisted for a further two days, then subsided. Leg movements began to return, and complete recovery from the flaccid paresis occurred in eight days. The patient was then able to stand, but he still had difficulty in starting micturition. He had full sphincter control three days later. Convalescence was uneventful. He returned home after fourteen days, and has remained well up to the time of writing.

Case 2—A market gardener aged 53 was seen in consultation with Dr F. W. Harrowell on March 1, 1945. He had been ill for about ten days with malaise, high pyrexia, severe cough and respiratory distress. During the previous three days a progressive weakness of the legs and arms had appeared. More recently he had developed difficulty in swallowing, his voice had become hoarse, and he had great difficulty in raising himself from the bed. There was no sphincter disturbance. On examination the temperature was 103° F (39.4° C), respirations 36, and pulse 140. Rales and rhonchi were heard at both lung bases, and there was some injection of the pharynx. The blood pressure was 120/80. There was flaccid paresis of arms and legs. The legs were almost completely paralysed except for slight toe movements. All tendon-jerks and abdominal reflexes were absent, and plantar responses were flexor. There was doubtful loss of position sense in the legs, but no other sensory disturbance. Weakness of the erector spinae, recti abdominis, and intercostal muscles was noted. Respiration was almost entirely maintained by the diaphragm and accessory muscles in the neck. As respiratory paralysis appeared imminent the patient was removed to hospital so that a Drinker respirator could be used, but this was not necessary. Examination of the cerebrospinal fluid showed pressure 130 mm, no cells seen, protein 80 mg per 100 ml, Lange test, no change, Wassermann reaction negative. On March 4 the leucocytes numbered 13,200 per cmm (polymorphs 71%) the pyrexia was subsiding, and there was no increase in paralysis. The temperature became normal in three days. A skiagram of the chest showed basal mottling of atypical pneumonia. The paralysis cleared up very rapidly. On March 10 the patient was able to stand without aid, and thereafter his recovery was uneventful. His hoarseness and dysphagia were cured before the limbs. The tendon jerks had not returned six weeks after his discharge from hospital on March 10, but he has remained well since.

Lymphocytic Meningitis

Case 3—An airman aged 26 was admitted to hospital on April 23, 1943. He had been ill for one day with severe frontal headache, sore throat and dysphagia, pain in the back, and general malaise. There was slight vomiting, and his voice was hoarse. The temperature was 101.4° F (38.5° C), respirations 24, and pulse 72. The tongue was dry and coated, the fauces and tonsils were reddened, with greyish pseudo membrane between the right tonsil and uvula. Klebs-Loeffler bacilli and naemolytic streptococci were not grown from a swab. He was given 16,000 units of diphtheria antitoxin. Next day he was slightly confused and delirious, temperature 102° F (38.9° C). He vomited during the night. The tonsils were still congested and there was profuse nasal discharge. On the 25th the temperature was 102.5° F (39.1° C) and he still had headache.

backache. He resented flexion of the neck, but no definite meningism was present, and no evidence of otitis. Neck rigidity was more definite on the 26th. Cerebrospinal fluid showed pressure, 130 mm, fluid clear, cells, 64 lymphocytes per cmm, protein 90 mg per 100 ml, chlorides 690 mg per 100 ml, culture sterile, Wassermann reaction negative. Next day the readings were pressure 150 mm, cells, 122 lymphocytes per cmm, protein, 100 mg per 100 ml, chlorides 640 mg per 100 ml, culture sterile. The general condition was improved and the headache less, but neck rigidity was still present. On May 3 there was no headache or pyrexia, but he still had sore throat and some cough. The cerebrospinal fluid readings were pressure, 100 mm, cells, 380 per cmm (98% lymphocytes), chlorides, 730 mg per 100 ml, protein 120 mg per 100 ml. A skiagram of the chest on May 5 showed moderate bronchial striation and bilateral basal mottling characteristic of atypical pneumonia. There were no definite physical signs in the chest. The patient was free from symptoms on the 7th, and the cell count had fallen to 12 lymphocytes per cmm. He was discharged to a convalescent unit on May 10.

Case 4—A schoolboy aged 13 was admitted to Wrexham E.M.S. Hospital on March 3, 1945. He became ill on Feb 9 with what was called 'influenza'. Two days later he developed acute pain and tenderness in the left frontal region. After this he developed pain and stiffness in the neck with Kernig's sign and bilateral extensor plantar responses, but no other neurological signs. The cerebrospinal fluid was said to have been normal on Feb 15. On admission cerebation was slow, and he had difficulty in answering questions. Slight neck rigidity and Kernig's sign were present. There were no other neurological signs, no signs in the chest, and no papilloedema. Tachycardia 100 per minute. The cerebrospinal fluid showed pressure, 300 mm, cells, 100 per cmm (50% lymphocytes), protein, 30 mg per 100 ml, chlorides, 680 mg per 100 ml, culture sterile. Leucocytes numbered 9 000 per cmm (84% polymorphs). A skiagram of the chest showed slight thickening of the horizontal interlobe and pleural thickening in the lower part of the left lateral chest wall, with patchy shadowing over the left lower lobe. On March 9 the cerebrospinal fluid readings were pressure, 160 mm, cells 60 per cmm (50% lymphocytes), protein, 60 mg per 100 ml. Further progress was uneventful. A skiagram of the chest on March 26 showed no abnormal shadows in the lung fields apart from pleural thickening at the left base. The patient was discharged on April 23.

Serous Meningitis

Case 5—A man aged 37 was admitted to hospital on Feb 25, 1939. He had had pyrexia of 102–103° F (38.9–39.4° C) for three days with severe cough and malaise, followed by intense frontal headache that was much aggravated by coughing. Only scanty moist sounds were heard in the chest. There was no papilloedema, meningism, or other neurological sign. The nasal sinuses transilluminated well. The cerebrospinal fluid showed pressure, 300 mm, no increase in cells, protein 80 mg per 100 ml, Wassermann reaction negative. He was given 40 ml of 50% dextrose intravenously, with some relief of headache. On Feb 26 the headache was again severe, but it was relieved by further lumbar puncture and intravenous dextrose. The cerebrospinal fluid pressure was still 300 mm. Next day the headache was less severe but there were still no neurological signs. The cerebrospinal fluid showed pressure 250 mm, no increase in cells. A skiagram of the chest revealed characteristic basal mottling of atypical pneumonia. Recovery was rapid and uneventful.

Encephalitis

Case 6—A housewife aged 29 was first seen on Sept 2, 1945, in consultation with Dr O. W. R. Tomkinson. She had been admitted to an isolation hospital on Aug 28 with severe pharyngitis which clinically resembled diphtheria but no Klebs-Loeffler bacilli were found. Pyrexia of 102–103° F (38.9–39.4° C) continued and there was respiratory distress but only scanty rales and rhonchi were heard in the chest. An initial dose of 32 000 units of diphtheria antitoxin had been given and subsequently full doses of sulphathiazole but without satisfactory response. On Sept. 1 the patient became confused and delirious and slight neck rigidity was noticed. Next day the cerebral symptoms were more prominent. The patient

was in a state of irritable stupor, neck rigidity and bilateral extensor plantar responses were present, and the pyrexia was still 102–103° F, but there were no other neurological signs. She was transferred to the Staffordshire General Infirmary, and a lumbar puncture revealed a clear cerebrospinal fluid under a pressure of 160 mm, no cells, protein, 30 mg per 100 ml, culture sterile, Wassermann reaction negative. The pyrexia subsided gradually during the second week of the illness, but widespread rales and rhonchi appeared in the chest and a skiagram showed the characteristic woolly mottling of atypical pneumonia. The meningeal irritation, confusion, and extensor plantar responses disappeared at the end of the second week of the illness. Further skiagrams of the chest showed the gradual disappearance of the opacities. The patient made a complete recovery and was discharged from hospital on Sept 30.

Discussion

Neurological complications in primary atypical pneumonia are undoubtedly rare, but it is probable that in many cases, such as those described here, the severe neurological symptoms may distract attention from the associated pulmonary infection, which may be unrecognized unless skiagrams of the chest are taken. Turner (1945) mentions one case of transverse myelitis in 286 cases of atypical pneumonia. Sheppe *et al* (1943) describe one case of meningo-myelitis in 150 cases. Gundersen (1944) noted one fatal case of haemorrhagic encephalitis in 122 cases, and mentions another fatal case, with cerebral symptoms, which did not come to necropsy. Campbell *et al* (1943) describe one fatal case of encephalitis in 200 cases. Ravenswaay *et al* (1944) noted meningeal symptoms in 0.4% of 1 862 cases, and Glendy *et al* (1945) noted three cases of 'meningism' in 180 cases. Scadding (1937) and Perrone and Wright (1943) each reported a fatal case of encephalitis. Many other reports of large series of cases contain no reference to any neurological complications. Reimann (1938) and Hein (1943) report cases of meningo-encephalitis in which complete recovery took place.

The first two cases described above as 'acute infective polyneuritis' closely resemble those described by Gordon Holmes (1917), Rose Bradford *et al* (1918–19), and Guilmann, Barré, and Strohl (1916). All these authors mention the association of the neurological picture with a respiratory infection, the nature of which at that time was unrecognized. The case of meningo-myelitis described by Sheppe *et al* (1943) was very similar in its clinical manifestations to my two cases of infective polyneuritis, but there was a high cell count in the cerebrospinal fluid, predominantly of lymphocytes. The sensory system was unaffected in their case and was only very slightly affected in my two cases. Another similarity, also mentioned in the earlier accounts, was the very rapid recovery from a severe flaccid paraplegia.

While it is realized that there is no evidence on which to attribute the above cases to the same infective agent, the presence of similar pulmonary lesions in all of them justifies, at any rate, a clinical correlation. The diagnosis of atypical pneumonia in such cases by radiological examination of the chest may have little value from the therapeutic point of view, but it may be of help in giving a hopeful prognosis. It seems probable from the very infrequent incidence of neurological complications that the virus of atypical pneumonia is primarily viscerotropic, and that when nervous involvement does occur the results are not as severe as in infection with primarily neurotropic viruses.

The clinical symptoms of these cases are comparable to those found in other virus infections of the nervous system, but residual damage has been absent. Although fatal cases of myelitis and encephalitis have been reported they appear to be rare.

Summary

Six cases are described in which symptoms of severe spinal and cerebral lesions occurred in association with pulmonary lesions presenting the radiological appearances of atypical pneumonia. Recovery was rapid and complete. Although the clinical picture was variable it was in each case suggestive of a virus infection of the nervous system.

A review of the literature suggests that the nervous system is rarely involved in atypical pneumonia, but that when this does occur the tendency is towards complete recovery without sequelae.

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DEFICIENCY DISEASES IN REOCCUPIED HONG KONG

BY

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In a paper entitled "Nutritional Diseases in Hong Kong before the Japanese Invasion" (Fehily, 1945) I described the widespread occurrence of B avitaminosis among the Chinese population in Hong Kong which was undoubtedly due to the high consumption of imported highly milled, and, latterly, long-stored rice. This vitamin B deficiency manifested itself mainly in beriberi, which was the second highest cause of death in Hong Kong in 1940, while maternal B avitaminosis (either latent or manifest) was the cause of infantile beriberi, a disease which often appeared in such an acute and lethal form that the term "human milk intoxication" was suggested for it. Practically no other deficiency diseases were observed before the occupation, isolated cases of vitamin A and C deficiencies, mainly secondary, were encountered in unwanted female infants who were fed only on rice paste.

Absence of Gross Deficiency Diseases

On the reoccupation of Hong Kong the medical officers of the British Military Administration were surprised at the absence of widespread beriberi and pellagra, owing to fishing restrictions gross vitamin A and protein deficiencies were also expected, but these did not materialize, neither was real starvation evident although the population of Hong Kong was obviously in a state of subnutrition. However, on close inspection the signs of chronic and mild vitamin B deficiency, mainly that of aneurine and riboflavin were detected.

It seems that during the Japanese occupation of Hong Kong rice was severely rationed and as soon as old long-stored stocks had been exhausted relatively fresh rice was issued to the population. In addition people ate whatever was available, and centuries-old food fads and prejudices

were thrown overboard. Wherever possible, people grew their own vegetables and kept hens and rabbits, even in flats and cubicles. These practices undoubtedly saved the population of Hong Kong from severe deficiency diseases as well as from starvation.

Extensive Relief Work by the Military Administration

After the reoccupation of Hong Kong the Relief Section of the British Military Administration opened free-food kitchens and unstintingly supplied free rations to charitable institutions and to all under-privileged persons, while the British and Australian Red Cross Societies assisted by issuing Red Cross parcels not only to civilian internees and to prisoners of war and their dependants but also to the sick and needy and to orphans.

Unfortunately, since the liberation of the Colony virtually all the rice available has been highly milled, but it has been rationed and supplemented by fresh Australian wheat flour, which, although highly milled, is richer in vitamin B than highly milled rice, and by blue peas, which are rich in vitamin B. In addition the Military Administration distributed vitamins on a large scale, indeed, the population of Hong Kong became vitamin conscious for the first time in its history. The popularity of vitamins may be judged from the fact that on occasion only vitamins were pilfered when warehouses were broken into.

When I arrived in the Colony six months after the liberation undernourishment had almost disappeared and the population was apparently in good health. Admittedly B avitaminosis was still encountered, but with the return of prosperity some people were able to get expensive highly milled rice on the black market and thus defy the rationing system. In addition the return of Hong Kong residents and the large influx of immigrants (many of these returning residents as well as immigrants were already B avitaminotic) made control of nutrition more difficult. Indeed, during the first nine months of liberation the population of Hong Kong tripled and almost reached its pre-war level, so that eventually the issue of rations had to be restricted to returning residents, and immigrants had to patronize the black market, where they purchased highly milled rice as their staple food. In spite of this the incidence of B avitaminosis in Hong Kong was very low compared with that of the years 1938-41, and undoubtedly its complete eradication could be effected if lightly milled rice (or other high-extraction cereals) became the staple food of the population. It is gratifying to know that the Killearn Nutrition Conference in Singapore last year passed the following resolution: "There should be laws or regulations to prevent the high milling of cereals to a degree dangerous to the health of the public, because high milling not only removes valuable nutrients from the food but also reduces the quantity of food available for consumption." However, owing to present world conditions any rice available for importation into the Colony during the last year was only too welcome.

Vitamin B Deficiency in Infants

Special attention was paid to orphanages, infant welfare centres and milk-distribution centres in order to detect any signs of deficiency diseases. In one founding home with 75 orphans up to the age of 5 years I observed signs of vitamin B deficiency in 27 children. The ocular signs of ariboflavinosis were especially prevalent. 12 children had conjunctivitis of the type described as being common in Chinese in Shanghai (Hou 1940, 1941), and 10 other children had photophobia alone. On entering the infants ward one was surprised to see so many infants with their heads buried in their pillows, while others were doubled

up with their heads between their knees. These ocular symptoms were frequently accompanied by cheilosis, marginal stomatitis, and glossitis, and it is interesting to note that both photophobia and conjunctivitis regularly disappeared after a few days' administration of riboflavin and marmite."

Undoubtedly all these infants were deficient also in other components of the vitamin B complex. Two of them (aged 2½ and 3 years) had beriberi of the adult dry type, one had classical acrodynia ("pink disease"), and one had a pellagroid condition of the skin. In smaller infants these multiple deficiencies manifested themselves in wasting, pallor, rigidity of the limbs and body, gastro-intestinal disturbances (mainly due to decreased tolerance of fat and protein), stomatitis, and glossitis. It seemed incongruous to see pale, pinched infantile faces with blood-red lips and tongue. However, the condition of these infants did not represent the true nutritional state of infants in general, almost all the inmates of such foundling homes are unwanted female babies whose mothers were unable or unwilling to nurse them owing to the nature of their work or the partial or complete absence of lactation. Most of these babies, many of whom were found abandoned on the steps, had been fed mainly on rice paste, and showed signs of severe malnutrition on admission; their treatment was extremely difficult because of multiple vitamin deficiencies and gastro-intestinal disturbances.

In one infant welfare centre 190 out of 1,215 cases (15.6%) showed signs of vitamin B deficiency—B₁ deficiency in 77 cases, B₂ and B₆ (riboflavin) deficiency combined in 110 cases, and manifest signs of ariboflavinosis alone in three cases. Only two infants both entirely breast-fed, out of 1,215 of the new cases were found to be suffering from acute infantile beriberi (human milk intoxication). The nutritional state of infants in Hong Kong cannot be judged by the condition of infants brought to infant welfare centres either, as up to 90% of them require medical treatment, there being no children's hospital or special children's clinics.

Subsequently I examined the children at milk-distribution centres. During the Military Administration these centres were established in hospitals, convents, orphanages, and infant welfare centres for the purpose of overcoming the black market in preserved milk, and children of the district up to 2 years of age were registered and supplied with milk at the controlled price. As they had to be brought to the centres, it was possible to observe the nutritional state of infants of most classes in the community. Out of 2,000 babies examined in one centre, 82 (4%) showed signs of vitamin B deficiency, ariboflavinosis being most evident.

Practically no other deficiency diseases were observed, although the hair growth of some babies about the age of 1 year was noticeably poor, probably as a result of deficiency of first-class protein during the Japanese occupation. One 4-year-old child was brought to the centre on its mother's back, and he was suffering from an acute form of rickets and was unable to walk. However, as none of the other children in this family showed signs of vitamin D deficiency this single case of rickets was probably due to some derangement of the endocrine system.

Outbreak of Scurvy

Quite suddenly in April 1946 scurvy broke out in the foundling home previously mentioned, 12 of the orphans being affected. This outbreak was unexpected, as the infants were supposed to be given ascorbic acid tablets and the other children tinned tomato juice as prophylactic, in addition to a regular supply of fresh vegetables. On investigation however it was found that the children's

diet consisted mainly of cereals supplied by the relief section and tinned foodstuffs provided by the British Red Cross Society. Fresh fruit was not available, while the amount of fresh vegetables (owing to the high cost) was quite inadequate. Consequently another orphanage, which I had not previously visited, was inspected, and it was found that of 188 children between the ages of 5 and 17 years 72 (38%) showed signs of frank scurvy. Here the scurvy must have been of considerable duration judging by a most irregular eruption of teeth (unusual among Chinese in Hong Kong), accompanied by enamel hypoplasia and subsequent caries. Close investigation revealed that the children had subsisted for months on a scorbutic diet consisting mainly of cereals and tinned meat and fish supplied by the British Red Cross. Fresh vegetables were supposed to be provided by the Committee (the orphanage being a Chinese charitable institution), but the amount of money allotted for this purpose was on the pre-war scale. To make matters worse, dried vegetables, being cheaper, were frequently supplied instead of the fresh variety. Thereafter fresh vegetables, ascorbic acid tablets, and occasionally oranges were added to the children's diet, with the result that gingival haemorrhages ceased after two weeks, and five of the children with frank scurvy could be regarded as cured after eight weeks. Unfortunately, owing to the ending of my tenure of office, I was unable to observe the further progress of treatment.

A high incidence of conjunctivitis was also present among these children, all but one child showing signs of vitamin C deficiency had conjunctivitis, while only two children with conjunctivitis were free of any other signs or of C avitaminosis. In contrast to the conjunctivitis due to riboflavin deficiency there was no lacrimation or photophobia—indeed, no subjective symptoms whatever—while the only part of the conjunctivae affected was the palpebral. The symptoms consisted mainly of hyperaemia, thickening, and, in one case only, haemorrhage. The alterations in the palpebral conjunctivae seemed to correspond with those of the discoloured and swollen gums in the condition termed "gingivitis scorbutica", "conjunctivitis scorbutica" would seem to be a suitable term for this manifestation in the conjunctivae.

Sporadic cases of scurvy among Chinese nurses also came under my observation. In all these cases the history was similar, the diet consisted mainly of cereals and tinned foodstuffs. As a result of the increased cost of labour, profiteering, and the devaluation of Hong Kong currency by the Japanese the prices demanded by merchants for all local produce were exorbitant, at one time 1 lb (454 g) of local potatoes cost as much as a 14-oz (388-g) tin of imported corned beef. Foreign exchange for the importation of Californian oranges was obtained by some merchants, but the oranges were cornered by unscrupulous profiteers, who either exported them into China or demanded such exorbitant prices that only the very rich could afford to buy them. Consequently the exportation of oranges was prohibited and prices were controlled, with the result that they could be bought at a reasonable price. In addition the Administration endeavoured to cut out the middlemen's profits, so far as the sale of vegetables was concerned, by taking over their activities, and in order to cut down the prices of fruit and vegetables it imported large quantities from the U.S.A. and Australia.

Great Reduction in Mortality Figures

After one year of British reoccupation the health of the population in general has greatly improved and the mortality figures have been considerably reduced. This is a result of the rationing of cereals, the price control of essential foodstuffs, and, to a smaller extent, the

distribution of vitamins. The number of deaths that occur daily now averages less than 45, in comparison with a daily average of 175 in 1941. As regards infant mortality, it is estimated that for the year 1946 the death rate will be approximately 100, as compared with 327 in 1940 (Annual Report of Director of Medical Services, 1940). The mortality rates for 1941 are not available, nor are the rates for the years of enemy occupation (1942-5). However, the infantile death rate during the occupation must have been very high, owing to the absence of any substitute for human milk and the decreased lactation of mothers suffering from undernourishment. In one foundlings' home the mortality rate of babies under 3 months of age was 100%.

Summary

Before the war in the Pacific severe B avitaminosis was widespread in Hong Kong and manifested itself mainly in beriberi. At that time the exceedingly high infantile mortality was chiefly due to a disease termed infantile beriberi or "human milk intoxication."

After the liberation of the Colony the absence of gross deficiency diseases was observed, although the population was in an evident state of subnutrition.

Extensive relief measures undertaken by the Military Administration are cited.

After six months of reoccupation a nutritional survey of infants was made, and it was found that mild and chronic vitamin B deficiency still existed in the Colony to the extent of 36% in a foundling home, 15.6% in an infant welfare centre, and 4% among the children in the milk-distribution centres. Ariboflavinosis was relatively more evident than before the outbreak of the war in the Pacific. Acute infantile beriberi, or "human milk intoxication," had virtually disappeared.

Practically no other deficiency diseases were observed, although, owing to the exorbitant prices of vegetables and fruit and their consequent substitution by cereals and tinned foodstuffs, there were outbreaks of scurvy in two orphanages as well as some isolated cases among the adult population.

After one year of reoccupation the health of the population has greatly improved, and the mortality rates are reduced to less than one third of those for the years immediately preceding the war.

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Medical Memoranda

Fatal Tracheitis after Endotracheal Anaesthetic

It has wisely been urged that anaesthetic disasters should be reported.

In common with many other anaesthetists I have for years kept endotracheal tubes in biniodide of mercury (1 in 1,000 solution), that is, until December, 1944 when I had a fatal case of tracheitis.

CASE HISTORY

A woman of 37 was anaesthetized for myomectomy. She had a history of recurrent aphonia which the ENT surgeons had diagnosed as hysterical, though there was said to be "some thickening of the cords." She was induced with "pentothal," cyclopropane, and a little ether and intubated under direct vision. A size 7 Magill tube was used, which was a moderately tight fit. This had been soaked in biniodide and washed. Anaesthesia was maintained with cyclopropane. In the evening of the following day her breathing became difficult, there was also collapse of the right base. Her temperature was 101° F (38.3° C). Adrenaline was advised and 5 ml (0.3 ml) gave considerable relief. The day after there was again an attack of stridor and dyspnoea with the production of greenish sputum. On the third day after operation the dyspnoea became much worse, though the temperature remained at about 101° F (38.3° C). Tracheotomy was performed with great difficulty, but the patient

succumbed on the 13th. Thick membranous material had been removed during this operation.

At necropsy the larynx and trachea were found to be considerably smaller than usual. There was subchronic inflammation in trachea and bronchi, with superimposed acute changes in trachea, bronchi and lungs.

COMMENTARY

The exact cause of death remains uncertain. At that time, however, a number of patients were getting sore throats after intubation—a fact elicited without any more than the customary amount of post-anaesthetic interrogation. Also, at that time face masks were being cleaned with biniodide after use, and a number of patients had a post-operative rash on the face. This was a painless non-irritating erythema. On its first appearance it was as though the shape of the cushion of the mask had been stamped on the face. This mark spread inwards and outwards until in a few days the whole face was red. It ended, a few days later, in a fine, faintly fawn coloured desquamation. The dispensary reported that the biniodide tablets were the same as usual, and the theatre sister that the solution being made was of the usual 1 in 1,000 strength. The rinsing of the masks and the endotracheal tubes was checked. As there was no new factor in the biniodide was there some difference in the wartime rubber? Was it having some action with, or absorbing, the biniodide? With a view to finding an answer to these questions the following test was carried out.

On the forearms of 30 volunteer patients or colleagues three little patches were fixed: (a) a piece of plain endotracheal tube of war time rubber, (b) a piece of a similar tube that had been soaked in biniodide and well washed, and (c) a small pellet of cotton wool dipped in biniodide and squeezed dry. These were inspected at two hourly intervals for 12 hours. There was one doubtful reaction to the plain rubber, nine to the biniodide rubber and eleven to the biniodide. The amount of solution left in the wool may have been variable. The reaction consisted of a pinkening, in several well marked places, followed in a day or two by fine desquamation.

Although this series is small, it does at least show that there is some change in the rubber after it has been soaked in the solution. Since ceasing to use biniodide—and this is now twenty months—we have had no face reactions at all and not more than the occasional sore throat—certainly no such reaction as in the above case.

I should be interested to know whether other people have had similar experiences, or can cast any light on this one.

I thank Miss M. A. M. Bigby, M.D., M.R.C.O.G. (surgeon in charge) for allowing me to publish this case and Dr. W. Pagel, hospital pathologist for his help and interest.

SHILA G. RANSOM, M.R.C.S., L.R.C.P., D.A.,
Late Senior Anaesthetist
Central Middlesex County Hospital

Shell Fragment Migrating from Kidney and Passed per Urethram after 23 Years

The following case report seems interesting enough to merit publication.

A municipal official aged 61 came into my consulting room on May 28, 1942, and produced for inspection a miscellaneous collection of coins and high-explosive shell fragments removed from his body at various times. Among these was a fragment measuring 1 cm by 0.5 cm by 0.2 cm, which he had passed per urethram in 1938. His history was confirmed by reports and radiographs which he brought with him, and was as follows. While serving as a gunner during the second battle of Ypres in 1915 a "whizz bang" shell exploded close to him and inflicted severe wounds in the left leg and lower chest. He had numerous operations and recovered. Eleven years later, in 1926 he was in London and was examined by Col (now Major Gen.) West. There was an open sinus passing between the eleventh and twelfth ribs to the left kidney, and a radiograph showed three pieces of shell casing in the neighbourhood of the kidney but none lower down. An operation was performed and one fragment removed. In 1928 the remains of the kidney were removed and another fragment was recovered. In 1938, ten years later he passed the third fragment per urethram. A radiograph showed that no fragments remained. As no renal colic preceded the event it is improbable that the ureter was the path of transit. The fragment had apparently travelled down and ulcerated into the bladder.

R. CAMPBELL BEGO, M.D., F.R.C.S.D.

Reviews

PHYSICS FOR THE ANAESTHETIST

Physics for the Anaesthetist By R R Macintosh, D.M. F.R.C.S.D., D.A., and William W. Mushin, M.B. B.S., D.A. Illustrated by Miss M. McLarty (Pp 235 illustrated 30s) Oxford Blackwell Scientific Publications 1946

It is incontestable that the modern anaesthetist should have a good working knowledge of applied physiology and applied physics. The former subject is dealt with in most textbooks on anaesthesia, but the latter has been generally neglected. The result is that many a candidate for the D.A. finds to his chagrin that he is quite unable to give an intelligible answer to the simplest question involving elementary physics, the memories of his first-year student days having faded into obscurity.

This book from the Nuffield Department of Anaesthetics at Oxford should therefore supply a definite need, for it explains the physical laws which underlie the design and working of all types of anaesthetic apparatus as well as a great variety of other subjects of interest to the anaesthetist. To take two examples, the importance of large-bore and gently curved connexions is explained as is the reason why an air embolism can occur from a leak in a saline infusion apparatus if the controlling clip is placed above the drip chamber. The principle and applications of the injector and the implications of osmosis and filtration are dealt with much more lucidly than is usually the case.

The style is simple with the minimum of technical terms. The numerous illustrations, many in colour executed by Miss McLarty, are clear without the over-simplification which leads to error. The book can be thoroughly recommended.

DISTURBANCES OF MOOD

Les Dérèglements de l'Humeur By Jean Delay. Preface by Gustave Roussy (Pp 180 No price given) Paris Presses Universitaires de France, 108, Boulevard Saint-Germain 1946

The theme of this book is that alterations of mood depend on the Jacksonian principle of cortical control over the lower cerebral centres. In the opinion of the author the hypothalamus stimulates the 'affective levels' of the individual and the cortex integrates them.

In the first part good clinical descriptions are given of depressions, manias and schizophrenic reactions and the effect of shock therapy upon them. Electric shock therapy is most useful in the depressions. An interesting point which is raised is how far hypochondria, psychasthenia, and true neurasthenia are allied to cyclothymic depressions. The author thinks that if the manifestations of these latter conditions are episodic they may be truly cyclic and will be improved by shock therapy, and in fact this therapy may be itself diagnostic as it has no effect unless the condition is truly cyclothymic. The manias are less amenable to shock therapy but may be tried and sometimes combination of shock with insulin therapy is worth while. Shock therapy—or, better, insulin therapy—is indicated in the schizophrenic conditions, but only 26% to 30% of patients are really benefited.

In the second part of the book the cortico-hypothalamic functions are examined in relation to the hyperthymias (manic depressive states) and the hypothymias (schizophrenic reactions). Clinical manifestations of pathological and experimental lesions of the hypothalamus are described and the effects of drugs and shock on hypothalamic function are studied and it is argued that the action of shock therapy can be explained through the action of this therapeutic measure on the diencephalon. The diencephalon may be regarded as 'the metronome of mood,' but the cortex especially the frontal cortex is necessary for its expression. If excessive instinctive and emotional impulses reach the frontal cortex a state of mania will result. In melancholia there is also an excess of diencephalic impulses, but these are of an inhibitory nature. Both these conditions are therefore hyperthymic and represent an over-excitation of the diencephalon. In schizophrenia there is a diminution of diencephalic influence on cortical function which is therefore not controlled by the instinctive necessity to adapt to life which characterizes diencephalic function hence the withdrawal from reality. The

diencephalon is not therefore the seat of consciousness but may well be the centre responsible for the awakening of consciousness. The cortex in its turn normally controls diencephalic activity, especially as with mental growth the instinctive demands become less insistent and the 'long view' takes precedence.

The thesis presented in this book is both interesting and important. Our ignorance of the true nature of the functional psychoses has been one of the reproaches of psychiatry, and the uncontrolled and empirical use of shock therapy has given rise to serious concern. Anything which will give order to our thought on these subjects is therefore well worthy of serious study.

SURGICAL PATHOLOGY

Pathology in Surgery By Naihan Chandler Foot, M.D. (Pp 511 368 black and white illustrations and 20 in colour £3) London J B Lippincott Company 1946

Chandler Foot is known to all pathologists in this country for his many sound contributions to histo pathology both technical and academic. He has written an excellent book full of useful information skilfully illustrated, and remarkably pleasant to read. It is intended to be a guide to the surgical pathology of those disorders in which operations are carried out or specimens removed for the specific purpose of obtaining biopsies, and it is not too comprehensive in the theoretical considerations of all the aspects of the lesions that are described. No serious attempt is made to explore those pathologic lesions that are seen only at autopsy.

Within these self-imposed limitations the author has left him self space and scope to deal at length with those diseases which are normally treated by surgical methods. Diseases of the breast and the gastro-intestinal tract are therefore dealt with in a more specialized manner than is usual in the average text book of surgical pathology. The skin biopsy and the histology of the excised lymph node have not been forgotten. Debatable problems are discussed with commendable brevity and lucidity. This book will prove to be a trustworthy guide to those who undertake the responsibility of reporting upon the routine surgical histology of a general hospital. It will appeal to surgeons because it is so obviously the fruit of the author's long accumulated experience in answering the questions and dealing with the pathological problems of his surgical colleagues.

PULMONARY TUBERCULOSIS STATISTICAL STUDY

The Prognosis of Open Pulmonary Tuberculosis A Clinical Statistical Analysis By Gunnar Berg (Pp 208 No price given) Lund Hakan Ohlssons Boktryckeri

The investigations into the after-histories of patients suffering from pulmonary tuberculosis in England and on the Continent are reviewed by Dr Gunnar Berg in the opening chapters, and the well-known difficulties of comparing these experiences are discussed. The author, in his series of 6,156 patients over the age of 15 with positive sputum who were resident in Gothenburg, Sweden, during the period 1910-34, is not concerned with the effects of treatment upon prognosis as were the majority of earlier workers but takes as his datum line the first appearance of tubercle bacilli in the sputum.

The data obtained from the records of twelve different hospitals and institutions have been analysed by age and sex for the three periods 1910-19, 1920-27, and 1928-34. The mortality was lower in the last period than in the earlier periods for the younger ages and for the first year after contracting the disease, but for the older ages and for cases of four or more years' standing there was little difference in the experiences of the three periods. These differences may be due to some selection of patients; it seems probable that the chance of surviving has not materially altered during the past thirty years. That the data are heterogeneous is a possibility that the author has not sufficiently realized, and this factor may account for some of the apparent differences—e.g. the median duration of disease before the sputum became positive is given as 29 months in 1934 and 116 months (from the table it should be 105 months) in 1910-11. The tabulation in detail of this large series of cases over a long period forms a useful addition to the material available for the study of the after histories of the tuberculous patient.

REVIEWS

The statistical treatment is somewhat faulty. In a number of tables the expected frequencies have been found on various hypotheses and compared with those observed by the test. This test was not justified in all the comparisons made and should not have been used. The analysis of variance carried out was also unjustified. The author deals at length (34 pp) with the prognosis of collapse treatment and reaches a negative conclusion on the results of such treatment. Data collected from so many sources and over such a long period are hardly suitable for such an inquiry. A comparison of survival rates after collapse therapy and conservative treatment is extremely difficult unless the data can be divided into groups of comparable degrees of severity, and this the author was unable to do.

OBSTETRIC PATHOLOGY

A Textbook on Pathology of Labor, the Puerperium and the Newborn By Charles O. McCormick, M.D., F.A.C.S. (Pp 399 illustrated 37s 6d) London Henry Kimpton

This book is based on the author's lectures to senior medical students at Indiana University. One section is devoted to each aspect of the title: labour, the puerperium, and the newborn. The belief is expressed that the attention of the student should be focused upon "infection, toxæmia, hæmorrhage, disproportion, prophylaxis, and diligent attention to the newborn infant." The author also believes that in this streamlining era the symposium type of text becomes a real necessity, so his teaching is arranged in that condensed form beloved of many students on both sides of the Atlantic. It must be remembered, however, that condensed facts are particularly liable to result in indigestion if not taken with due care. The memorizing of lists of summarized facts is not sufficient to turn a keen student into a good doctor. Cause and effect must be correlated logically whenever possible. For example, the pages dealing with uterine inertia contain much sound instruction, but when the treatment of secondary inertia is discussed no reference is made to the fact that this treatment, to be effective, must depend on the cause of the inertia. Lists of symptomatic treatment may be dangerous. The views of the author on sterilization would be regarded as lax in many clinics. Several pages are devoted to descriptions of various techniques which may be adopted when the operation is performed.

The second section of the book deals with the pathology of the puerperium and opens with an excellent account of puerperal infections. Due reference is made to the work of Semmelweis, Oliver Wendell Holmes and Sir Thomas Watson and in the pages referring to these men one catches a glimpse of what a stimulating teacher the author must be. One would imagine that his lectures and ward rounds are enlivened by the crisp phrase and the timely aphorism to drive home the moral of sound doctrine. The book is well illustrated, and in spite of its streamlining has earned its place as a book of reference on this reviewer's bookshelf.

SIR HENRY BASFORD'S new book, *Fisherman's Progress* is published by Constable and Co at 8s 6d. Why do so many doctors discover themselves born fishermen? Probably because the arts of medicine and angling equally demand natural aptitudes for observation, reflection, and manual skill. The author of this little book has also the gift of words to take us to the rivers and lochs he loves so well and lets us share with him the thrill of his first salmon, and the excitement of the huge trout half seen in the darkness and lost after an hour's play. There is no better recreation for the true fisherman when he cannot be by the water than to read books about fishing and this, with its exquisite photographs is perfect of its kind.

A very practical and well illustrated pamphlet, *Infestation Control Rats and Mice* has been published for the Ministry of Food by H.M. Stationery Office at 1s 6d. This handbook, prepared by Mr S. A. Barnett makes generally available to all responsible for the destruction of these pests methods based on rigorous scientific research and tested in large scale practice. Sound and logical planning, in accordance with the general principles laid down by the Ministry, is essential for scientific destruction. The fundamental research on which the methods are based has been carried out under the aegis of the Agricultural Research Council by the Bureau of Animal Population University of Oxford.

BOOKS RECEIVED

[Review is not precluded by notice here of books recently received]

Early Ambulation and Related Procedures in Surgical Management By D. J. Leithauer, M.D., F.A.C.S. (Pp 232 \$4.50) Springfield, Illinois Charles C. Thomas 1946

Exercise, especially walking, is regarded as a prominent feature of immediate post-operative treatment. The book includes chapters on psychological factors, pre-operative care, and economic influences.

Sir John Jervis on the Office and Duties of Coroners By W. B. Purchase, M.C., M.B., B.Ch., D.P.H. Eighth edition (Pp 350 30s) London Sweet and Maxwell and Stevens and Sons 1946

This student textbook, which covers the duties of coroners, has been brought up to date and partly recast in narrative form instead of all the subject matter being dependent upon some part of the Coroners' Acts.

New Human Embryology By Bradley M. Patten (Pp 776 45s) London J. and A. Churchill 1946

Designed as a standard textbook of embryology for medical students. Profusely illustrated. From the University of Michigan Medical School.

The Administration of Health and Physical Education By J. F. Williams, M.D., Sc.D., and C. L. Brownell, Ph.D. Third edition (Pp 483 15s) London W. B. Saunders 1946

This American book is intended for school teachers and administrators. The authors discuss such subjects as school sanitation, physical education, handicapped children, swimming pools, and the cost of health education.

Group Psychotherapy: Theory and Practice By J. W. Klapman, M.D. (Pp 344 21s) London Wm. Heinemann 1946

The principles of group psychotherapy are explained. A historical and anthropological summary is followed by an account of group transferences and formations, group and individual psychotherapy, and the use of the psychodrama.

The Nation's Food Edited by A. L. Bacharach, M.A., F.R.I.C. and T. Rendle, C.B.E., F.R.S. (Pp 349 18s) London Society of Chemical Industry 1946

Articles by 32 contributors on the physical and chemical character of British foods, with special reference to nutritional value. The foodstuffs considered are grouped into 7 sections: the egg, the potato, vegetables, cereals, meat, fish, and milk.

Allergy By E. Urbach, M.D., F.A.C.A. and P. M. Gottlieb, M.D., F.A.C.A. Second edition (Pp 968 70s) London Wm. Heinemann 1946

New sections in this book are on psychosomatic aspects of allergy, the Rh factor, allergic bronchitis, allergic cough, and eosinophilic erythrocytæmia.

Tuberculosis in the United States US Public Health Service (Pp 190 No price) US National Tuberculosis Association 1946

Mortality from tuberculosis in the United States presented in the form of statistical tables and maps.

Le Syndrome de Volkmann By M. Chuzaric and F. Junot (Pp 98 115 francs) Paris Masson 1946

A monograph on Volkmann's contracture. Pathative and radical treatments are discussed as well as various theories of the pathology.

L'Hypofonctionnalité By Max Wallet (Pp 354 480 francs) Paris Masson 1946

A study of the physical and mental effects of the excessive production of ovarian hormone. Includes extensive bibliography.

Diagnostic Hormonal et Traitements Hormonaux en Gynécologie By C. Beclere (Pp 371 525 francs) Paris Masson 1946

A book on hormone therapy for practitioners. Includes a discussion on the physiological effects of the pituitary and ovarian hormones.

La Périonite Nodulaire Maladie de Kussmaul By P. Nicaud (Pp 125 255 francs) Paris Masson 1946

A monograph on the symptoms, signs, and treatment of peritonitis nodosa.

La Tuberculose Rénale Sous L'Angle de la Thérapeutique By J. Cibert (Pp 533 1150 francs) Paris Masson 1946

A monograph on the pathology, signs, symptoms, and treatment of renal tuberculosis. Many illustrations.

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CONTROL OF MEASLES

After a temporary dislocation in the early years of the war measles has again assumed its biennial periodicity, and we are now on the crest of the epidemic wave of 1946-7, with notifications of over 10,000 per week. But measles, like the other childhood fevers, has steadily lost ground as a killing disease during the past half-century, with an accelerated decline in the death rate since 1920, so that the total deaths now number less than 1,000 in an epidemic year, and the case fatality is reckoned around 0.2%. This remarkable reduction in mortality is probably attributable mostly to improved environmental conditions and the better nutrition of young children, but partly, according to Butler¹ to the delayed age of attack associated with smaller families and partly, no doubt, to the more successful treatment of secondary bronchopneumonia with, for example, the sulphonamides. While mortality has so strikingly declined morbidity remains unaffected, and probably not more than 10% of children in an urban community escape an attack of measles. A recent analysis² of notifications according to age shows that incidence is highest among children aged 3-4 years and next highest among children between 1 and 3 years of age. Most of the serious complications and deaths occur among these younger children, and consequently our efforts should be directed principally towards their protection.

Methods of control may be considered under measures to be adopted in the home in the day or residential nursery, in the school and in the hospital. Perhaps the most important single measure is not so much putting the child to bed as soon as the infection is diagnosed as keeping it there until recovery is complete, with sulphonamide therapy whenever there are signs of secondary complications such as bronchitis or otitis. When, as frequently happens, measles is brought into the home by a child at school, younger children should if possible be passively protected by an injection of convalescent measles serum or normal adult serum. A procedure to be recommended is to give complete protection to the infant between 6 months and 2 years of age by an intramuscular injection of 5 ml convalescent measles serum within five to six days of exposure, counting the appearance of the rash in the primary case as the fourth day. For children aged 3-5 years a dose of 5-10 ml normal adult serum will in most cases either protect or give a modified attack according to dosage, potency of the serum and the day of exposure on which it is given. In a healthy child an attenuated attack is preferable since it does not usually lead to complications and it gives the child immunity to further attack, whereas a

child completely protected becomes susceptible again in three to four weeks' time.

In day or residential nurseries a somewhat similar procedure may be followed. It often happens that infants of 6-18 months are kept separate from the older children and if this younger group is intimately exposed it should if possible be completely protected, even though it means repetition of the prophylactic injections if infection is again introduced some time later. However, the supply of convalescent measles serum is very limited, and the nursery doctor may find it expedient to attempt modification of the infection in the younger children—that is, between the age of 6 months and 3 years—by the use of normal adult serum, which is available from most of the constituent laboratories of the Public Health Laboratory Service. Gamma globulin in controlled trials with small supplies sent from America has proved to be at least twice as potent as convalescent serum in the prophylaxis and attenuation of measles. We understand that experimental batches of gamma globulin are being prepared in this country, and no doubt as supplies become available this substance, if equally successful, may replace all other sera for passive protection against measles. Apparently it may have an additional advantage in being free from the risk of producing homologous serum jaundice, but it should in fairness be stated that thousands of doses of convalescent and normal serum have been given to young children without any untoward effects. The young child may be as resistant to homologous serum jaundice as he apparently is to infective hepatitis.

The school is probably the most important community focus for the dissemination of measles, the secondary attack rate of measles among pre-school susceptible children aged 1-5 years, when a primary case is introduced to the home has been estimated at nearly 90%. If, therefore the age of attack of the primary case at school could be postponed from 5-7 years to 8-10 years the younger children in the household would, with present-day small families, have passed the most susceptible age of 1-3 years. Wells, Wells and Wilder³ have shown that the epidemic spread of measles in junior classrooms can be largely prevented by a "ceiling" of ultra-violet light, and controlled studies, sponsored by the Medical Research Council and the Ministry of Health, are now in progress in a number of schools in Southall to test the efficacy of ultra-violet light in preventing the spread of respiratory infections. If the American findings are corroborated the control of measles in schools may make a valuable contribution to the reduction of deaths and complications from this infection.

In recent years many hospital authorities have made increasing provision for cases of measles at the expense of cases of scarlet fever which is now so mild, and of diphtheria which steadily diminishes in incidence. But, as we have previously emphasized,⁴ the nursing of children together in measles wards is not without its attendant dangers of which the most important is secondary streptococcal infection. The respiratory mucosa after attack by the measles virus is very susceptible to bacterial invasion,

¹ J. Roy. Soc. Med. 1945, 38, 259.

² *Weekly Bull. Min. H. & Publ. Hlth. Lab. Serv.*, Jan. 1947, p. 2.

³ *Amer. J. Hyg.*, 1942, 35, 97.

⁴ *British Medical Journal* 1945, 1, 300.

and secondary streptococcal infection rates of 50–70% with suppurative otitis media in 10–20% have been recorded in measles wards. Infected dust from bed linen and floors has been incriminated as the main repository of the haemolytic streptococcus in these measles wards, and dust-suppression by oiling floors and bed linen has proved most effective in limiting streptococcal cross-infection.⁵ In this issue (p 209) Begg, Smellie, and Wright report a further controlled trial in the prevention of secondary streptococcal infection by oiling floors and bed linen in a measles ward during the 1945 epidemic. That oiling of the bed linen, done in the hospital laundry with the help and advice of the British Launderers' Research Association, was effective is indicated by the reductions of 80 and 95% of total bacteria and haemolytic streptococci in the air of the oiled ward during bed-making when compared with similar counts in the control ward. However, the streptococcal pollution of the air in the untreated ward was only about one-tenth of that experienced in another hospital during the 1943 measles epidemic, and for this and possibly other reasons latent streptococcal cross-infection remained at a low level, and there were no cases of secondary streptococcal otitis media. This negative finding must not be regarded as a contraindication of dust-suppressive measures, and it is hoped that hospital authorities will arrange further trials of oiled bed-linen in measles wards. Another interesting observation made by Begg and his colleagues was that the prophylactic use of sulphadiazine (daily doses of 0.25–1 g) was associated with very low streptococcal pollution of the air, a low cross-infection rate and a low incidence of heavy nasal carriers of the haemolytic streptococcus. Here again further controlled trials are needed, and the risk of breeding drug-resistant streptococci by chemoprophylaxis must be borne in mind.

These measures for the control of measles and its complications will have no obvious effect on the total incidence of the disease, and experience with diphtheria has taught us that only active immunization will reduce morbidity as well as mortality. Future progress in the control of measles will therefore depend on the successful cultivation of the virus and the preparation of an effective vaccine. Some preliminary steps along this road have already been taken in America, and now with a gradual return to peacetime conditions British research workers will doubtless bend their energies to this difficult task.

THIS YEAR'S INFLUENZA

For some years before 1939 influenza in Britain seemed to have settled into a simple rhythm. There was an outbreak every second year, and these outbreaks were alternately large and small ones, so that the major epidemics came every fourth year. These were mainly outbreaks due to virus A.⁶ Probably unrelated to their long-term periodicity was last winter's influenza B, so far as we know the first outbreak in this country mainly due to that virus. Virus A had not been much in evidence since the winter of 1943–4. Previously, in 1940–1, virus A, instead of

producing the expected epidemic, occurred in mild sporadic infections as a virus of rather low virulence.⁷ Last winter 1945–6, there was no minor outbreak due to virus A, and this made it difficult to prophesy what would occur this winter—a major prevalence, a minor prevalence, or nothing. It is beginning to look as though “a minor prevalence” is the answer.

A heavy incidence of “influenza” has been reported from many schools, particularly in the London area, and this has led to the premature conclusion that the country is on the eve of a major influenza epidemic. This conclusion appears to be remote from the known facts. Sera and throat washings from affected schools and other young communities have been sent for examination to the Public Health Laboratory Service, but not in any unusual quantity. There has been an abrupt increase, however, in the number of specimens of this kind submitted to the laboratories of the National Institute for Medical Research at Hampstead. We understand that virus A has been recovered from a number of outbreaks at certain schools and hospitals. Virus B has not been found.

There is some virus A influenza about in addition to a febrile catarrh of undetermined origin which produces symptoms for some two or three days. Boarding school communities are particularly affected, but the London County Council schools, for example, record no more absenteeism than is usual at this time of the year. The influenza itself is mild in character and certainly no more severe than the virus B influenza of last year. That the mortality is negligible is well shown by a comparison of the deaths from influenza in the 126 great towns over the first four weeks of this year. The figures were 36, 74, 85, and 92, as compared with 123, 165, 174, and 273 in the first four weeks of 1946. A real epidemic is usually associated with a much more sharply rising curve.

The largest of recent epidemics occurred in 1929, 1933 and 1937, and the figures for these years afford no evidence for the belief that a hard winter will prevent influenza epidemics.⁸ The present trend of the deaths from influenza in the 126 great towns during the past few weeks has been following a similar course to that observed in the outbreaks of 1941, 1942, and 1945. In 1941 the deaths continued to rise during the early weeks of the year, and a maximum of 324 was recorded in the seventh week, while in the other two years the deaths never exceeded 90 a week and the heightened incidence was maintained only for a few weeks. All recent epidemics have been restricted to the first quarter, except that of 1939, when the outbreak extended into the sixteenth week. Deaths in the large towns during the past four weeks are less than half the number recorded in the corresponding period of last year. The low number of deaths and the slow increase in the mortality rate during recent weeks do not suggest that the present outbreak will develop into a severe epidemic.

An incidence of a mild disease, particularly on the “under twenties,” was also a feature of last winter's outbreak of virus B influenza both here and in Australia. The present outbreak is equally mild, but even if influenza seems to be changing its character, having a lower incidence

⁵ Wright J, Cruickshank R, and Gunn W. *British Medical Journal* 1944 1 611.

⁶ *Ibid* 1945 1 209.

⁷ *British Medical Journal* 1943 2 717.

⁸ *Ibid* 1946 1 112.

adults and coming upon us rather less frequently, we had better beware of false confidence, as the virus is clearly an unstable and deceitful agent

THE MINISTER ACCEPTS

The resolution of the Representative Body agreeing to negotiate with the Minister of Health "provided that such discussions are comprehensive in their scope and that the possibility that they may lead to further legislation is not excluded" was sent to him last week, and on Feb 1 the Secretary of the B.M.A. received a reply from the Secretary of the Ministry in which he said "The Minister wishes me to say that he has considered the terms of the resolution and will be glad if the Negotiating Committee will resume discussions with him, in the light of that resolution, at their early convenience"

In discussing the position of the Minister in relation to the Association's offer, *The Times* considered that Mr Bevan could not pledge himself beforehand to any new legislation since this would impose an obligation in advance on Parliament, which has only recently approved the National Health Service Act. The essential requirement, *The Times* states, is the resumption of discussions. "Then, if issues should arise which made Parliamentary intervention indispensable, it would be for Mr Bevan and his colleagues in the Cabinet to consider what action might be appropriate." This would seem to provide the answer to those who still think that Parliamentary intervention is constitutionally impossible or unlikely.

The Negotiating Committee meets on Friday (Feb 7) to consider the resolution of the Representative Body and resolutions from the other constituent bodies. The three English Royal Colleges and the Society of Medical Officers of Health advocate negotiation on regulations without any proviso. Of these bodies only the Royal College of Physicians had the opportunity of revising its resolution in terms of that of the Special Representative Meeting, which has been adopted provisionally by the Royal College of Surgeons of Edinburgh, by the Royal Faculty of Physicians and Surgeons of Glasgow, and by the Association of the Honorary Staffs of the Major (Non-undergraduate Teaching) Voluntary Hospitals of England and Wales. The Society of Apothecaries affirms its loyal support of the final decision of the B.M.A., while the Medical Women's Federation states it has no mandate for saying Yes or No.

FOOD FOR INVALIDS

Food rationing for invalids presents many difficult problems for the doctors looking after them and for those responsible for seeing that available foodstuffs are fairly and evenly distributed throughout the community. Recent correspondence in this *Journal* has shown how disturbed many general practitioners are by what they regard as interference with their proper function of looking after sick persons. Elsewhere in this issue we publish correspondence between Sir Edward Mellanby, in his capacity as Chairman of the Food Rationing (Special Diets) Advisory Committee of the Medical Research Council, and the Minister of Food, correspondence between the Secretary of the B.M.A. and the Ministry of Food, and a

statement issued from the Ministry on the procedure for dealing with applications for extra rationed foods on medical grounds.

Even those most critical of recent happenings will admit the justice of Sir Edward's claim that the work of his committee during the past seven years under four successive Ministers of Food has been a noteworthy achievement—noteworthy, among other reasons, for the small volume of complaints directed against this branch of the Ministry's work. Sir Edward describes in his letter the general principles which have been followed by the committee and goes on to say "These are hard principles, and the members of my committee, while appreciating their necessity, have disliked applying them." He asks the Minister whether the services of his committee are still required and whether "it is necessary for them to continue to be guided by the same strict principles." In his reply, Mr Strachey, the Minister of Food, asks the committee to continue its work and adds "I do think that when your committee sits in what I might term its function as a court of appeal against its own regulations as applied by my divisional food officers, it might now begin to take a more lenient view of individual applications." The committee will, no doubt, be relieved by this ruling, which is the final outcome of the publicity given in this *Journal* to instances of the application of what Sir Edward has called "hard principles." The reaction of responsible lay opinion is well put in last Sunday's *Observer* in this editorial comment: "When one considers the amount of rations available in the country for emergency, for visitors, and so on, it is intolerable that a man dying in pain should be denied the few ounces of butter deemed necessary by his doctor in order to give him some relief. This kind of administration can only be described as callous bureaucratic pedantry and is utterly offensive to normal human beings. Are we to send our rationed food to the Germans while our own cancer-cases are denied a necessary morsel?"

HEALTH IN HONG KONG

The present position of Hong Kong was recently reviewed by a special correspondent of *The Times*,¹ who urged the importance of "a five-year or ten-year plan for the social and economic development" of this "tiny colony." Large-scale reforms would need to be undertaken from local resources, but outside aid would be particularly valuable in the sphere of health and education. Perhaps the greatest single health problem is that of nutritional deficiency. Up to 1941 Hong Kong enjoyed a relative economic prosperity and freedom from war. Yet its infantile mortality rate, which was 345 per 1,000 live births in 1939, was one of the highest in the world.² Vitamin B, and mainly B₁, deficiencies were widespread and due to the consumption of imported highly milled rice. Vitamin C deficiency was less common and rarely encountered except in association with a deficiency of vitamin B₁. Beriberi was the second highest cause of death in Hong Kong in 1940, and B₁ avitaminosis either latent or manifest in lactating women caused in their infants a form of beriberi so acute and so lethal that the term "human milk intoxication" was suggested for it.³ Ironically enough the Japanese occupation led to some improvements in nutrition. Long-stored stocks of rice were exhausted and relatively fresh rice was issued even though severely rationed. Centuries-old food fads and prejudices were abandoned by a hungry population and people grew their own vegetables and kept hens and rabbits even in flats.

¹ *The Times* Jan 14 1947 p 5

² *British Medical Journal* 1945 2 468

³ *Ibid.* 1944 2 590

Developments since the defeat of Japan and the setting up of a British Military Administration are discussed by Dr Lydia Fehily at p 220 of this issue. One year of British reoccupation has seen a considerable improvement in the health of the population generally, reflected in a steady reduction in the mortality figures. It seems likely that the infantile mortality for 1946 will be approximately 100. There is cause for congratulation here but not for complacency. Dr Fehily shows that mild and chronic vitamin B deficiency still existed in the Colony to the extent of 36% in a home for foundlings, 15.6% in an infant welfare centre, and 4% among the children attending centres for milk distribution. "Human milk intoxication" had virtually disappeared, but ariboflavinosis was more evident than in earlier surveys.

But much remains to be done. Some such plan as *The Times* suggests will, if it is to be effective, need all the assistance that can be given from both official and voluntary sources. No official policy has yet been defined, but it is significant that the Nutrition Conference in Singapore, presided over by Lord Killearn, recommended that "there should be laws or regulations to prevent the high milling of cereals to a degree dangerous to the health of the public". The British Red Cross Society did much valuable work during the years of occupation and immediately afterwards, and it is not likely that its work will diminish. It is good to know, too, that the Hong Kong Branch of the British Medical Association is again active. At its meeting last week the Council of the B.M.A. approved the urgent requirement of a financial grant to enable the Branch to make good the equipment lost during the Japanese occupation.

WORLD FOOD COUNCIL

Ending malnutrition throughout the world requires the solution to two basic problems: more foodstuffs must be grown, and the poorer nations must increase their purchasing power. Before the war local excesses of foodstuffs commonly occurred in the producing countries, especially in the New World, the undeveloped countries, whose people lacked the purchasing power conferred by industrialization, were powerless to relieve the malnutrition that assailed them. Farmers burnt their wheat where it stood, and planters spilt their coffee beans into the sea.

In September, 1946, at the conference held at Copenhagen by the Food and Agriculture Organization (*Journal* Sept 7, 1946 p 334) Sir John Boyd Orr proposed the setting up of a world food board to stabilize food prices and establish reserves. Most countries including Britain considered that the expense of implementing this scheme would be prohibitive. The Preparatory Commission of the F.A.O. therefore worked out an alternative, and they have now issued their Report. The Commission took the realistic view that agreement between governments is the fundamental necessity, and that the basis of international arrangements should be the expansion of consumption, not the restriction of output. It also reiterated the need for industrial development in backward regions. The most important proposal, however, is the establishment of a World Food Council, whose functions would be to supervise the accumulation of basic food reserves by individual nations, particularly the food producers, and of buffer stocks of commodities subject to seasonal or cyclic variations. The food reserves, though held nationally, would be used internationally in times of famine. The financial arrangements necessitated by such a scheme imply that each country must have a sound economy, so that international credit may be obtained through various channels,

such as the International Bank for Reconstruction and Development.

The Commission's scheme may be seen, therefore, as inspired by Sir John Boyd Orr's proposals but restricted by the nationalism that is still one of the most potent causes of wariness in world affairs. The World Food Council will lack the supra-national power proposed by Sir John for his food board, but its limited scope may commend its virtues more readily to nations determined to retain control of their trading arrangements. Sir John is quoted by the *Observer* (Jan 26) as having said "The world food board was an ideal. This is half-way towards it and will do all that the board would have done if the governments will do their duty."

POSTGRADUATE TEACHING IN FORENSIC MEDICINE

The University of Glasgow will soon be inaugurating postgraduate courses in forensic medicine. These courses are intended for those practitioners whose duties require or would be greatly assisted by, a more extended knowledge of the subject. The provision of these new facilities has been prompted by the fact that continuing study and research has widened the scope of forensic medicine, which should now take its proper place in any scheme for postgraduate education. It is intended to provide a general treatment of medico-legal practice. All the medico-legal activities in the City of Glasgow will be co-ordinated to this end with the co-operation of the university, the Scottish Home Department, the Crown authorities, the corporation of Glasgow, and the chief constable.

The practical outcome of this arrangement will be a liaison between the department of forensic medicine in the university and the scientific bureau of the police, the city mortuary, the city analyst's department, and the sheriff's procurator fiscal. Thus, although remaining under the unchanged control of the police and the corporation respectively, these bodies will co-operate with each other and with the university in activities of common concern and in giving every assistance so far as is consistent with official safeguards in the work of teaching and research. This will include lectures by specialists of the police bureau, practical work in their departments, post-mortem studies and attendance at the various courts to learn procedure and the technique of giving evidence. By permission of the corporation and the Scottish Office, the principal medical officer of the City of Glasgow police is an assistant in the department at the university, and he, with the members of his medical staff, will participate in the general scheme with special regard to the mortuary side of instruction. Such facilities with those already available in the university will lay the foundation for a medico-legal institute in Glasgow. Teaching will be planned scientifically, bearing in mind the need for a higher general standard in the whole range of medico-legal work. Postgraduate instruction will be made available for those who want a "refresher" course and for those who are interested in some special branch of the subject. Courses of short duration will be arranged to meet the individual requirements of those on leave from overseas. Facilities for research will also find a place in the new scheme: one of the important objects of which is the full interchange of knowledge and facilities in the interests of the progressive advancement of new methods and their practical application in the investigation of crime. Arrangements will be made for instructing members of the medical profession who wish to specialize in forensic medicine or who desire to study certain aspects of the subject. Courses will also be

established for senior members of the police and for others whose work demands a knowledge of criminology. Wider scope for co-operation between the medical profession and the police and legal authorities is envisaged by the inauguration of this new scheme at Glasgow.

SUPERIOR VENA CAVAL SYNDROME

Obstruction of the superior vena cava is a subject which lends itself to study by phlebography and measurements of venous pressure. Ehrlich, Ballon, and Graham¹ reviewed the literature in 1934 and collected 309 cases. About 35% were caused by aortic aneurysm, 50% by primary or metastatic thoracic neoplasms, and the remaining 15% by a variety of rare causes, some undetermined.

Hussey² points out that a fistula between an aortic aneurysm and the superior vena cava may lead to the obstruction. Armstrong, Coggin, and Hendrickson³ collected 100 cases of this type of fistula, including two of their own and seven further cases have been reported since 1939. In Hussey's 35 cases there were two examples of the condition and it seems probable that its importance has been insufficiently recognized. In these cases the onset is explosive, with dyspnoea and oedema and cyanosis of the upper part of the body. The diagnosis depends on the sudden onset of severe manifestations of the superior vena caval syndrome in a patient with aortic aneurysm. Signs ordinarily associated with arteriovenous fistula, such as thrill, bruit, and wide pulse-pressure, are not usually found.

Phlebograms were prepared for 13 of Hussey's cases, using diatrizast and thorotrast. Injections were made into a suitable vein in one arm, or simultaneously into both arms, or into the external jugular vein. 20 to 30 ml was injected rapidly through a wide-bore needle. Phlebograms can demonstrate with certainty the presence of an obstruction during life, sometimes in cases in which it might otherwise remain undetected. The level of the obstruction can be shown, and secondary thrombosis extending into the innominate, subclavian, or jugular veins is also revealed.

Venous pressure readings are interesting, and comparison of the pressure in the antecubital and femoral veins is important in diagnosis. The pressure in the antecubital vein should always be significantly higher than that in the femoral vein. The increased volume of blood entering the inferior vena cava by way of collateral vessels is not in itself sufficient to cause elevation of the pressure in the femoral vein and if it is found to be higher than normal some factor other than obstruction of the superior vena cava is responsible. Repeated measurements of venous pressure are valuable for following the course of the syndrome. Lowering of the venous pressure indicates that the collateral circulation has become more adequate or, in the case of a radio-sensitive mediastinal tumour, that the reduction in size of the tumour by x-ray therapy has resulted in a lessening of the obstruction. Hussey states that undue emphasis has been laid upon thrombosis of the superior vena cava and that investigation shows it is rare and is seen for the most part in cases of neoplasm. In malignant cases however it should always be remembered that a sudden onset of severe obstructive symptoms with oedema, cyanosis and dyspnoea strongly suggests that thrombosis has occurred. If this is so it is clear that radiotherapy is scarcely likely to be of benefit. Most patients succumb fairly rapidly to a sudden obstruction of this type. The end is hastened by oedema of the upper air passages and by the high pressure in the cerebral veins, which causes drowsiness, stupor and occasionally convul-

sions and loss of consciousness. In cases of the superior vena caval syndrome phlebography should certainly be made use of, and the method might with advantage be applied more often.

TOTAL PANCREATECTOMY

Total pancreatectomy is an operation which is likely to daunt the most fearless patient and to try the surgical prowess of the operator to the uttermost. The surgeons of the Mayo Clinic¹ are therefore to be congratulated on being able to report success in four cases—one ablation for carcinoma of the head of the gland, one for chronic pancreatitis and two for hyperinsulinism.

The report of the metabolic studies carried out on the patients after recovery from operation is of as much importance as the operative details. From animal experiments intractable steatorrhoea, gross fatty changes in the liver, and severe diabetes were to be expected, but it has been shown that the external secretion of the pancreas is not essential to life, and the internal secretion can be replaced easily. The diabetic state became established within a few hours of operation, but with the striking feature of control by less than forty units of insulin daily. Even the cancerous patient, who had been a diabetic for some years, required only a further twenty units daily. The authors are careful not to make any inference on the aetiology of diabetes from their few cases, but the significance is obvious. All the patients had as many as three large motions daily containing about 30% of the calorie value of the food taken and excess nitrogen and fat residues. All the cases had well-balanced diets containing about 270 g of carbohydrate daily, and fatty livers with hypcholesterolaemia did not develop. It is recommended that all such patients should be given high calorie diets with an abundance of eggs and offals which are rich in choline or other lipotropic substances. The excess of fat and nitrogen in the faeces could be reduced by 40-50% by giving 15 g of pancreatin in enteric-coated capsules daily.

American surgeons are not alone in their interest in this field of surgery, for in 1942 Gordon Taylor² recorded several examples of successful partial pancreatectomy by British surgeons, and in stressing the relatively low malignancy of pancreatic growths he made a plea for the wider use of surgery. Since then cases have been reported by Watson³ and Pannett⁴ for carcinoma and by Oakley⁵ of an almost total pancreatectomy for hyperinsulinism. Pancreatectomy is always likely to have a high mortality in the cachectic cancerous patients, but in hyperinsulinism 80% of adenomata occur in the tail of the gland, and partial pancreatectomy should be tried first. Increasing numbers of successful total pancreatectomies may be anticipated with the aid of vitamin K, blood transfusion and sulphonamides and if the surgical treatment of malignant jaundice becomes firmly established all will be indebted to the present pioneers in this formidable operation.

We regret to announce the death of Dr Arthur Whitfield, Emeritus Professor of Dermatology, King's College, London.

Dr F. Avery Jones F.R.C.P. will deliver the Goulstonian Lectures before the Royal College of Physicians of London, Pall Mall East, S.W., on Tuesday and Thursday March 18 and 20 at 5 p.m. His subject is "Haematemesis and Melaena".

¹ *Proc. Mayo Clin.*, 19-6, 21, 25.
² *Brit. Med. J.*, 1942, 2, 119.
³ *Brit. J. Surg.*, 19-4, 31, 368.
⁴ *Id. id.*, 19-6, 2, 84.
⁵ Recent discussion at Association of Physicians *Quart. J. Med.* (In press).

FOOD RATIONING FOR INVALIDS

CORRESPONDENCE BETWEEN THE SECRETARY OF THE B.M.A. AND THE MINISTRY OF FOOD

Dear Sir,

A number of cases have recently been reported by medical practitioners in which their recommendations for additional food allowances to patients under their care have either been rejected by your Ministry, or granted tardily and partially, after what appears to have been an inadequate examination of the medical evidence produced by the practitioners concerned.

These reports have created considerable disquiet among both the medical profession and the public. The Association would therefore be glad to have a detailed statement on how applications for extra rationed foods for individual patients, especially those submitted under Clause 19 of MED 2, are at present being dealt with, both within the Ministry and within the Food Rationing (Special Diets) Advisory Committee of the Medical Research Council.

Yours faithfully,

CHARLES HILL

Jan 7

The Secretary, Ministry of Food

Sir,

In reply to your letter of Jan 7 asking that the British Medical Association may be furnished with a detailed statement about the manner in which applications for extra rationed foods for individual patients, especially those submitted under Clause 19 of MED 2, are at present being dealt with, both within the Ministry and within the Food Rationing (Special Diets) Advisory Committee of the Medical Research Council, I am directed by the Minister of Food to send you the accompanying statement on the subject. I am also directed to enclose a copy of a Question and Answer in the House of Commons on Jan 22 1947*.

I am, Sir,

Your obedient Servant,

D C V PERROTT

Jan 28

STATEMENT BY MINISTRY OF FOOD

Procedure for Dealing with Applications for Extra Rationed Foods on Medical Grounds

(1) No application from a member of the public for extra supplies of rationed foods on medical grounds is considered by the Ministry unless it is supported by a certificate signed by a registered medical practitioner. The only exception to this rule is that certified midwives and health visitors may certify the condition of an expectant mother. A medical practitioner's certificate of his diagnosis of his patient's complaint is always accepted by the Ministry's advisers without question.

(2) The Food Rationing (Special Diets) Advisory Committee¹ of the Medical Research Council has made certain recommendations which are embodied in the instructions issued to all officers of the Ministry who deal with applications made on medical grounds and as far as is necessary, in the Ministry's pamphlet MED 2 which is issued for the information of all medical practitioners.

(3) These recommendations include (a) a schedule of the classes under which extra supplies of milk and eggs may be authorized by doctors (MED 2, paras 1 and 12) (b) a list of conditions which qualify for extra supplies of certain named rationed and controlled foods (MED 2, para 18), (c) a list of commodities, extra supplies of which are not in the opinion of the advisers, required for the treatment of any complaint (MED 2, para 20), (d) a list of complaints for the treatment of which our advisers have considered and advised against granting applications for extra foods other than milk and eggs, and (e) a list of complaints for which certain extra foods may be granted, either outright or pending the final decision of the advisers.

(4) Local Food Offices are required to adhere generally to these instructions but an overriding instruction requires them to refer to higher authority any case in which a doctor insists

that extra foods are necessary for his patient and cases of any type which have not, to the knowledge of the Food Executive Officer, been considered by the advisers. It is also understood by all concerned that in cases of emergency Food Executive Officers may use their discretion in granting extra foods pending a decision being made.

ROUTINE CASES

(5) The procedure in routine cases is for the form R G 30 or medical certificate to be scrutinized on presentation at the Food Office for obvious clerical errors, illegible signatures, and anomalies such as the classification of a patient for extra milk under class 1 (c) without any classification for extra eggs. Queries of this nature are, as far as possible, dealt with immediately and the wishes of the doctor ascertained. Food Executive Officers are required to maintain an up to date list of medical practitioners in their areas for the purpose of applications on which no questions arise are granted immediately and the necessity for speed in arranging for patients to be able to get their extra supplies has been stressed. An instruction requires Food Executive Officers to arrange delivery of priority supplies of milk by telephone if necessary.

(6) Cases which must be referred to higher authority are forwarded immediately, details being given by telephone if necessary, and, when applicable, extra supplies are granted at once either in accordance with the instructions that have been issued or under the Food Executive Officers' powers of discretion.

SPECIAL CASES

(7) Applications for extra foods, or for extra quantities of foods that are not covered by the advisers' standing recommendations and Ministry instructions are all treated as special cases, in addition to any applications which are specifically made under paragraph 19 of MED 2. Food Executive Officers have no powers of decision and the application must be forwarded without delay to Divisional Food Officers. Divisional Food Officers are not empowered finally to reject any application that is supported by a medical certificate but they are informed both by their experience and by information passed on to them by Headquarters of the requirements and views of the advisers and therefore they ensure as far as possible, by reference back to Food Executive Officers or doctors that applications include all the required information. This procedure does, of course, in practice dispose of a number of applications. Divisional Food Officers instruct Food Executive Officers as may be necessary in the exercise of their discretionary powers.

(8) In general all non-routine cases are received at the Headquarters of the Ministry, where the department concerned is in continuous and close touch with the Ministry's advisers through the Ministry's Scientific Advisers' Department.

(9) Since the appointment of the Food Rationing (Special Diets) Advisory Committee in January, 1940 a number of precedents have been established, both on groups of similar cases which have been individually considered by our advisers and on general rulings that have been given.

(10) Applications which are clearly covered by precedent are therefore promptly granted or rejected or if necessary further information is requested. Any case, however, in which there is the slightest doubt whether an exact precedent has been established, cases in which the applicant is dissatisfied with a previous ruling, and of course, all cases specifically made under paragraph 19 of MED 2, are referred to the Scientific Advisers' Department for special consideration by the Food Rationing (Special Diets) Advisory Committee.

(11) The Food Rationing (Special Diets) Advisory Committee advises the Minister on the best disposal of the limited amount of foods available for invalids. In respect of the above special applications referred to them by the Ministry they advise on the priority to be accorded to each on the basis of the statement of the particular case set out in the medical certificate and of the foods available. Applications from England, Wales and Northern Ireland are sent in the first instance to Prof H P Himsforth in London; applications from Scotland to Prof L S P Davidson in Edinburgh. If the application concerns a matter upon which the Committee has already given general guidance a written statement of the reasons for, or against, granting the particular application is prepared and, if agreed to by another member of the Committee forwarded to

* See "Medical Notes in Parliament" *Journal* Feb 1, p 204.

¹ Sir Edward Mellanby (Chairman), Prof L S P Davidson, Sir Francis Fraser, Lord Horder, Dr R D Lawrence, Prof R A McCance, Dr Norman Smith, Prof J C Spence, Prof H P Himsforth (Secretary), Dr M L Rosenheim (Assistant Secretary).

the Ministry of Food. If the application raises a new point it is referred to the whole Committee, advice on the general principle being, if necessary, obtained from professional bodies, or, in the case of unusual illness, from other persons with expert knowledge.

GENERAL

(12) The necessity for the minimum of delay in making or obtaining a decision on every application and in putting the decision into effect has been repeatedly stressed to all concerned.

(13) The Minister accepts full responsibility for the action which is taken in relation to all applications. In practice the Department always accepts the advice which is given and no officer of the Ministry is permitted to adjudicate on the medical evidence given in any case. This does not prevent them however putting into effect the known views of the Food Rationing (Special Diets) Committee, but the principle which has been followed is that all lay officers who handle applications for extra foods on medical grounds do so essentially in the capacity of a Secretariat for the Ministry's medical advisers.

CORRESPONDENCE BETWEEN SIR EDWARD MELLANBY AND MR STRACHEY

Dear Minister

I am writing to you in my capacity as Chairman of the Food Rationing (Special Diets) Advisory Committee of the Medical Research Council. As you know this Committee was formed seven years ago at the request of the Minister of Health, the Secretary for Scotland and the then Minister of Food, Mr W S Morrison. Since then this same Committee has functioned continuously under successive Ministers—Lord Woolton, Lord Llewellyn, Sir Ben Smith and yourself—and until the last few weeks there have been few complaints directed against this branch of your Ministry's work. I think you will agree that this is a noteworthy achievement considering the onerous and often invidious duties of the Committee and is in marked contrast to experience in the first European war when invalid and other claims were a major difficulty in working food rationing plans and even at one stage threatened to wreck the scheme. When I have reviewed the hard disinterested and very competent service given by its members and in an outstanding degree by its Secretary, Prof Himsforth and also by Prof Davidson in Scotland I could not help feeling surprised at how little their work was known or understood. There can be few instances in which the work of a whole department of a Ministry apart from routine administrative duties has been planned and carried on for so long by an honorary committee entirely outside the Ministerial organization itself.

The Committee has not only advised your Ministry on thousands of individual appeals against the rationing regulations for invalids on appeals from commercial food interests against restrictions on their supplies given authoritative opinions on requests from industrial bodies and trade unions for special consideration undertaken negotiations with professional bodies on behalf of the Ministry, but it has also entirely devised the present system of invalid rationing down even to its administrative details.

I am sure you will appreciate that the members of the Committee being busy and distinguished men are beginning to wonder how long their services will be required. They appreciate of course that no single medical man could undertake the functions which they now discharge as a body and I as their Chairman may perhaps be permitted to add that I know of no other group of men in this country who have either the status or the knowledge to take their place. Realizing these points and knowing that their duties will not continue indefinitely the Committee would no doubt be prepared to continue but they do feel in need of reassurance on two points.

First, the Committee would like to know if you still desire their services. If so they would appreciate a public statement that the Government has confidence in them. Perhaps you might consider it appropriate to make such a statement in the House when you deal with the matter of invalid rationing. It would certainly be appropriate although I realize it might be impracticable if past Ministers of Food were to associate themselves with such an expression of appreciation.

Secondly, the Committee would like to know whether the situation regarding food supplies is still such that you would

wish them to continue on the same strict principles which were necessary under the exigencies of war. Hitherto such has been the food situation that the Committee has had to formulate its advice in accordance with the following general principles:

(a) That extra rations should only be granted to invalids on the grounds of proven therapeutic necessity,

(b) that extra rations could not be spared for comforts,

(c) that in deciding between competing claims for the limited supplies of food preference should be given to those categories of invalids who are capable of being restored to health or preserved by means of diet, as active workers,

(d) that extra rations should not be granted on vague general grounds, such as debility or general ill health but only when there were precise indications that certain foods were specifically necessary for the patient's treatment,

(e) that only in exceptional cases could the Committee advise you to exercise your prerogative of granting compassionate rations.

These are hard principles, and the members of my Committee, while appreciating their necessity have disliked applying them. As physicians they know that, although the extra rations desired by the patient may be of little or no material benefit to him, the refusal of such rations may cause very real psychological distress. But because of the food supply situation they have had no option in such cases but to advise refusal. Are they to understand that if you still desire their services the food situation is still such that it is necessary for them to continue to be guided by the same strict principles?

Yours sincerely,

E MELLANBY

Jan 9

Dear Sir Edward Mellanby,

Thank you for your letter of Jan 9, to which I hasten to reply.

Let me say at once that I value intensely the work of yourself and your colleagues of the Food Rationing (Special Diets) Advisory Committee of the Medical Research Council. I do not see how any Minister of Food could carry on the medical side of food rationing without the help of such a body. As you say it is a unique but exceedingly valuable feature of the present arrangement that an independent honorary committee entirely outside the Ministerial organization itself is responsible for this side of our work. I also agree with you that the present membership of the Committee is authoritative and eminently fitted to perform its duties. I welcome the opportunity to make these views public, which will be given me by a Question put down by Sir Ernest Graham-Little which I shall be answering in the House of Commons next Wednesday, Jan 22. I need hardly tell you that I do desire the continued co-operation and assistance of the Committee. I realize the arduous and self-sacrificing work which it has performed but I must appeal to the Committee to continue to perform its functions while our food difficulties continue.

Finally I come to the points raised by you as to whether some relaxation of the very stringent principles under which the Committee works might not now be permitted. Unfortunately the food situation especially in regard to the particular foodstuffs which I take it are most often recommended such as butter, eggs and meat has not yet improved. In all the circumstances I am inclined to think that we cannot yet make any marked changes in the terms of reference of your Committee. On the other hand I do think that when your Committee sits in what I might term its function as a Court of Appeal against its own regulations as applied by my Divisional Food Officers it might now begin to take a more lenient view of individual applications and I would trust that such a relaxation would help your Committee in its arduous and often unpleasant work.

It is of course still vitally important to prevent a general relaxation in the granting of extra foodstuffs to patients such as did tend to occur this autumn in the case of milk. It would undermine our entire rationing system if it became possible to obtain say double the normal milk ration by means of a complaint to a general practitioner about feeling over-tired or other undefined symptoms.

Yours sincerely

JOHN STRACHEY

Jan 14

Correspondence

Medical Education under the Act

SIR—Among other matters to be discussed with the Minister of Health about the new Health Service should be the payment of medical education for future doctors. It is generally admitted that the sons and daughters of doctors are peculiarly fitted to follow their parents' profession. It is anticipated that there will be a general reduction in the income of general practitioners, and there will also be a loss of capital associated with the buying and selling of practices. It is already a great financial strain on a doctor to educate his children at a university, and unless the Government is prepared at this stage to express the intention of financing the medical education of suitable entrants there will be a great reluctance on the part of the general practitioner to enter the new Service.

There is no suggestion that such grants should be limited to the children of doctors, but open to all suitable candidates. It might be argued that the already expressed policy of the Minister of Education to grant aid where necessary for university education for all purposes will include medical education. This county (Denbigh) has not shown any evidence of its intention to implement the scheme, whereas Glamorgan gives generous grants. Unless these grants are universal there will be difficulty in obtaining doctors to practise in areas where educational facilities are poor.—We are, etc,

TREVOR HUGHES
ENID HUGHES

Ruthin Denbighshire

National Health Service Act

SIR—With the National Health Service looming ahead and the uncertainty throughout the whole profession, it appears a small matter that the Association in the years which lie behind us has interested itself so little in the financial welfare of the country practitioner, particularly such as labour in sparsely populated districts. Here twenty visits may be a hard day's work to visit one panel patient may be half a day's work.

The National Health Insurance pays about £50 mileage for about 500 patients scattered over the hillsides and along broken cart roads, and for dressings, drugs, and dispensing about £60. To such as us the National Health Service can offer nothing worse financially than we already have. Could anyone be surprised if we voted for it? Yet since we elected to labour in the front line of civil practice, with rattling, broken down cars and draughty servantless houses in remote country districts our values must differ from those of the town practitioners. Perhaps we value freedom more highly and when we voted against the National Health Service it was not because of fear of financial loss but because we dreaded to be enmeshed in a colossal Government machine.—I am, etc,

Haydon Bridge Northumberland

RICHARD BELL

SIR—Let us beware before it is too late. We are indeed faced at this very moment with a veritable "medical Munich," which some of your correspondents in the *Journal* of Jan 25 so rightly fear. The Council's resolution of Jan 15 is the first sign of weakening—it is the thin end of the wedge, the Council should adhere to its previous resolution of Dec 11. If we give in now we are lost, when if only the profession would unite, we could so easily win.

We have been accused by the Press of flouting the Government. Surely it is our bounden duty to flout the Government if we think they are guilty of perpetrating evil. Perhaps if more people had flouted the Government and listened to one of our greatest statesmen in the thirties we might have avoided this last war. Many newspapers seem to think it is our duty to collaborate with the Government at all costs yet it was this same Press who suppressed or changed the communications of our foreign correspondents in Berlin before the war, who were trying their hardest to enlighten the people of this country how vigorously the Germans were preparing for war. Are we again to be ruled or swayed by the self-same Press?

The three Presidents of the Royal Colleges have written to Mr Aneurin Bevan. Why, one may ask, did they do this?

Had they a mandate from the profession to do so? Are they not going behind the back of the B.M.A., who have a mandate from the profession and who have decided their policy? They say that a refusal to negotiate may lead to an impasse and they wish to do what they can to prevent such an impasse arising. Sure, those who voted "No" earnestly desire that an impasse should arise, otherwise nothing can change the main provisions of the Act.

Mr Bevan says the Act is law and "within its terms I can negotiate freely." What does this mean? It means that he will not and cannot alter the main provisions of the Act. That is to say he will not and cannot allow the buying and selling of practices. No amount of negotiation can change this. Once we have sold our practices to the Government we become Civil Servants. Why should £66 million of the taxpayers' money be spent on buying up practices in order to abolish the freedom of the doctor without any obvious advantage to the community? Would it not be better to spend this money on research into cancer and tuberculosis and other terrible diseases? All Governments have been niggardly in their grants to research.

Many thinking people are looking to the medical profession to stop this national deterioration that is ensuing from the Government's policy of nationalization at all costs. If we remain united with firm resolve we can do this, as Mr Bevan says no National Health Service Act can function without the full co-operation of the doctors. Mr Bevan has stated his terms. Let us state plainly our terms. We will negotiate with Mr Bevan, nay, we will welcome negotiations with Mr Bevan when, and not until, he abolishes the "five impossible clauses" so aptly named in the *Journal* (Jan 18, p 110) by Dr A. H. Moore—namely (1) Basic salary (2) Refusal to allow an appeal against the Minister's decision in case of dismissal (3) The direction of doctors (4) The most important the refusal to allow the buying and selling of practices (5) The penal clauses—I am, etc,

Mansfield Notts

HUGH TATE

** The day after this letter was written the Representative Body passed the Council's second recommendation.—Ep B.M.J.

The Act and Freedom

SIR—May I say how fully I endorse all Dr Sybil Tremellen says in her letter (Jan 25, p 156)? Is anyone so simple as to imagine that this Government is so concerned about the health of the nation that at all costs this Health Act must be forced upon the country? The health of the country is extraordinarily good considering the privations and hardships we are still subject to. That there is a shortage of hospitals, beds and of staff is well known, but that is the result of the war and labour shortage and has nothing directly to do with the medical profession. No, the real reason is the Government's determination to nationalize the whole country, including the medical profession.

An alarming aspect of the whole thing is the way the trade unions are getting, if they have not already got, control of the Government and this must surely make medical men pause to consider whether they are prepared to place their professional honour and duty to their patients in the power and under the direction of trade union bosses. Anyone who will take the trouble to read K. G. W. Ludecke's book, *I Knew Hitler* will observe the same sinister influences at work—at first, smug benevolence and frothy promises, and then, once the sheep within the fold the whip and curb chain. It is not too late to avoid this tragedy, but we must act together and not waver or compromise over our essential points.—I am, etc,

Burwash Sussex

HOWARD M. STRATFORD

The Plebiscite

SIR—Current professional feeling appears to be a mixture of frustration over the result of the recent plebiscite and hope that in the remaining time before the N.H.S. Act comes into force we may yet see some important modifications. The latter hope however slender, must lead us to an examination of the cause of our failure to express any united opinion in the result of the plebiscite. Undoubtedly this was due in part to the particular form it took, but after a couple of years

working up to the enormous majorities in favour of B.M.A. policy that were obtained at the central meetings it must have been a profound disappointment to many that the profession as a whole did not come forward with the same united endorsement of official policy that it had just given previously to the N.H.I. representatives.

Both in the Government Act and in the B.M.A. "Principles" it is clearly recognized that participation in the future Medical Service is left to the choice of the individual doctor. It therefore follows that both Government and B.M.A. are prepared to leave the final effect of their respective policies to be expressed by the independent decision of each doctor to enter or refrain from joining the Service. That being so a *bloc* of strong united support for any particular policy could only be obtained by the greatest possible decentralization and it was obvious that whereas the Government might hope to achieve final acceptance of their Act without any very large initial acceptance of it by the profession effective opposition could not succeed without a large and firmly united majority. The first step was therefore to ascertain what was the opinion of members of the profession on all important matters relating to the reform of the medical service. For this purpose was issued the now almost forgotten questionnaire. On that should have been founded the official B.M.A. policy. Possibly a further referendum would have been necessary at a later stage, but by such democratic method with a little give and take on all sides there could have been built up a large and united majority which knew for what it fought and loved what it knew. That preliminary reconnaissance was a lot of use to successive Ministers of Health but the pundits of the B.M.A. forsook these democratic beginnings and started what I referred to at the time as a rearranged action by the old guard in a gradual retreat from the *status quo*. Rightly or wrongly an enormously wide front had to be defended when both sides knew that the main body on the B.M.A. side would not be prepared to defend the whole position when it came to the final showdown. By yielding a little ground to the old Conservative regime a tolerable peace might have been signed but that opportunity was lost.

The final phase saw almost unanimous resolutions at B.M.A. meetings in favour of "Principles," which still covered an immense area of opposition to the Government. There was an appearance of democracy but some of us knew only too well that in fact all the support and impetus were centrally generated and that there was still in existence no more reliable index of the reactions of a large part of the profession than was provided by dusty copies of the *Journal* report of the questionnaire. Those who felt that professional and public support should and could be consolidated round the one important issue of ministerial control were swamped at meetings or even jettisoned until the illusion of a united opposition to a number of well known controversial clauses in the Act seemed complete. Knowing that the balance still lay in the hands of a majority whose voice had not been heard since the questionnaire the Government ignored B.M.A. opposition. It must be said that the B.M.A. should not have lost touch with or gone ahead of the rank and file but let it not be forgotten that if a large proportion of the profession was not consulted between the questionnaire and the plebiscite all who failed to come and reveal divergent views and elect their representatives at local meetings must share the responsibility for the creation of this fool's paradise. We might have respected them more if they had forever held their peace instead of breaking silence with their "Yeses" at the plebiscite. All cries and pleadings for unity were in vain because the rallying point was not a natural focus derived and synthesized from the lowest common denominators. In a regime where policy can be carried through as well as formulated by a well supported central junta the B.M.A. which have effected nothing less than a *coup d'etat* B.M.A. whatever may be said for the broad front on which the B.M.A. have stood could never have been effective in a democratic regime until it had so to speak "come to the common front" generally when it had to represent a large number of centres whose own initiative would take them no further than opposition to anything the name "Yes" at the ballot. However, that once "Yes" multiplied comes with it the power of any wholehearted resolutions passed unopposed by a large majority. I can also be the last word when

it comes to voting whether the profession is going into this new Medical Service.

This cannot make pleasant reading to many who have hitherto just looked upward instead of around them, but unless we recognize our weakness we cannot find our strength. Most people can now discern that our true rallying point is round the banner of our freedom. We need not lose that with such rights as the buying and selling of practices. But whatever we lose, if we forgo our own control and administration little else can be retained in the long run. It may be too late but still the only practical course is to go back to the rank and file of the profession and later to the man in the street. A referendum will undoubtedly uncover the real state of affairs in relation to much of our pseudo-united front, but it should also reveal the fundamental basis on which we can unite. We cannot avoid a final showdown and a little anticipation should enable us to formulate some positive amendment of the present Act. If the B.M.A. could not accept the result of the recent plebiscite as a mandate to negotiate with Mr. Bevan are we at present in a position to show Mr. Bevan any valid democratic reason for believing that he has a mandate to tinker with an Act of Parliament that has just passed through both Houses of Parliament? Certainly not. But such a mandate might even yet be forthcoming if we enlisted our democratic power and abandoned methods unsuited to the manner in which all institutions are set up and maintained in this country—I am, etc.,

Eye Suffolk

J. SHACKLETON BAILEY

* This letter was written before the meeting of the Representative Body on Jan. 28.—ED. B.M.J.

An Eighty-four-hour Week

SIR—There is one clause in the Act to which general practitioners should take great exception and that is the one wherein it is stated they will be responsible for all patients at all times. It is generally agreed that there will be a great increase of work, particularly with infants and old people. It is neither in the interests of the patients nor the doctors for the latter to be on duty 168 hours per week and, further, if a doctor contracts to be so responsible he will be unable to fulfil his contract. Who will take his calls when he is out? Domestic servants are scarce and will get scarcer as the years go by. The wives of doctors have enough to do already with their ordinary household duties.

I therefore suggest an 84-hour week. The G.P. will be on duty 7 a.m. to 7 p.m. every day of the week and a night service could be run in each district. With London in mind doctors who could do night duty only could be stationed at the local town hall or any similar convenient building and would receive urgent calls between the hours of 7 p.m. and 7 a.m. I reckon that two doctors and two cars could manage for every 100 doctors in the area. The telephone number could be made popular—say 111 for all districts like 999 except that each district would have its code letters in front of the number. The doctors doing night duty would be young doctors who had done a six-months house job and would then do six months' night duty. The benefit to the general practitioner of twelve hours undisturbed cannot be overstressed.

Finally we have the Press and public against us—Conservative Liberal and Labour—because people have not the imagination to picture a G.P.'s life but when those people, mostly working 40–48 hours per week, read a headline that doctors are demanding an 84-hour week they will appreciate our position and be with us. I have tried this suggestion on several of my patients and have been very gratified at their reactions—I am, etc.,

London S.W. 6

G. ROSEMONT

Food Utensil Bacteriology

SIR—I was most interested in the article on "Food Utensil Bacteriology" by Dr. Irene Hutchinson (Jan. 25 p. 134) as I have felt for a long time that British hygiene standards are very poor. It would be most enlightening to have similar statistics of other countries—say America, Canada and the Scandinavian countries—as a comparison. Surely the public health authorities could do something about the sanit-

arrangements of all feeding places? Why wait for outbreaks of diarrhoea etc., before taking action?

I note that Dr Hutchinson refers to the fact that "no washing facilities were available either within or immediately adjacent to the sanitary convenience." Surely a wash bowl is essential in any sanitary convenience. In many private houses there even seems to be a social snobbery to have a w.c. and a separate bathroom and wash-bowl. I would maintain a wash-bowl essential in a lavatory—separate bathroom if you like. An architect recently discussed a house plan with me in which there was to be a downstairs lavatory and bowl, and even he said, "A bowl downstairs would be regarded as unnecessary, as there was ample accommodation upstairs." What can we do when even our architects feel like that?

As for the lack of soaps, soda and washing cloths, etc., it would seem false economy and the usual incoordination between bureaucratic departments, public health, and Board of Trade or Supply. A further plea on a different line—fuel. Every house has at least one fire inefficiently heating one room whereas with well-designed central heating that one fire burning even poor quality fuel would heat the whole house. An American lady recently said to me she was always constipated in England as our bathrooms and lavatories were so cold that she could not bear to stay in long enough. Is any further comment necessary?—I am, etc.,

Tintagel Cornwall

W LAWSON

Measles and Reconstituted Dried Plasma

SIR—In view of the present epidemic of measles the following case may be of interest to your readers. Four cases of measles were reported on the children's ward of this hospital early in January, and although efforts were made to obtain immunizing serum, these were unsuccessful. It was decided to use reconstituted dried plasma as a method of producing immunity among the remaining children who had not had measles.

Master A., aged 5 years, received 10 ml of double strength reconstituted plasma intravenously one day after exposure to infection. On the tenth day after exposure he had a temperature of 99° F (37.2° C), but was otherwise quite well. Two days after this a Koplik spot was observed and he had a few maculopapules, typical of measles developing fourteen days after exposure. The temperature rose at its highest to 99.6° F (37.5° C). There was no conjunctivitis, cough, or vomiting and the child scarcely felt unwell. An uninterrupted recovery was made.—I am, etc.,

London W 13

R P ARONSON

Haemoglobin Concentration in Lobar Pneumonia

SIR—The article on the "Changes in Haemoglobin Concentration in the Acute Stage of Lobar Pneumonia" (Jan 25, p 131), in which Dr Margaret S Ferguson states that there is no evidence of haemoconcentration in lobar pneumonia, recalls a similar observation made from a different aspect. A few years ago when in hospital we were presented with a case which was either an early lobar pneumonia or an acute abdomen. The haemoglobin was taken and found to be normal. This one would expect to be raised in an acute abdomen and we therefore concluded that we were dealing with pneumonia. The progress of the disease confirmed this diagnosis.

For the next six months the haemoglobin was taken in all cases of lobar pneumonia admitted, and each time was found to be approximately normal. The differential diagnosis of an early pneumonia and an acute abdomen can at times be very puzzling and it is suggested that the simple measure of taking a haemoglobin might be of great assistance.—I am, etc.,

Bradford Yorks

R P MATTOCK

Endocrines in Gynaecology

SIR—The brilliant researches which have led to the isolation of the ovarian hormones and the means of accurately assessing their action are in danger of bringing clinical endocrinology too much into the foreground at the expense of the equally (if not more) important nervous mechanism of control of sexual physiology. So long as conditions are normal Nature leaves

the routine working of the systems which have hormone control to that chemical mechanism. When conditions are abnormal this is far from being the case. In times of great anxiety and stress the nervous controlling mechanism takes precedence over the more slowly acting chemical one, and this action can be instantaneous. Conditions of total war afforded many examples. Frequently the sudden fright of aerial bombardment did cause the menstrual process actually in evidence to cease instantaneously, the nervous tension and anxiety attaching to expected raids did induce the most profound metropathia—to mention the most obvious examples. No gynaecologist would think of attributing these dramatic happenings to abnormal hormone action nor of treating them with hormones.

In civil life the stimuli which affect the autonomic system are less dramatic than those of total warfare and their form is different, they are none the less real and their action is comparable. Those who declare that endocrine therapy is unsatisfactory in the management of the metropathias and the secondary amenorrhoeas should indicate what proportion of their cases are being subjected to this line out of the total number of cases seen. Without this information it is difficult to assess the real value of treatment given—I am, etc.,

Stanmore Middlesex

EVERARD WILLIAMS

SIR—The leader writer (Jan 18, p 96) and Mr Aleck Bourne (p 79) seem to misunderstand the nature of the disease entity metropathia haemorrhagica. This has been isolated from the mix-up of functional bleeding and can be successfully treated by rhythmic substitution therapy with progesterone. The size of the dose and the fact that it may require to be continued for years are irrelevant to the principle of treatment, which is familiar enough in myxoedema and diabetes mellitus.—I am, etc.,

London W 1

DONALD FRASER

Gynaecomastia

SIR—I am surprised to see the recommendation in the annotation under the above heading (Jan 25, p 144) that a surgical removal of the breast tissue should be undertaken in cases of gynaecomastia. During the course of a somewhat long surgical career I have come across many cases of this troublesome little disorder generally in males but occasionally in females, occurring before the true development of adolescence. In every case the condition has settled down after a few months, and a few words of explanation and encouragement are sufficient to allay any worry or anxiety on the part of the patient. I have likewise come across several cases where the small but very mutilating operation of excision has been performed on males and even more unfortunately on females. The operation is wholly unnecessary and should never be undertaken.—I am, etc.,

York

GERALD S HUGHES

SIR—In the annotation on gynaecomastia (Jan 25, p 144) no reference is made to what is perhaps the commonest cause of this condition—leprosy. In the lepromatous or more severe type of leprosy gynaecomastia is a comparatively common complication and the breasts, which are generally both enlarged, may reach considerable size. The cause is supposed to be associated with the destruction of the testicles—a not uncommon occurrence in leprosy. In the most striking case I have seen, in which both breasts were larger than those of a pregnant multipara and were very painful and congested, the administration of thyroid extract gave rapid and complete relief the breasts shrinking to about one third the size in a few days.—I am, etc.,

London S W 1

E MURK

Curare

SIR—With reference to Dr Massey Dawkins's letter (Jan 18, p 111) in which he states that curare has three disadvantages in the opinion of the nursing profession—namely patients are more shocked there is more respiratory depression for a longer period and there is a risk of post operative paralytic ileus—I beg to disagree. In my experience patients are less shocked when using curare and first-plane or second plane cyclopropane



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Luckily, now that our own trawlers have the job in hand again, there is plenty of British cod liver oil for all who need it. There is no shortage of SevenSeaS liquid oil or capsules, and the transport difficulties which sometimes delayed deliveries are straightening out. Obviously the general food rationing situation will be difficult for many months yet. But we hope that the burdens it imposes on doctors and nurses will be somewhat lessened, now that it is possible for anyone to buy this supplementary food from the nearest chemist.

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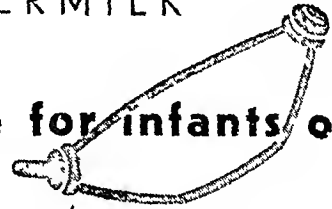
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anaesthesia It has also been the experience of all our ward sisters that patients come round more rapidly and are brighter and thus give rise to far less anxiety to the nursing staff, who welcome the administration of curare for this very reason. As a matter of interest I should like to quote from an article which appeared in *Current Researches in Anaesthesia and Analgesia* March-April, 1946, by Harold R. Griffith who has used curare since 1942: "A judicious use of curare does not seem to increase the hazard of a patient in shock or suffering from haemorrhage, in fact it seems safer to obtain relaxation in this way than to use a toxic anaesthetic agent."

I do not doubt that curare can cause marked respiratory depression. We even know that it can cause respiratory arrest. The point, however, is that this state occurs five minutes after intravenous injection of curare and that even with complete respiratory arrest automatic breathing is resumed within eight minutes. In my own series of over 100 cases I have seen complete respiratory arrest in 5, and each time automatic breathing was resumed in less than five minutes. Controlled breathing was of course performed and there were no after effects in any of these patients. It is therefore obvious that there will be no sign of respiratory depression by the time the patient reaches the ward—usually half an hour or more after the curare has been administered. By that time of course the patient has resumed normal breathing, and furthermore curare is eliminated by the liver and the kidneys within thirty minutes.

The third point in Dr. Massey Dawkins's letter is the occurrence of paralytic ileus. Now, I have personally seen a patient suffering from this condition which came on four days after my anaesthetic of 'pentothal,' cyclopropane, and curare for an abdominal operation. The question of curare being the cause was raised at the time, as is perhaps natural with any fairly new drug. Personally I can see no connexion, nor can I find any mention of this complication in the extensive literature on curare. It is also difficult to see how curare, which is excreted within thirty minutes or so, can possibly cause paralytic ileus four days after the anaesthetic. The only peripheral action of curare apart from its effect on skeletal muscles is a block of the synaptic transmission between preganglionic and postganglionic fibres of the sympathetic nervous system. This would mean constriction of the intestine and active peristalsis, which are certainly not consistent with paralytic ileus—I am etc.,

Chiddingfold Surrey

H. KAHLENBERG

Histology of the Common Cold: An Appeal

SIR—Apart from the work of Hilding (*Arch. Otolaryng.* Chicago, 1930, 12, 133) we have found no references to careful studies of the histological changes produced in man by the common cold virus. Further information about such changes would be of great value in the studies of this disease now being conducted here. Many people are killed in accidents or die acutely from other causes, many people have common colds, especially at this time of year, there must therefore be many who die acutely in the early stages of a cold.

We should be very grateful to any pathologist who could let us have small pieces of nasal mucous membrane from cases of accidental or other acute death where it was known that the subject was in the first week of a cold. Material should be placed in saturated corrosive sublimate solution containing 10% of formalin (40% formaldehyde), and sent to this address. One of us would also be glad to attend personally a necropsy on such a subject, should it be taking place in the London area—We are etc.,

National Institute for Medical Research
Hampstead London NW 3

C. H. ANDREWS
J. S. F. NIVEN

Applications for Special Diets

SIR—In the debate on "Applications for Special Diets," reported in the *Journal* of Feb. 1 (p. 204) Mr. Strachey declared that the Advisory Committee named by him acted as a "court of appeal" to which all disputed cases were individually referred. He thought that its meetings were held weekly and business required and gave an assurance that the average time taken by the committee to decide appeals was nine days.

In an answer a week later (*Hansard* Jan. 29) he said the committee had met twice in the last six months and full meetings are held only when revisions of the schedule are called for. Applications in disputed cases are not dealt with by the committee as a whole but by the secretary, who sends them to the members he thinks most suitable to deal with the particular case. The impressive "court of appeal" is thus whittled down to the exercise of the discretion of the secretary and it is on this authority that the Minister overrules from Whitehall the treatment prescribed by doctors in actual charge of the patients concerned—I am, etc.,

House of Commons

E. GRAHAM-LITTLE

The Food Ration

SIR—With the issue to the fore of the overruling of doctors' recommendations of rationed foods to patients, is it not also more than time that we made our professional voices heard regarding the inadequate rations of good protein and fat? We need no longer be deceived by official statements of world food shortages or by misleading statistics of the quantities of food we consume. Ministers themselves more than hint that rationing is now continued mainly for financial reasons, as such it is the implementation of a policy of suppression and bureaucratic control. Can we honestly deny that physical and mental health would be improved by more liberal allowances of milk, cream, butter, cheese, eggs, and fresh meat and can we reasonably escape the conclusion that the continuation of this low and monotonous level of subsistence, accepted inevitably and even cheerfully during wartime, is contributing in no small measure to the chronic ill-health, frustration, and idleness so prevalent to day?

Patients themselves are aware of this and appeal to the doctor for his verdict on the adequacy of their diet. I submit, Sir, that we should not hesitate to express our considered opinion to patients on this matter, also pointing out in those cases where we would wish to augment diet to assist recovery exactly how and where our hands are tied. Our critical opinion voiced persistently by as many of us who are agreed on this matter, in which the public is so profoundly interested, must surely hasten the loosening of at least this crippling stranglehold on our liberty—I am, etc.,

Kingston Hill Surrey

KENNETH O. A. VICKERY

WAR OFFICE DEMAND FOR JUNIOR OPHTHALMOLOGISTS

The Central Medical War Committee is informed that, because of the shortage of ophthalmologists available for military service, the War Office is prepared to employ as trainee ophthalmologists, with a view to early grading as graded specialists a number of men who, although not at present of graded specialist status, have held resident appointments for not less than six months in ophthalmic hospitals or ophthalmic departments of general hospitals in the United Kingdom, and are recommended by the ophthalmologists under whom they have worked as being competent to deal with errors of refraction, to perform minor operations of the eye and to treat the common diseases of the eye. A large part of the ophthalmic work in the Army falls under these headings, and if men with the limited experience referred to were available to deal with such work, the cases requiring the attention of a fully trained ophthalmic specialist could be concentrated at special centres in the home and overseas commands, greater economy in the use of the specialist officers would thus be effected.

The Central Medical War Committee is now considering the recruitment of young practitioners whose experience in ophthalmology is such as to satisfy the Army's requirements as stated above. It invites applications from practitioners who will shortly complete junior resident appointments in eye hospitals or eye departments and who would like to undertake their military service at this stage as trainee ophthalmologists. Communications should be addressed to the Secretary of the Committee, B.M.A. House, Tavistock Square, London W.C.1.

Obituary

BERNARD T ZWAR, CMG, MD, MS, FRACS

Mr Bernard T Zwar died at his home in Malvern, Victoria, on Jan 16 at the age of 70. Bernard Zwar was born in Adelaide on June 20, 1876, and was educated at Prince Alfred College. He began his medical course in the University of Adelaide, but owing to difficulties at the hospital there about 1897 the students migrated to other universities. Melbourne benefited by the acquisition of Bernard Zwar and Julian Smith, and Sydney by that of Charles Blackburn. These three men were to attain eminence in their chosen professions—Bernard Zwar and Julian Smith as surgeons and Charles Blackburn as a physician.

When he graduated in 1900 Zwar became senior resident surgeon at the Melbourne Hospital, later to become the Royal Melbourne Hospital. He was then, for three years, medical superintendent at the Austin Hospital, where many of the patients were suffering from advanced tuberculosis and malignant disease. He proceeded MD in 1902, and took the MS in 1908 the year in which he was appointed honorary surgeon at St Vincent's Hospital remaining on the staff there until 1911. In 1912 he was appointed honorary surgeon in charge of out-patients at the Melbourne Hospital, where he had been a student and with which he was to be intimately associated for the rest of his life. He remained on the honorary staff of the hospital until 1935, when he was appointed consultant surgeon. In 1937 he became president of the Board of Managers of the Royal Melbourne Hospital and chairman of the Board of the Walter and Eliza Hall Institute.

Zwar served in the Great War of 1914-18 with the rank of major A.A.M.C., as a surgeon in the 2nd Australian Stationary Hospital, and later in the 2nd Australian General Hospital. In 1916 he married Miss Essy Craig and so began the very successful partnership which ended only with his death. Their only son, John, has adopted surgery as his chosen profession and served in the recent war. Zwar was also very closely associated with the University of Melbourne. He was Stewart Lecturer in Surgery from 1924-35, and thereafter became a member of the council of the university, and ultimately Deputy Chancellor in 1943. He was for a long time a member of the Medical Board of Victoria and he took an active part in the formation of the Royal Australasian College of Surgeons, becoming a Foundation Fellow in 1927. In 1929 he was president of the Victoria Branch of the British Medical Association. At the Fourth and at the Fifth Australasian Medical Congresses he was vice-president of the section of surgery.

Dr C H Kellaway writes: My friendship with Zwar dates back to 1912 when I was a resident, and later registrar, at the Melbourne Hospital. Zwar was associated with Mr Moore in private practice and had just become an honorary out-patient surgeon at the hospital. During the time I was in residence he did a great deal of the emergency surgery there. He was a fine surgeon with a first class knowledge of anatomy, and his aseptic technique, in the days when there were some surgeons who had occasional lapses, was beyond reproach. In surgery requiring dissection he was especially skilful. This art he had learnt from Mr Moore—known to us all as Jerry just as Zwar was always known to and addressed by his intimates as 'Z'. He was a splendid teacher and was very good to his young house surgeons whom he would take out to play tennis or to the country in his car at the week-ends.

As a member of the University Council Zwar brought his accurate knowledge of past events his clear and unbiased judgment and his skill in debate fully into play. As president of the hospital he was also chairman of the Board of the Walter and Eliza Hall Institute, and contributed much to developing the Institute and securing its closest possible relationship to the university. His efforts in this direction resulted in the Director of the Institute becoming professor of epidemiology in the university with a university research department within the Institute.

One of the most impressive things about Zwar was his accurate and detailed knowledge of the local history of the profession

of his own hospital of the medical school, and of the university. Among his many activities the work that Zwar did for the Royal Melbourne Hospital stands pre-eminent for he devoted many years of his life to getting the hospital moved from its cramped quarters in the city in Lonsdale Street to the spacious new site in Sydney Road adjacent to the university. This project had many vicissitudes and much opposition and without Zwar's energetic championship it is doubtful whether it would ever have been achieved. Through his personal effort and the enthusiasm he inspired in others he was instrumental in raising a considerable part of the money needed. Much of his time in the last years of his life was spent in hospital and university affairs. As president of the Board of Management of the hospital he saw the new buildings go up the main buildings being finished in time to house the 4th U.S. General Hospital in April, 1942. Finally towards the end of the war and after many delays, Zwar had the crowning satisfaction of seeing completed the removal of the staff and patients from the old hospital to the new. For his work for the Royal Melbourne Hospital and for the community Zwar was appointed CMG in 1941.

It was not surprising that Zwar had many friends. He always enjoyed a joke, even a practical one upon occasions. His robust optimism and unfailing cheerfulness had a stimulating influence on patients and friends alike. He was always full of energy and threw himself with characteristic vigour into his outdoor hobbies walking, golf, and gardening, and, even when over 60, he still played a skilful game of tennis in good company. Although he was a sick man for many months before his death, knowing full well the outcome, he continued to write to his friends cheerful letters full of interest in their doings and with never a reference to his own illness. Zwar would have been a leader in any profession or in any circle by reason of his personality, his ability, his forthright honesty and sincerity, and his determination to be satisfied with nothing less than the best.

Dr FRANCIS ROBERT BRYANT BISSHOPP died on Dec 26 at the age of 87, at Tunbridge Wells Hospital after an operation. Dr Bisshopp took the Cambridge MA in 1887, and after a year at Guy's Hospital qualified MB BCh. He proceeded MD in 1892, and was awarded the MRCP in 1901. Dr Bisshopp had been in retirement for some years. He was latterly consultant physician and had been senior physician at the Tunbridge Wells Counties and General Hospital. He was also consulting physician to the Tunbridge Infirmary. A Fellow of the Royal Society of Medicine and of the Medical Society of London, he had been president of the Kent Branch of the British Medical Association in 1927-8. Dr Bisshopp was a resident at Guy's Hospital after qualifying and held successively the posts of resident physician, house-surgeon and resident obstetric physician. He was a quiet and reserved man, but he always continued his association with a few of his earlier contemporaries.

Dr ROBERT VACHELL DE ACTON REDWOOD died on Jan 3 at Crickhowell, Breconshire at the age of 67. He was born into a Unitarian home at Rhymney, and ultimately became chief surgeon to the Rhymney Medical Aid Society, a position which his father and grandfather had held previously as surgeons to the iron and steel works before they were closed down in 1899. The three succeeding generations had held the post of chief surgeon at Rhymney for a period of 142 years, but the family succession to the practice is now broken. Dr Redwood married a Yorkshire lady, a Miss North who survives him. He was trained at the Welsh National School of Medicine at Cardiff and at St Mary's Hospital and after taking the conjoint diploma in 1903 he went to Edinburgh, where he obtained the Fellowship of the Royal College of Surgeons. He had intended practising as a consultant surgeon in ear, nose and throat work, but settled finally in Monmouthshire practising as general surgeon. He was also medical officer of health to the Rhymney Urban District Council and district medical officer under the Monmouthshire Social Welfare Committee. He was a good sportsman, an accurate shot and a fine cricketer played for Monmouthshire in the Minor Counties Tourney, but of recent years he had to take things easily owing to arthritic trouble. The inhabitants of Rhymney and its neighbours have lost a greatly respected friend and one whose memory will be cherished for years to come, for he was gifted with the personal charm and grace of manner which give the balance of life and to the happy relationship between doctor and

He had been a member of the British Medical Association for over forty years surgeon to the Rhymney hospital for even longer, and he was also the St John's Ambulance divisional surgeon for Monmouthshire

Dr ALFRED HAYES SMITH died at a Bradford nursing home on Jan 6 at the age of 63. Dr Smith qualified M.B. B.Ch., B.A.O. in 1908, and he returned to Dublin to take an M.D. in 1939. He served as a captain in the R.A.M.C. in the 1914-18 war, and apart from this interruption most of his professional life was spent in Bradford. He was honorary physician to the Bradford Children's Hospital and had been honorary secretary of the Section of Diseases of Children at the annual meeting of the British Medical Association in 1924. He had published a number of papers on acquired anaemia in childhood, acute aplastic anaemia, and hereditary telangiectasia. He was a staunch supporter of the Conservative Party and of the Society of Individualists, helping to found the Bradford branch of that society in 1944. Perhaps his last published address was given on behalf of the Society of Individualists and the National League for Freedom to a meeting of the Cleckheaton Rotary Club. Dr Smith put forward a vigorous defence of the moral and spiritual quality of a free medical profession as against any form of State medicine. He was a confirmed opponent of the "closed shop" and of the present National Health Service Act.

Dr W. Sampson Handley writes: Dr Hayes Smith had been a friend of mine for many years. He was a passionate idealist and an individualist. After the death in action in North Africa of his only son, a schoolboy when the war broke out, Hayes Smith found solace for his grief in a determined campaign to enlist public opinion in favour of medical freedom and in opposition to the shackles of State medicine. On Dec 16 last he was assisting at an operation when the patient stopped breathing. Hayes Smith continued artificial respiration unceasingly for three hours until the patient revived. The exertion was too much for him. Subsequently he suffered from increasing precordial pain and an electrocardiogram on Dec 21 indicated coronary thrombosis. After a temporary improvement under treatment he died in his sleep on Jan 6. His life and his death too illustrated the selfless devotion to the interests of his patients which characterized the man.

Dr ALEXANDER ROSE of South Norwood, London, died in Edinburgh on Jan 12. Born in Scotland, he qualified M.B., C.M. at Aberdeen in 1889 and took his M.D. in 1906. He started in general practice in South Norwood in 1891, after acting as registrar at the Central London Throat and Ear Hospital. For nearly fifty-five years he conducted a large practice with amazing energy. In 1939 he had intended retiring but decided to play his part in the war effort. His two partners were called up for service with the armed Forces, and so the latter years of practice put a heavy strain on a man of his years. In 1914-18 Dr Rose worked at the emergency hospital at the Davidson Road Schools. During the recent war he was one of the first local doctors to be attached to the ARP organization in South Norwood. His charming personality and fund of Scottish humour combined with his high standard of professional skill to bring him a wide circle of friends who held him in high esteem and affection. As a relaxation from his work his interests lay in B.M.A. work, bridge and chess. He joined the British Medical Association in 1910 and was a member of the executive committee for many years and chairman of the Division 1929-30. A keen bridge player, he entered many competitions and was a member and president of more than one chess club. He showed the same skill in his hobbies as he did in his work. His sudden death occurred while he was playing chess for Edinburgh.

Dr CHARLES FRANCIS PURCELL PLUNKETT died suddenly in his surgery on Jan 14 at the age of 69. Dr Plunkett had not been well for a few days and had been busy. He had just completed his evening surgery when he was taken ill and died shortly afterwards. Born in Ireland, Dr Plunkett took the L.R.C.P.I. and L.M., L.R.C.S.I. and L.M. in 1903. Soon afterwards he came over to this country and he saw service in Salonika during the 1914-18 war. After his demobilization he practised for some years in the Harehills and Beckett Street district of Leeds. His brother-in-law, Dr A. J. Swanton, is still Leeds City Coroner. Later, however, Dr Plunkett set up in practice at Mitcham Road, Tooting, London, and there he was actively engaged in a busy general practice right up to the time of his death. He did particularly valuable work during the recent war and continued to look after his many patients although he had to evacuate his house, which was damaged, and on another occasion he was himself injured in an air raid. Dr Plunkett was one of the most popular general practitioners in Tooting, and the sympathy of all who knew him will go out to his widow, his two sons, and a daughter.

Dr ERNEST GEORGE SYMES SAUNDERS died on Jan 16 at his home in Devonport. He qualified M.B., C.M. at Aberdeen in 1891 and proceeded M.D. in 1893. Not long after qualifying Dr Saunders, who was born at Exminster, started practising at Devonport and he was on the staff of the Prince of Wales Hospital there for forty-three years. He was consulting surgeon to the hospital at the time of his death and for twenty years he had been honorary surgeon to the Torr Home for the Blind. In recent years he had not been so actively engaged in practice as formerly but he never completely retired. Dr Saunders inherited his love of art from his grandfather, Emanuel Jeffery, a freeman of Exeter and a contemporary of Turner. He was one of the original members of the Plymouth Arts Club and of the Plymouth Society of Artists. His chief interest outside his work, however, was in archaeology. He was the oldest member of the parent society and had been for many years chairman of the local branch of the Devonshire Association. He spent many of his leisure hours searching the Blackhouse, Brickfields, and Roborough for flint implements and other archaeological relics.

The death of Mr HERBERT JOHN GREEN at the early age of 40 has cut short what appeared to be a career of great promise. Mr Green was born at Boyndie in Banffshire where his father was a successful farmer and he was educated at Banff Academy. From there he passed to the University of Aberdeen and graduated M.B. Ch.B. in 1930. He was resident house-surgeon to the Aberdeen Royal Infirmary and afterwards to the Royal National Orthopaedic Hospital, London. In 1932 he settled in practice in Banff and was early appointed to the staff of the Chalmers Hospital. Here he carried out much surgical work of high quality and in 1937 he obtained the F.R.C.S.Ed. Becoming interested in obstetrics and gynaecology, he gave up his practice when he was appointed to the Jessop Hospital for Women, Sheffield, in 1938. Here he worked hard and successfully, and in the following year was made registrar to the hospital and tutor in the department of obstetrics and gynaecology of Sheffield University. He obtained the M.R.C.O.G. in 1940. On the outbreak of war in 1939 Mr Green was called on service as medical officer to the Banffshire R.A. Territorial Unit. He served throughout the war at one time holding administrative staff appointments but for the greater part of service he held surgical appointments in India and Ceylon. He attained the rank of lieutenant-colonel. Just over a year ago Mr Green was demobilized and took up again his appointment in Sheffield where his interest in obstetrical and gynaecological work continued unabated. It seemed likely that he would worthily uphold the reputation of the Jessop Hospital in the future but this was not to be. Mr Green was tall and had a genial disposition which brought him many friends both in Banff and Sheffield. He was held in high esteem by the board and the staff of the Jessop Hospital and was popular among the students who profited by his teaching. He was a careful and conscientious surgeon. He is survived by his wife and two sons.

The Services

Capt (Temp Major) N. C. Welply, R.A.M.C., has been appointed MBE (Military Division) in recognition of gallant conduct in carrying out hazardous work in a very brave manner.

Brig F. R. Sandford, CBE, MC, TD, has been appointed Honorary Colonel 43 (Wessex) Division, R.A.M.C., Territorial Army, in succession to Col G. L. Thornton, CBE, MC, TD, whose tenure of appointment has expired.

The following decorations have been conferred by the President of the U.S.A. in recognition of distinguished services in the cause of the Allies:

Legion of Merit Degree of Commander—Major-Gen. Sir A. G. Biggam, KBE, CB, KHP, Major-Gen. (local) D. C. Monro, CBE, CB, KHS, late R.A.M.C.

Legion of Merit Degree of Officer—Brig (local) E. R. Boland, CBE, R.A.M.C.

Bronze Star Medal—Brig (local) Sir Stewart Duke-Elder, KCVO, Major (Temp) P. M. Turquet, R.A.M.C.

The following appointments and mentions in dispatches have been announced in recognition of gallant and distinguished services in the field:

MBE—(Military Division)—Major T. McLardy, R.A.M.C. Capts R. S. Seagat and S. Ahmed, I.A.M.C.

Mentioned in Dispatches—Major G. O. Gauld, and Capts D. Benson, S. Campbell, D. R. MacPherson, L. D. Stone, and W. J. Street, R.A.M.C., Capt C. S. Singh, Sub D. M. Khan, and Jem W. M. Khan, I.A.M.C.

Medical Notes in Parliament

SCOTTISH HEALTH SERVICE BILL

The Standing Committee on Scottish Bills, Mr MATHERS in the chair, began consideration of the National Health Service (Scotland) Bill on Jan. 28. The Committee agreed to sit on Tuesdays and Thursdays of each week.

On the motion that Clause 1 should stand part of the Bill Col WALTER ELLIOT said the Clause which recapitulated the general purposes of the Bill, had secured the approval of a majority of the House of Commons and therefore the Conservative Opposition could not criticize it. Nevertheless there were questions of emphasis which the Opposition thought it worth while to raise. The Clause defined the object of the Bill to be

"The establishment in Scotland of a comprehensive health service designed to secure improvement in the physical and mental health of the people of Scotland and the prevention, diagnosis, and treatment of illness, and for that purpose to provide or secure the effective provision of services in accordance with the following provisions of this Act."

Col Elliot said the Opposition view was that in the past the people of Scotland had themselves done a great deal to secure the provision of effective health services. The concentration which this Bill sought to centre on the Secretary of State for Scotland might slow up the securing of effective health services throughout the whole of Scotland. Therefore the Opposition would seek to lay emphasis on securing in the Bill provisions which would divert its methods from actual provision of services by the Secretary of State himself and from the danger of over-centralization.

Mr THORNTON-KEMSLEY said subsection 2 of Clause 1 stated that the services should be provided free of charge. This was true in the sense that such services would not be followed by an account. In every other sense they would be far from free. Parliament would provide a very expensive service which would have to be paid for by the taxpayer, the ratepayer, and those who paid National Health Insurance contributions. If the service was to be free of charge for all, then so far as he could see any foreign subject staying in this country who required medical attention or treatment of any kind would be eligible to have that service free. He was not sure that this ought to be provided. He suggested that on the Report stage an amendment could be made to make it clear that the service should be free to British subjects resident in the United Kingdom.

Mr STEPHEN drew attention to the provision in subsection 2 that the services provided should be free of charge except where any provision of this Act expressly provided for the making and recovery of charges. He noticed in the Bill a special reference to provision of dental treatment. He hoped the Minister would cut that out of the Bill and have one treatment for all people.

Mr J S C REID said the point raised by Mr Thornton-Kemsley was important. He assumed that if someone was run over in the street the Secretary of State would take that person into a hospital and treat him whether he was alien or Scots. The second type of person was the one who became ill and required the services of a doctor. Could that person walk round to the nearest doctor on the list and say he needed attention? Did he have to find out whether he was on a list somewhere else in Scotland or England? If so, what happened to him meanwhile? Was any member of the community who happened to be sick while away from home entitled to walk round to the nearest doctor on the list, and was that doctor bound to attend to him? If the doctor was not bound to attend to a person on holiday or an alien this service was not comprehensive. Was an alien or a British subject not resident in Scotland entitled to get the services in the Bill which were not so urgent, such as the provision of spectacles?

Paying for the Service

Mr WESTWOOD said he would take all such points into consideration when dealing with the Regulations and the administration. It had been made perfectly clear on Second Reading that somebody had to pay, but so far as calling in the doctor was concerned and getting the service which the Clause sought to provide that would be free to the individual who required the service. The payment would be met as in respect of less than 5% of the cost from local rates nearly 20% from the National Insurance contribution, and the rest directly from the Exchequer. As for providing treatment to those temporarily in the country, the Government would have to see that treat-

ment to those who required it was given. There would have to be regulations to safeguard the services of the doctors who gave such attention. Experience under the National Health Insurance Scheme of to-day could be turned to good service in dealing with the problems of a comprehensive health service. The word comprehensive meant taking in everything.

Col ELLIOT said he had a troublesome case in mind of an alien temporarily resident in this country who was suffering from a dangerous and infectious disease and because he was an alien had been refused treatment not in Scotland but in England since the passage of the National Health Service Bill. His disease was leprosy. An active leper was walking about an English city because he was not allowed access to treatment. Col Elliot thought that the provision of the Bill did not cover that case. Subsidiary legislation might be needed for such cases. The declaration of Mr Westwood went a good deal further than a statement Col Elliot had received from the Chief Medical Officer for England which was that the policy in such cases was to repatriate the individual. That was an ill advised suggestion for an active disease such as leprosy. In the present condition of Europe it was not always possible to repatriate.

Mr SCOLLAN said the fact that a man with leprosy was walking about and that the present medical services could not deal with the case was the finest argument for a new medical service.

Dr MORGAN said Col Elliot had not been in active practice for some time. Had he been, he would have been aware that the infectivity of leprosy had been grossly exaggerated.

Col ELLIOT replied that Dr Adam had certified the infectivity of this case.

Clause 1 was then ordered to stand part of the Bill.

Health Services Council

On Clause 2 Mr J S C REID moved an amendment to provide that the Scottish Health Services Council whose duty would be to advise the Secretary of State upon matters relating to services provided under the Act, should also be empowered to give advice respecting services which could be provided.

Mr WESTWOOD said he was willing to accept the amendment for the purpose of giving him a more comprehensive health service. The Committee then agreed to the amendment. A similar amendment was made in respect of advice on health services provided by local health authorities.

Cmdr GALBRAITH moved to omit from subsection 3 of Clause 2 words which provided that the Secretary of State should appoint Advisory Committees from persons who were members of the Health Services Council and other persons and should do this after consultation with that Council. Cmdr Galbraith thought that the Secretary of State having appointed the Council should allow it to appoint its own members on the Standing Advisory Committees.

Mr Westwood accepted the amendment.

Mr WATSON asked for an explanation of what was meant by "Advisory Councils" and "Advisory Committees" who were to advise the Secretary of State. He pointed out that the Secretary of State could disregard such advice and take his own line.

Mr WILLIS said it seemed dangerous for the Secretary of State to receive advice from a Health Services Council which in turn received advice from Committees appointed by itself.

Mr WESTWOOD said that apart from the members appointed by the Health Services Council he would appoint all the other members on these Advisory Committees. Such appointments would be made only after consultation with the appropriate bodies. The amendment moved by Cmdr Galbraith was then agreed to.

Power to Withhold Annual Reports

Col ELLIOT moved to omit from Clause 2 subsection 5 the provision that the Secretary of State might after consultation with the Health Services Council withhold from Parliament the annual report from that Council or any part of that report if satisfied that publication would be contrary to the public interest. He said the same issue had already been discussed during the debates on the English Act. He thought the danger of unauthorized disclosure was covered by the Official Secrets Act and that so responsible a committee was unlikely to make disclosures against the public interest.

Mr WESTWOOD said the requirement that the annual report must be published was contained in the Clause but was a rather unusual one. He must have the safeguard which was afforded him by the proviso. If there were some new drug for which fantastic claims were made it would be right that until that drug had been tested the Government should not publish a part of the report dealing with it. Again, the report might include a statement about the increasing incidence of certain diseases. The Department did not wish to create undue alarm and it might be desirable in the public interest that the whole

of the report should not be made public. He resisted the amendment.

Mr MACLAY thought that the Secretary of State would never act on his own decision or even on the advice of his permanent officials concerning the publication of a statement on a particular disease or a new drug. He asked him to be guided entirely in such a matter by the Health Services Council of medical experts.

Mr WESTWOOD said that if he could do nothing except by agreement with the committee set up he would be divesting himself of executive responsibility.

Mr SCOLLAN said those who drew up the report would not be foolish enough to include information alarming to the public. Even if they did, and it was kept out of the published report, a Member of Parliament could elicit the information by a Question to the Minister in the House.

Sir JOHN GRAHAM KERR said the ultimate responsibility for administration under the legislation rested with Parliament and it was wrong that any part of the report should be kept secret from Parliament. The proposal to omit the words which had been challenged was defeated by 33 to 16.

Standing Advisory Committees

On the motion that Clause 2 as amended stand part of the Bill Mr MCLEAN WATSON said it appeared to him that in the Health Services Council some interests were over-represented and others were under-represented. He supposed that the representative organizations which the Secretary of State was to consult when appointing the Advisory Committees were organizations outside those already represented on the Council. Was the Minister satisfied that there was no possibility of a conflict between the Standing Advisory Committees and the Council itself?

Mr WESTWOOD said he had in mind as Advisory Committees a medical, a nursing, a hospitals, a mental health, a dental, and a pharmaceutical committee, and so on. Their advice would be considered as and when it was given. On these bodies it would be possible to include members connected with sectional interests which at the moment might be excluded from the central committee. He also proposed to set up a Highlands and Islands Committee. A Standing Advisory Committee under Clause 2 could report direct to the Secretary of State with the provision that a copy of the report went to the main Council, which could make observations on it to the Secretary of State. There would be consultations with the associations of the local authorities, but in a State service there could not be direct representation from a local authority as such. There would be consultation with the national associations of local authorities in Scotland. In appointing an Advisory Committee on nursing he would consult the bodies which controlled nursing in Scotland. For a medical Advisory Committee he would have consultations with the representatives of the British Medical Association. He was prepared to see whether something further could be provided for safeguarding the rights of local authorities.

Clause 2 as amended was then ordered to stand part of the Bill.

Hospital and Special Services

On Clause 3 Mr REID moved to amend the phrase 'It shall be the duty of the Secretary of State to provide throughout Scotland by substituting the words "secure the provision" for the word "provide"'. He said this Clause dealt with services necessary to meet all reasonable requirements in hospital accommodation, medical, nursing, and other services required at or for the purpose of hospitals, and the services of specialists whether at hospitals health centres, or elsewhere. The manner in which these services were to be provided was by direct supervision of the Secretary of State. Yet Clause 2 provided alternative methods whereby the services under the Bill were to be provided either by the Secretary of State or by his securing effective provision of them. Would Mr Westwood not leave other bodies to provide hospital services where they did this at present in a perfectly good manner or where they could do so? The phraseology came from the English Act about which Mr Bevan had declared that he could not be responsible for adequate provision of services unless he was directly responsible for every detail of those services. Mr Reid was sure Mr Westwood would not try to repeat that argument. Why should local authorities who were carrying on a good hospital service be deprived of their hospitals simply to get a uniform regimentation of the hospitals of Scotland? Why should the great infirmaries which provided as good hospital services as any in or out of Britain be taken over by the Government? If the Secretary of State desired to provide additional beds himself nobody would seriously object and he was setting up under this Bill Regional Boards which were appropriate bodies to see to the proper co-ordination of hospital

services. Indeed, the Bill put too much on the Regional Boards and made it more difficult for them to carry out their primary function of co-ordinating the hospital services. That could be done at least as well if the Regional Boards did not have direct responsibility for the everyday administration of hospitals. He hoped Mr Westwood would agree to alternative methods and that either he should provide or that others should provide these services.

Mr WATSON said the local authorities had been pushed into the background even with regard to management of the hospitals. He agreed that all hospitals should be brought under a central control no matter how well they had been run in the past, but when it came to management he thought the local authorities should be given more say.

Mr CARMICHAEL said it was not merely a case of taking away the administration of tuberculosis hospitals and of infectious diseases hospitals from the local authorities but of breaking the link with the medical officer of the area and with the people responsible for reporting infectious diseases. Parliament was denying the medical officer the right to keep contact right up to the hospital.

Mr WESTWOOD said the Government deliberately avoided putting into Clause 3 the words 'to secure the provision of hospital services' and he had not the slightest intention of being accommodating so far as this particular amendment was concerned. He could not accept the arguments in favour of local authorities continuing to provide the hospital services as they did now. Some were wealthy and had been able to do the job well, but they had to consider the effectiveness of the service that had to be provided for Scotland as a whole. The national responsibility for this service must rest with the Secretary of State and it must be a national hospital service. There must be neither local authority nor voluntary hospitals but a clear national responsibility for the hospital service. He advised his supporters to oppose the amendment.

Col ELLIOT said the Opposition conceded the point made by Mr Westwood that he must have the right to provide. They were willing to modify their amendment but they asked why the Committee should not use the words employed by Mr Westwood on an earlier Clause—to provide or secure the provision of.

The Committee then adjourned.

Services Secured and Provided

Consideration of the amendment to Clause 3 moved by Mr J. S. C. Reid was resumed by the Committee on Jan. 30. Col ELLIOT said that arguments had been advanced to show that the services should be secured as well as provided by the Secretary of State. The suggestion that a great improvement would take place in the health services if they were provided by one Minister was not borne out by practical experience, for example of the pensions Ministers. For one complaint which any M.P. had during the twenty years between the wars about voluntary hospitals or about local authorities they had a hundred about the hospitals of the Ministry of Pensions. Provision of services by the alternative methods of the voluntary hospital and of the local authority hospital should not be scrapped without more justification than had been given. The Secretary of State, with his own hospitals, would be in a position to supplement deficiencies to fill any gaps and if necessary to act as a pacemaker to the hospital system which at present existed.

Mr MACLEAN WATSON said Col Elliot was trying to introduce prejudice into the debate because there was feeling about the Ministry of Pensions hospitals. As far as Mr Watson knew the Ministry of Pensions hospitals did good work during the war and had done so since the end of the war. The Ministry of Pensions hospitals might carry on under that Ministry in the future as they had done in the past.

Mr SOMERVILLE HASTINGS said it was common grounds that some power must tell each hospital what its function should be, decide what type of work it could do best and not allow every hospital incomplete facilities to undertake every type of work. The Secretary of State could not control these hospitals merely by a monetary grant. Control could not be achieved without ownership. Some small voluntary hospitals which had been highly endowed had neither the staff nor the equipment to turn out the best work. The Secretary of State could now say to such a hospital 'In the new scheme your sphere is not to be a general hospital but a convalescent home.'

Cmdr GALBRAITH said the Committee was concentrating too much on hospitals and forgetting that the clause also dealt with medical nursing and other services.

Mr BUCHANAN said the Ministry of Pensions hospitals taken on the whole compared more than favourably with most other hospitals. It was true that Members received some complaints, but if a person had a complaint about a voluntary hospital he

could write to no one because no public body had any responsibility. It was essential to the Bill that the Secretary of State should have the whole of the hospitals within his power and control. Major LLOYD said the view expressed by the Opposition was that of the majority of the people of Scotland. The amendment proposed by Mr Reid was rejected by 27 to 12.

Medical Education and Research Facilities

The chairman, Mr MATHERS then called an amendment by Mr Reid to leave out subsection 2 of Clause 3. This subsection provides that it shall be the duty of the Secretary of State in furnishing hospital and specialist services to make available such facilities for undergraduate and postgraduate clinical teaching and research as he considers necessary to meet all reasonable requirements.

Mr REID said this amendment covered narrower ground compared with others which would appear later suggesting that the teaching hospitals might receive rather different treatment from the ordinary hospitals. The Opposition thought that the difference made in the English Act between the governors of a teaching hospital and the board of management of an ordinary hospital. He did not think that all the issues raised on the functions of the teaching hospitals could be covered in an omnibus discussion. There was the relationship of the teaching hospitals with the universities the question whether the internal administration should be under the Regional Board, the position of the officers of the hospitals and whether they should be officers of the Royal Infirmary or of the South-Eastern Region, and a number of other questions. Every one of these questions was of great importance to Scotland. Mr Reid then moved to leave out subsection 2. He said that if Scotland was to have a flourishing school of medicine, it must have intimate and friendly relations between the university and the hospital in which clinical teaching took place. These relations must be between equal partners and between people who were on the spot. In the past one of the elements leading to the success of the Scottish schools of medicine had been the friendly relationship between the royal infirmaries and the universities concerned. A similar basis had been maintained as far as possible under the English Act. But in Scotland the permanent officials sitting in St Andrew's House would advise the Secretary of State on the clinical teaching facilities considered necessary to meet reasonable requirements. The Secretary of State and his permanent officials were not the right people to dictate to the universities of Scotland what clinical teaching facilities they ought to have. If the Bill went through in its present form he would view with apprehension the future of Scotland as a resort for foreign students for the teaching of students but he had told the House that the present Scottish education system was bad and ought to be altered as soon as possible so as to decentralize it. The Opposition thought the proper course was to decentralize this matter.

What the Opposition proposed was that the schemes which regional boards must make with regard to future organization of the hospital services should specify those hospitals which were to be concerned in the provision of facilities for teaching and research. It was not easy to say what was a teaching hospital. Therefore an improvement on the English scheme would be to let the regional board say which hospitals were to be chiefly engaged in teaching and which hospitals were only engage in teaching to a minor extent. The regional board knew the local circumstances and so could say which were to be the big teaching hospitals in Scotland in future. At present there were five large ones about which no one could have any doubt. Others were already used to a considerable extent for teaching and would probably come into this category. Others were only used to a minor extent and could be left out. This was a proper job for the regional board to undertake. One of the blots on the present scheme was that the new boards of management for the Royal Infirmaries in Edinburgh and Glasgow the Western Infirmary and the other big infirmaries had no direct contact with the universities. It was completely subject to the regional board. Under this Bill there was no difference in status between the board of management of a great royal infirmary and the board of management of two or three cottage hospitals in the country. Parliament would not secure the right people on the boards of the royal infirmaries if they were to be tied hand and foot.

Universities and Teaching Hospitals

Sir JOHN GRAHAM KERR said the interrelation of the university and teaching hospital was important to the welfare

of the whole public health service. The two were inextricably entangled. He instanced the calling of one of his staff by a Colonial Government to go out and tackle an epidemic of dysentery. That man was a member of a particular university staff which the outsider would think had nothing to do with such a problem. It was in the medical school of a university or an extramural medical school that such work was done. The Committee should not forget that Scotland had some of the greatest extramural medical schools in the world, such as Anderson College in Glasgow. Research was done partly in the laboratory of the University or of the medical school and partly in the wards of the infirmaries. To ensure that these two were properly run there must be an intimate relationship between the governing bodies of the university or medical school and of the teaching hospital or the result would be disaster. What would have happened to Lister when doing his research in the Royal Infirmary of Glasgow if that infirmary had been under the control of any Government official at a distant point? That great work would have been lost.

Mr SCOLLAN pointed out that the Clause itself said that as far as practicable each area must be such that provision of the services in the area could be conveniently associated with the university having a school of medicine and that the Secretary of State should consult such bodies and organizations as appeared to him to be concerned.

Mr NIALL MCPHERSON said that under the Bill a man would have the right to go to hospital and to refuse to be examined for clinical study. He asked whether the Secretary of State would have a right to say that such a man should be examined. He saw no other object in the Clause because in the past the arrangements between the universities and the governing bodies of the hospitals had worked perfectly well.

Dr STEPHEN TAYLOR felt that the English Act had a considerable advantage over the Scottish Bill in the way it treated its teaching hospitals. One desired to give the rebel in medicine the maximum opportunity for developing himself free from any supervision. However the Secretary of State must consider the size of the medical labour force which he would require in future. He must make a decision on how many people he needed in the medical school and how much clinical teaching. He must keep the subsection so that he could say how much of his hospital service was to be devoted to supplying clinical material for teaching. He had heard it said that one of the troubles which had developed of late years in the Edinburgh School of Medicine was that it had become so popular in many parts of the world and so many people had come to Edinburgh that the ratio of students to clinical teaching in the Royal Infirmary had become increasingly unsatisfactory. The regional board might not be a desirable body for nominating teaching hospitals. The Secretary of State must take a nation-wide view in deciding.

Major LLOYD said more doctors were sent out of Scotland than were provided inside Scotland. The matter was one of world-wide importance and the amendment should be considered sympathetically.

Expanding the Teaching Hospitals

Mr BUCHANAN said the Bill did not affect teaching at all. Teaching remained a duty of the university. The Government provided facilities for teaching but did not interfere with the historic privilege of the universities to provide the teaching. On this issue the local authorities the British Medical Association, and the universities were broadly agreed. The only body which was against this scheme for Scotland was the British Hospitals Association. That was the only section which would not be concerned with the running of this scheme. In Scotland the teaching hospitals played a much larger part in the provision of beds than was played by similar hospitals in England. Mr Reid had spoken of the Royal and the Western Infirmary in Glasgow and the Royal Infirmary in Edinburgh as hospitals in Scotland. That was wrong. In Aberdeen for example nearly the whole of the hospital beds for that town were provided in teaching hospitals. How could these hospitals be taken out of the scheme when they provided a greater part of the accommodation for the people? Mr Buchanan hoped to see the teaching hospitals expanded. Doctors in ordinary practice would be required to take part in teaching work. Instead of four or five grandiose hospitals in Glasgow or Aberdeen, he wished teaching hospitals to be extended to other parts of the country. He looked forward to seeing the Falkirk hospital become a teaching hospital. Under the scheme proposed there would be discussions between the regional board and the teaching hospitals to decide who was to do substantial teaching. If another hospital such as the one at Falkirk came under the regional board that board would fight to the death to keep it, and before it could be classified as a teaching hospital

it must go to the board and start a series of arguments. The Government proposed to give the universities representation on every board of management and imposed the condition that if there was a substantial amount of teaching the university should have a larger representation. The Government went further and said that the staff should be represented on the board. These proposals were more far-reaching than the English ones.

Mr THORNTON-KEMSLEY said Mr Buchanan had been less than fair to the British Hospitals Association Scottish Branch. He ought to know that that Association agreed in what was proposed and thought that the Opposition went too far in suggesting that teaching hospitals should be taken out of the regional association.

Col ELLIOT said the point in debate was not a political one. The Opposition found itself in this position because the Government were speaking with two voices. He did not think that the English solution of the problem would completely remove the difficulties, but he thought that the proposed solution in the case of Scotland would not do so either. If the university found itself in conflict with the hospital and bed accommodation was not provided for the university nominee the university professor would be in the greatest difficulty. By 34 votes to 18 the Committee decided that subsection 2 should stand part of the Clause.

On the motion that Clause 3 stand part of the Bill Mr RANKIN asked whether in the term 'specialists' Mr Buchanan included medical auxiliaries or if he proposed to cover the position of these people by Regulations as had been done in the English Act.

Mr BUCHANAN said he would endeavour to obtain an answer to this question. He remarked that owing to the terribly cold conditions in the Committee room he desired to adjourn the discussion shortly. In reply to Miss HERBERTSON he said that the department would have power to provide travelling costs to beneficiaries under the Bill. The specialist services would be available as part of the equipment of the hospitals. He promised to look into drafting amendments which had been suggested by Sir JOHN GRAHAM KERR.

The Committee then adjourned.

Food Rationing for Invalids

Col STODDART-SCOTT asked on Jan 29 the number of individuals with medical qualifications who sit on the Food Rationing (Special Diets) Advisory Committee, how many times they met during the last six months of 1946, and how many medical men were present on each occasion. Mr STRACHEY said applications for special rations for individual patients were not taken to the committee as a whole but were sent by the secretary to at least two members of the committee, the two members most qualified to deal with the particular case. All cases raising a new point were sent to all members of the committee. This was more expeditious than attempting to convene the committee to deal with each application. The full committee met when a change of the scales of extra rations automatically available for each illness was in question. For this purpose the committee met twice during the last six months. Eight of the ten members were present at the first and nine at the second meeting. He thought it satisfactory that men who were best qualified should be consulted in the case of each particular interest (see also pp 227 and 230).

Medical Students from Nigeria

Mr CREECH JONES said on Jan 29 that 381 students from Nigeria were studying in universities and medical schools in the United Kingdom. Except in the case of medical schools where the pressure was greatest the Nigerian Government did not send over priority lists. Of the eleven students from Nigeria who were placed in medical schools in 1946 three figured high in the priority list for that year. The remainder had been recommended in previous years but could not be placed for various reasons. Every effort was being made by letter and personal contact with university and other authorities to persuade them to allot as many places as possible to students from the Colonies. Mr Creech Jones praised the help they had given to the Colonial Office despite their own difficulties. He added that the situation of all institutions of higher education would owing to the claims of ex-Service students be as difficult as it was in 1946-7.

Tuberculin Tests—In 975 000 tests of Attested cattle made in 1946, 461 animals reacted and in 368 000 tests of T.T. cattle 674 animals reacted. In giving these figures on Jan 27 Mr TOM WILLIAMS added that reaction to the tuberculin test did not imply infection in the milk of a reactor.

Universities and Colleges

ROYAL COLLEGE OF PHYSICIANS OF LONDON

At a meeting of the College held on Jan 30 the following resolution was passed. The College desires the Negotiating Committee to enter into discussions and negotiations with the Minister on the Regulations authorized by the National Health Service Act.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

Monthly dinners will be held in the College for Fellows and Members of the College, members of the associations linked to the College through the joint secretariat, and their wives and guests on Wednesdays at 7 p.m., Feb 12, March 12, April 9, May 7, June 11 and July 9, at an inclusive charge of £1 1s, which must be sent with the application to the assistant secretary of the College at least a week before the date of the dinner.

Geoffrey H. Bourne, D.Phil., D.Sc., has been appointed to the Readership in Histology tenable at the London Hospital Medical College and not Geoffrey Bourne, M.D., F.R.C.P., as announced in the *Journal* of Feb 1 (p. 204).

Medical News

The next meeting of the Zoological Society of London for scientific business will be held on Tuesday, Feb 11, at 5 p.m.

A joint meeting of the Royal Society of Medicine and the Scientific Film Association will be held at 1, Wimpole Street, London, W., on Wednesday, Feb 12, at 4 p.m., when the general subject for discussion will be 'The Use of Filmstrip in Medical Teaching.'

A meeting of the Royal Sanitary Institute will be held at 90 Buckingham Palace Road, S.W., on Wednesday, Feb 12, at 2.30 p.m., when there will be a discussion on 'Recent Advances in the Treatment of Sewage by Biological Filtration' to be opened by Dr B. A. Southgate.

A lecture on 'Some Chemical and Pharmaceutical Aspects of Anaesthesia' will be given by Dr H. Davis before the Pharmaceutical Society of Great Britain (17, Bloomsbury Square, W.C.) on Thursday, Feb 13, at 7 p.m.

A joint meeting of the Tuberculosis Association with the Section of Anaesthetics of the Royal Society of Medicine will be held at 26, Portland Place, London, W., on Friday, Feb 14, at 3.30 p.m. when there will be a discussion on 'Anaesthesia for Major Thoracic Surgery in the Tuberculous,' to be opened by Mr A. L. d'Abreu, Dr I. W. Magill, and Dr Joan Millar.

The Ministry of Supply announces that a further disposal sale will be held at the Ministry's Depot No. 83, Otley, on Tuesday, Feb 11, and will include a quantity of medical equipment, namely: first aid haversacks, A.R.P. first aid boxes, a surgery box, bandages, absorbent gauze, plain wound dressings, calamine lotion, surgical scissors, forceps, white basins, splints, stretchers, and tourniquets. Further information and catalogues can be obtained from the auctioneers, Messrs Daere, Son, and Hartley, Station Road, Otley (Tel. Otley 2251).

Dr A. C. Monkhouse, Deputy Director of Fuel Research, speaking on Jan 15 at the Royal Institute of Chemistry, said that about 2.3 million tons of smoke were produced in Britain every year—one half of that from domestic grates. Pollution by oxides of sulphur amounted to about 5 million tons per year, of which one fifth came from domestic fires burning raw coal. The Atmospheric Pollution Research Committee of the Fuel Research Board was investigating the problem and had developed apparatus being used by local authorities. More efficient appliances and the use of smokeless fuel would reduce domestic smoke, but no satisfactory method of reducing sulphur dioxide pollution had been developed.

A circular from the Ministry of Health points out that streptomycin is not yet generally available in Britain, but clinical trials are being carried out by the Medical Research Council, and it repeats the warning given in our annotation (Dec 14, 1946, p. 906) that in the small number of patients with tuberculous meningitis whose lives have been prolonged by treatment with this drug permanent mental derangement, blindness, or deafness has nearly always ensued.

A British medical commission headed by Lord Moran is visiting Nuremberg to study the results of experiments carried out by German scientists on the inmates of concentration camps.

INFECTIOUS DISEASES AND VITAL STATISTICS

No 3

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Jan 18

Figures of Principal Notifiable Diseases for the week ended Jan 18

London (administrative county) (a) England and Wales (London included) (b) Figures of Births and Deaths recorded under each infectious disease are for (a) The 126 great towns in England and Wales (including London) (b) London (administrative county) (c) The 16 principal towns in Scotland (d) The 13 principal towns in Eire (e) The 10 principal towns in Northern Ireland

A dash — denotes no cases / a blank space denotes disease not notifiable or no return available

Disease	1947					1946 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever Deaths	58	6	31	2	1	62	6	44	2	2
Diphtheria Deaths	256	18	78	40	10	478	41	135	63	28
Dysentery Deaths	72	4	17	1	—	371	20	75	—	—
Encephalitis acute Deaths	1	—	1	—	—	2	—	—	—	—
Erysipelas Deaths	—	48	5	3	—	—	63	11	4	—
Infective enteritis or diarrhoea under 2 years Deaths	96	13	14	39	—	61	5	4	9	1
Measles * Deaths	11 087	378	276	61	890	726	109	105	112	4
Ophthalmia neonatorum Deaths	69	6	21	—	2	51	4	9	—	—
Paratyphoid fever Deaths	—	6	2(B)	—	—	1	12(A)	—	—	—
Pneumonia influenzal Deaths (from influenza)†	1 223	73	53	13	6	1 310	85	85	10	11
Pneumonia primary Deaths	85	13	23	—	—	174	23	30	3	6
Polio encephalitis, acute Deaths	—	94	413	30	14	73	510	22	16	20
Polio myelitis acute * Deaths	9	—	—	—	—	—	—	—	—	—
Puerperal fever Deaths	—	2	—	15	—	6	—	—	2	—
Puerperal pyrexia‡ Deaths	—	2	12	—	1	—	—	—	—	—
Relapsing fever Deaths	153	9	31	1	—	131	14	10	1	—
Scarlet fever Deaths	1 226	106	276	22	29	1 331	131	214	26	36
Smallpox Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid fever Deaths	4	—	2	4	—	3	—	3	2	1
Typhus fever Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough * Deaths (0-1 year)	2 192	158	488	107	62	1 251	117	79	19	10
Infant mortality rate (per 1 000 live births)	622	81	72	—	9	438	62	65	32	21
Deaths (excluding still births) Annual death rate (per 1 000 persons living)	6 579	1056	785	155	6 152	971	827	232	185	18
Live births Annual rate per 1 000 persons living	10 628	1721	1260	269	6 792	1008	802	372	233	16
Stillbirths Rate per 1 000 total births (including stillborn)	291	32	29	—	226	37	25	—	—	30

* Measles and whooping-cough are not notifiable in Scotland and the returns are therefore an approximation only

† Includes primary form for England and Wales and Eire

‡ Includes puerperal fever for England and Wales and Eire

It is still not possible to publish the return of births and deaths for Eire for the weeks ended Oct 26 Nov 2 9 16 23 30 Dec 7 14 21 28 1946 Jan 4, 11, and 18, 1947

EPIDEMIOLOGICAL NOTES

Measles and Influenza

The two conditions which are of the greatest epidemiological interest at the moment are measles and influenza. Both are the subject of leading articles elsewhere in this issue (see pp 225 and 226).

Measles was epidemic in 1945 and a comparison of the notifications in the 126 great towns for the first four weeks of this year and the two preceding years is interesting.

	1st Week	2nd Week	3rd Week	4th Week
1945	11 947	10 979	12 054	12 941
1946	771	777	726	907
1947	10 823	10 223	11 087	11 671

Influenza is not notifiable, but a comparison of the recorded deaths from influenza in the 126 great towns in the first four weeks of this year and the two preceding years gives no indication of a major influenza epidemic.

	1st Week	2nd Week	3rd Week	4th Week
1945	55	72	56	87
1946	123	165	174	273
1947	36	74	85	92

Discussion of Table

In England and Wales the common infectious diseases of childhood were more prevalent. There were increases in the notifications of measles 864, whooping-cough 264, scarlet fever 168 and diphtheria 24. The only decreases in incidence were acute pneumonia 41 and dysentery 15.

The largest increases in the notifications of measles were Warwickshire 279, Lancashire 224, Sussex 127, and London 87. The largest decreases were recorded at Durham 104 and Nottinghamshire 74. The rise in cases of whooping cough was most pronounced in the northern section of the country, notably in Yorkshire West Riding 57 and Lancashire 42. A small rise in the incidence of scarlet fever was recorded throughout the country and the only increase of any size was slightly in the south and rose slightly in the north.

There were 19 cases of dysentery in Lancashire, Preston R D compared with 8 in the preceding week and 5 further cases of dysentery were recorded in the outbreak in Hertfordshire St Albans R D, where 24 cases were notified last week.

In Scotland a decrease occurred in the notifications of measles 169 and acute primary pneumonia 42, while rises were reported for whooping cough 23, diphtheria 18 and scarlet fever 10.

In Eire a rise occurred in the incidence of measles 27, diphtheria 22, and diarrhoea and enteritis 11, decreases were recorded for whooping-cough 21 and primary pneumonia 11. The rise in cases of diphtheria was mainly contributed by Cork, Kanturk R D where an outbreak involving 10 persons was reported. Whooping cough declined in Dublin C B by 24 cases, but a fresh outbreak with 16 cases was reported from Louth, Dundalk U D.

In Northern Ireland the outbreak of measles in Belfast C B flared up, the notifications rising from 755 to 889.

Health of Glasgow

The birth rate in Glasgow during 1946 was 22.4 per 1,000, the highest rate for twenty years. The infant mortality was 67 per 1,000 births and was one below the record low level of the preceding year. The general death rate was 13.8 per 1,000 being 0.7 higher than last year. The principal causes of death were pulmonary tuberculosis 1,173, pneumonia 709, influenza 161, and other respiratory diseases 505. These were 95, 161, 115 and 64 respectively in excess of last year's totals. There were 39 deaths attributed to diphtheria, 7 more than in 1945. Deaths from infantile diarrhoea and enteritis numbered 296, compared with 396 in 1945 and 698 in 1944.

Week Ending January 25

The notifications of infectious diseases in England and Wales during the week included scarlet fever 1,286, whooping cough 2,151, diphtheria 247, measles 11,671, acute pneumonia 1,270, deaths from influenza in the 126 great towns numbered 92.

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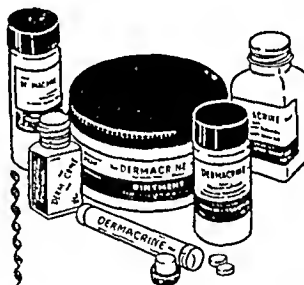
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Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Sodium Morrhuate Injections

Q—In two patients with varicose veins injections below the knee of 2 ml of 5% sodium morrhuate were followed by a fainting feeling, pain in the ankle and severe headache. What is the explanation?

A—The Council on Pharmacy and Chemistry of the American Medical Association recommended withdrawal of the 10% solution of sodium morrhuate from accepted remedies (*J Amer med Ass* 1942, 119, 498). This was on the basis of reports of ill effects from use of the 5% solution and much more marked ill-effects from the 10% solution. Dale, M. L. (*J Amer med Ass* 1937 108 718) reported the sudden development of vertigo, faintness, bradycardia, and cyanosis of the extremities without anaphylactic symptoms after injection of the 5% solution in a case which had received repeated injections previously. He considered the reaction specific and attributed it to idiosyncrasy. The symptoms were not anaphylactic in nature and there was no period of cessation of treatment during which the patient could have become sensitive. Previous reports of ill effects following sodium morrhuate injections for varicose veins had been attributed to anaphylaxis. K. M. Lewis (*J Amer med Ass* 1936 107 1298) found urticarial rashes at the site of injection and sometimes severe allergic reactions followed by collapse. During a first course of treatment there seemed to be no reactions but after an interval anaphylaxis occurred. He concluded that people subject to allergic disease should not receive sodium morrhuate at all.

Similarly G. A. Holland (*Canad med Ass J* 1939, 41 262) reported three severe cases of allergic reactions following the drug—nausea, cyanosis, fainting and severe shock occurring with the first dose of sodium morrhuate after an interval in treatment. The lesson is one of caution in the use of the mixture of saponified fatty acids of cod liver oil known as sodium morrhuate at the beginning of treatment but especially in patients who have received the same solution previously after a sufficient time has elapsed to allow for the development of a foreign protein sensitivity. It is recommended that the initial dose should be 0.5 ml and that after an interval in treatment an intradermal test be made. P. Clarkson (*Lancet* 1938 2, 69) states: "Sodium morrhuate is the least harmful of sclerosing agents but 5% of cases have morrhuate sensitivity." There may be immediate and profound collapse more often there is a diffuse eczematoid skin reaction which lasts two to four weeks and itches intensely. Prayer, L. L., and Becker, S. W. (*J Amer med Ass* 1935 104 997) found that 7 out of 176 patients treated with the drug had reactions mostly urticarial not necessarily at site of injection. One had weakness for two days. The protein content of a 20 ml sample was too small to be determined but the total nitrogen was 0.037 g/litre assuming that it is all protein nitrogen the protein content would be 0.25 g/litre—not enough to produce sensitization. But sodium morrhuate may act as a hapten and sensitize susceptible individuals. The eventual production of a nitritoid crisis in one patient emphasizes the desirability of changing the nature of the drug used for injecting varicose veins at the first sign of hypersensitivity.

Death from Cocaine or Adrenaline

Q—A girl of 17 received an injection of 1% cocaine in the femoral solution. She collapsed and died. Subsequently it was discovered that the solution had been made up in error with 1:1000 instead of 1:10,000 adrenaline. It is estimated that 11 to 21 mg. was injected. What is the bearing of this large dose of adrenaline on the cause of death which had been certified as an idiosyncrasy to cocaine?

A—If as much as 2 ml of the solution was injected the amount of cocaine received by the patient was 20 mg., and

toxic symptoms (though not death) have been recorded from this amount on previous occasions. It is not possible to be sure what bearing the large dose of adrenaline had on the effect of the cocaine. The cocaine might have arrested the heart by prolonging the refractory period and depressing conduction. This effect is antagonized by adrenaline, which shortens the refractory period. Cocaine usually causes convulsions as its chief toxic effect, but as there is no mention of this it presumably did not occur here. Cocaine appears sometimes to arrest the respiration by a curare-like action on the endings of the motor nerves, this action is also antagonized by adrenaline. On the whole, if the death was due to cocaine, the large dose of adrenaline would lessen the likelihood of death occurring.

Was death due to the large dose of adrenaline? It is unlikely that this dose would produce death by an action on the cardiovascular system of a girl of 17. This might occur in a woman of 47 or older, but not in one whose heart and vessels were presumably healthy. Adrenaline in a large dose may however arrest the respiration, causing apnoea, and its effect would be intensified and prolonged by the cocaine. On the whole this seems the most probable explanation of the death. This case is an illustration of the danger of using cocaine for injection. It should be used only in the eye or for superficial application to mucous surfaces.

Legality of Intrauterine Contraceptives

Q—It would be of interest to have an authoritative opinion as to the legality of the gold wishbone and Gräfenberg ring contraceptive appliances. They would appear to permit fertilization of the ovum and then either prevent subsequent implantation or (Nov. 9 1946 p. 721) act by inducing early abortion. Since presumably a woman is pregnant at any time following fertilization of the ovum it would appear that any interference after this moment except on therapeutic grounds is an offence against section 58 of the Offences against the Person Act 1861. This statute also makes it an offence to administer any noxious thing with intent to procure a miscarriage even if the woman is not pregnant. This might be held to include the fitting of such an appliance before there was any chance of a pregnancy having occurred.

A—On the purely legal side, if a woman were prosecuted for the use of such an appliance the Crown would have to prove that she had been pregnant and had miscarried through using the appliance. The difficulty is obvious. If a retailer were prosecuted the difficulty would be less because the Crown would have to prove only that he had supplied the appliance with intent to procure miscarriage. Proof could only be given however, by medical evidence that the action of the appliance was to induce abortion and unless this evidence convinced the jury beyond reasonable doubt the accused could not be convicted. As the evidence must be largely speculative, the prosecution would not be likely to succeed.

Treatment of Post-operative Thrombo-phlebitis

Q—Nine days after operation for a leaking luteal cyst a woman aged 25 developed phlebitis of the left popliteal and femoral veins. This was treated for five weeks with absolute rest but at the end of this period the veins were still tender and oedema of the leg and thigh was still pronounced. The phlebitis then spread to the right femoral vein with marked oedema. Tenderness of the lower abdomen has been constant throughout but that over the femoral and popliteal veins is now only slight. Please advise as to prognosis and further treatment.

A—The sudden extension to the right leg is thought to be due to the clot extending up to the confluence of the common iliac veins and might have been prevented by dicoumarol treatment started at the first sign of thrombosis especially as the patient was so young for this condition possibly an injection of the lumbar ganglia at the same time would have been valuable. The prognosis is good as regards life such a case is unlikely now to have a pulmonary embolism. The legs however will have a disorganized venous circulation for life, and will swell and may become eczematous and ulcerated in the usual situations possibly after a lapse of as long as twelve

or more years. To prevent these sequelae the patient should be advised to wear leg supports when she gets up—elastic bandages at first, and stockings later when the tendency to swell is less marked. Immediate treatment with dicoumarol should be started, 300 mg on the first and 200 mg on the second and third days, with an estimation of the prothrombin time on the fifth day, and the drug should thenceforth be administered with the object of maintaining for six weeks a 120% increase in the prothrombin time. The patient should get up when swelling in both legs has subsided, and 'elastoplast' or Unna's paste bandages should be worn from the knee down for the first month.

Antisymphilitic Treatment in Pregnancy

Q—Should a previously infected woman receive antisymphilitic treatment throughout each pregnancy regardless of negative Wassermann reactions in order to avoid the possibility of producing a congenitally syphilitic child? In view of the large numbers of men who have contracted this disease while in the Services what risk is there of one of these men now pronounced cured fathering a congenital syphilitic child?

A—A woman who has been infected with syphilis should invariably receive antisymphilitic treatment during each subsequent pregnancy even if her blood shows a negative Wassermann reaction because (1) such a test is not in itself proof of cure, (2) she may infect the foetus if she still harbours spirochaetes however old her infection and however much previous treatment she has had, and (3) the inconvenience of treatment is as nothing compared with the tragedy of producing a syphilitic baby.

A man who contracted syphilis while in one of the Services who was treated (adequately) and pronounced cured is extremely unlikely to father a congenitally syphilitic child because it would be necessary for him first to infect his wife, this is improbable not only because he has been treated and has passed tests of cure but also because the older the husband's infection the less likely is it to be conveyed to the wife, after two years a man is unlikely to be contagious, and after four years is almost certainly not so assuming he has been symptom-free for those periods. This latter applies when treatment has not been given and still more so when it has, most Service men were treated very adequately during the war, in fact probably much more so than they would have been had they been civilians.

It is hardly correct to speak of the large numbers of Service men who contracted syphilis during the war, in fact the numbers of British soldiers infected were relatively small, at any rate compared with other nations (See also Oct 5, 1946, p 521).

Remote Risk of Contracting Tuberculosis

Q—Is it safe for a child of 3 to stay in a house where a patient was nursed for five years with open tuberculosis and died three months before the child's visit?

A—It would be very unlikely that any harm could result from a child staying in a house three months after the death of a patient suffering from pulmonary tuberculosis, provided that the usual precautions had been taken to disinfect the mattress and bed-clothes, that the personal belongings of the patient which were in constant use had been removed and that the room had been thoroughly cleaned. The tubercle bacillus is rapidly killed by direct sunlight and it would not survive if there were good ventilation and a reasonable amount of sunlight entering the house. It is difficult to find the tubercle bacillus even in the dust from tuberculosis hospital wards so that the likelihood of contracting tuberculosis from living in a house three months after the death of a patient is remote.

Vitamin H

Q—What is vitamin H? Has it any effect on alopecia or on baldness? Is it sold under some branded name in this country?

A—Vitamin H is the same as biotin. So far as the writer is aware no work has been published on its effect on baldness and alopecia. It is not sold under branded names in this country, in fact it is still only obtainable in very small amounts

Letters and Notes

Endogenous Depression in General Practice

Dr A S ELLIS (Napsbury Hospital) writes: Many will agree with Dr A Lionel Rowson's implications (Jan 18 p 111) that conditions in some mental hospitals are far from ideal, one feels however, that Dr Rowson displays regrettable ignorance concerning present day methods of psychiatric investigation and treatment. With regard to Dr Sheldon's cases (quoted by Dr Rowson) it is a safe bet that, in the unlikely event of a magistrate's making a reception order for these patients, the organic nature of their illnesses would have been discovered during their first week in a mental hospital. Modern psychiatrists are fully alive to the possibility of organic disease, and it is not correct to say, as does Dr Rowson, that "most of the patients' complaints are invariably put down to imagination and persecution mania." Diagnostic errors such as those against which Dr Rowson inveighs would be more often avoided if general practitioners more frequently adopted the course outlined by Dr L Sheldon (Jan 4, p 33), and submitted to radiography all cases of dyspepsia of over four weeks' duration. By such ordinary precautions could the general practitioner spare his patient months of discomfort and himself the humiliation of having cases referred back by the psychiatrist with a tactfully worded suggestion that an organic investigation be carried out.

Dr WILLIAM SARGANT (Sutton Emergency Hospital) writes: Dr C A H Watts's suggestion in his article (Jan 4, p 11) that many of the less severe cases could be treated with out-patient ECT has proved correct. He mentions American work along these lines, but out-patient ECT has also been done in London hospitals since 1941. I have used it for over four years and the results have been most gratifying. Many patients have been saved months of misery and incapacity. Careful selection of cases is important. I find that in 1946 there were 113 patients referred to the out-patient ECT clinic at the West End Hospital for Nervous Diseases, of which only 45 were treated, and in 1945 the figures were 35 out of 89. The high rejection rate was accounted for in part by neurotics and schizophrenics and by those needing hospital supervision during treatment. There has been hesitation in many parts of the country in starting this method. Patients have had to travel to London from as far afield as Dorset each week for treatment to avoid admission to a mental hospital. Any risks inherent in out-patient ECT are easily counterbalanced by the tragedies involved in leaving such patients untreated. Before the war it was statistically predicted that 90,000 people living in the area of Greater London alone would eventually die by their own hand. Many such suicides are severe examples of the much greater number of depressions who suffer prolonged invalidism without mental hospital admission.

Doctors' Wives and the Act

Dr P E R KIRBY (Brighton) writes: May I suggest that when the Negotiating Committee get into action a thought might be given to that unfortunate person, the doctor's wife without domestic help. When the State Medical Service comes into being I visualize knocks at the door and rings on the telephone all day and half the night. The so-called better class State patients will not be content to await their turn in the surgery but will demand preferential treatment. As far as I can see, as the Act now stands we shall lose our practices, perhaps our homes, and possibly our wives.

Yellow Fever Inoculation Centres

The Department of Health for Scotland has arranged to set up centres where inoculation against yellow fever may be obtained free of charge by people intending to travel to or through areas where that disease is prevalent. Certificates of inoculation approved by the Government will be issued from the centres. The addresses are Dr W R Logan, Bacteriological Department, Royal Infirmary Lauriston Place, Edinburgh 3, The Medical Officer of Health, 20 Cochrane Street, Glasgow, C1, Dr J Smith City Hospital Laboratory, City Hospital, Urquhart Road, Aberdeen.

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BMA SCOTTISH OFFICE 7 Drumsheugh Gardens Edinburgh

LONDON SATURDAY FEBRUARY 15 1947

WATER AND SALT DEPLETION*

BY

H L MARRIOTT, CBE, MD, FRCP

Physician with Charge of Out-patients Middlesex Hospital

A great recent advance in knowledge has been the separation of the respective effects of water depletion on the one hand and of salt depletion on the other. The distinction seems to have been first made, through experimental work, by Kerpel Fronius (1935), and the studies of McCance (1936-1938) on salt metabolism greatly clarified the subject. In the clinical field Nadal, Pedersen, and Maddock (1941) have been pioneers. Water and salt are so closely associated in the body that for long the separate effects of their deficiencies have been confused. This has been unfortunate because it has led to wrong treatment. It is now realized that there often arise conditions of (a) pure water depletion, (b) pure salt depletion, and (c) mixed water and salt depletion. All are common and all result in dehydration, but in dehydration of two types which, as Nadal, Pedersen and Maddock have said, 'differ from each other not only in mechanism of production but also in symptomatology and treatment indicated. In fact almost the only similarity between the two conditions is that implied by the term "dehydration"'. Nadal and his associates (1941, 1942) have called the two types simple dehydration and extracellular dehydration. I have termed them primary and secondary dehydration (Marriott, 1943). It is perhaps best to get away from the word "dehydration" and speak, in terms of causation, of water and/or salt depletion.

Pure water depletion occurs when water intake stops or is inadequate and when there is no significant sodium chloride loss in secretions. The common causes are great weakness from any serious medical or surgical condition, coma of any causation and dysphagia due to local conditions. Administration of saline to patients suffering only from water deficiency makes them worse (McCance and Young 1944). Pure salt depletion arises when water and salt are lost in secretions—for example, in vomiting or diarrhoea—and water only is replaced. This situation is common nowadays when there is general consciousness of the importance of dehydration but a tendency to think only in terms of water administration and to forget that water cannot be held in the body without salt. Fluid balance in patients so treated is usually recorded on intake and output charts which at least for a time show satisfactory figures in regard to urine output. In spite of their theoretical hydration they continue to look dehydrated and go downhill. They are not thirsty and this is regarded as further evidence that they cannot really be dehydrated. Their deaths are ascribed to toxæmia or uræmia or circulatory failure when they have in fact died from simple lack of salt and

could easily have been saved. It is probably not an exaggeration to say that large numbers of patients die unnecessarily in these circumstances. On the other hand, others die from uncontrolled excessive saline administration.

Basic Physiological Considerations

The main facts relating to body water are shown in Table I and Fig. 1 (Peters, 1935, 1942, 1944, Gamble

TABLE I—Normal Content of Body Water in a Man Weighing 70 kg (11 stones)

	% of Body Weight	Litres*
Intracellular	40-50	35
Extracellular	12-18	11
Tissue fluid	4-5	3
Plasma		
Total	70	49

* The British pint = 0.57 litre the U.S.A. pint = 0.47 litre

1942, Abbott, 1946). The total salt content of the body is about 1/400 of the body weight (Bartlett, Bingham, and Pedersen, 1938). In a 70-kg (154 lb or 11 stones) man this means about 175 g, or 6 oz. Two thirds of it is in the plasma and tissue fluid, nearly all the rest is in the alimentary secretions, sweat and urine. The composition of plasma and tissue fluid is shown in Fig. 2 (Gamble *et al.*, 1923, Gamble, 1942). The great predominance of sodium and chlorine is evident. It should be observed that the composition of plasma and tissue fluid, apart from the protein in the former, is identical. Indeed these are not two fluids but the same single continuous fluid—the extracellular fluid. This conception of the continuity of the extracellular fluid is vital to understanding of the subject.

The intravascular portion of the extracellular fluid is said to lie within the 'vascular compartment'. The tissue space portion is said to occupy the 'interstitial compartment'. It must, however, be understood that there is constant to-and-fro filtration of the fluid between the two compartments. In every capillary there is hydrostatic ejection of fluid in the proximal portion while in the distal portion where the hydrostatic pressure gradient has declined, there is return of an equivalent volume of fluid under the influence of the osmotic pressure exerted by the plasma

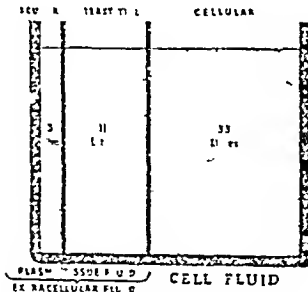


FIG. 1—Body fluid compartments (man of 70 kg)

* The Course in Lectures delivered at the Royal College of Physicians, London, on Dec. 7 and 8, 1946. These will be published in the next issue of the Journal and will appear in the next issue.

protein molecules (Starling, 1895-6) The volume of oselating filtrate is possibly of the order of hundreds of litres daily The normal constancy of the plasma volume is evidence of the accurate balance struck between hydrostatic pressure and plasma protein osmotic pressure If it were not for the latter, a man would lose the whole of his plasma into his tissue spaces within ten seconds (Landis, 1937)

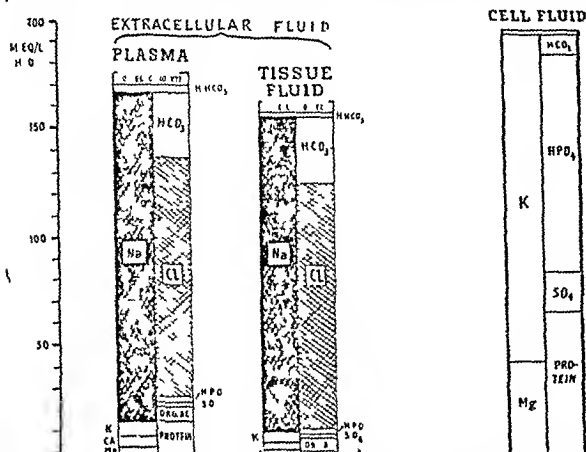


FIG 2—Composition of plasma and tissue fluid (extracellular) compared with that of intracellular fluid. The scale is graduated in milliequivalents per litre of water (= milligrammes per litre - atomic weight \times valency)

The back-and-forth movement of fluid between the vascular and interstitial compartments facilitates exchange of substances, so that the tissue fluid is maintained constant in all its properties. According to the concept of Claude Bernard the tissue fluid is the "internal environment" of the cells and the reason for the evolution of multicellular organisms wherein cells are assured of existence in a medium far more constant than the cells of unicellular or few-celled organisms can count upon from the external environment. Intracellular fluid is of quite different composition from extracellular fluid (see Fig 2) and is practically devoid of sodium and chlorine except for the small amount of the latter in red blood cells (Laviates, D Esopo, and Harrison, 1935)

The distribution of water between cellular and tissue fluids is determined by their relative osmotic pressures, since cell membranes are freely permeable to water (Darrow and Yannet, 1935). Osmotic isotonicity of the tissue fluid is perhaps the most important of all the properties in regard to which constancy is required by the cells. Any osmotic imbalance must result in water being either sucked out of the cells or forced into them. In the osmotic equilibrium between intracellular and tissue fluid it is the electrolyte ions which play the chief part. In cell fluid the main ions are potassium cations and phosphate anions, in the extracellular

fluid osmotic pressure is mainly exerted by sodium cations and chlorine and bicarbonate anions. The sodium ions are the most important because there is no substitute for them. Any lack of chlorine ions is automatically filled by bicarbonate ions, which are always freely available from tissue metabolism. The osmotic relationship between the body-fluid compartments is shown diagrammatically in Fig 3. The dividing septa—the capillary and cell mem-

Osmotic Difference between Water and Salt Depletion

The difference between these conditions is shown diagrammatically in Fig 4, it depends on the fact that the respective depletions produce opposite effects on extracellular fluid osmotic pressure. In simple water lack the extracellular fluid becomes hypertonic because water is lost from it, through the lungs, skin, and urine, without fully

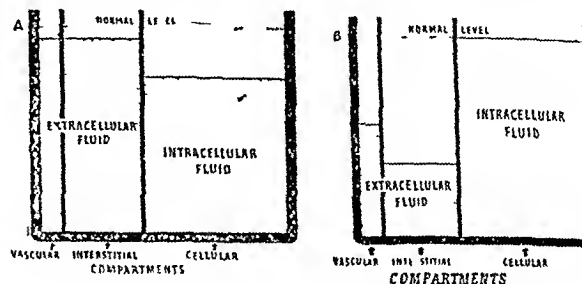


FIG 4—Showing the osmotic pressures in (A) pure water depletion (primary or simple dehydration) and (B) pure salt depletion (secondary or extracellular dehydration)

parallel salt loss. In consequence water is sucked out of the cells and the volume of the extracellular fluid tends to be maintained. The dehydration is chiefly a matter of loss of cellular water. In salt depletion the extracellular fluid becomes hypotonic from loss of electrolytes. There is no tendency for water to be sucked out of the cells. The volume of the extracellular fluid falls because the kidneys excrete water in the attempt to maintain extracellular isotonicity. The reduction in volume is relatively greater in the tissue fluid than in plasma, because the simultaneous decline in hydrostatic pressure, together with a rise of colloid osmotic pressure from concentration of plasma proteins, determines a relative shift of fluid into the vascular compartment from the interstitial compartment. This shift, however, is insufficient to prevent marked fall in plasma volume.

Body Water Balance

Under normal conditions water intake exceeds requirements and balance is maintained by renal excretion of the surplus. Average adult intake and output figures are given in Table II. If all water intake stops, unavoidable water

TABLE II—Average Water Intake and Output in an Adult

Intake		Output	
	ml		ml
As fluid	1,500	Vaporization	1,000
As solid food	1,100	Lungs, 400	
		Skin, 600	1,500
		Urine	100
		Faeces	
Total	2,600	Total	2,600

losses continue by vaporization (through the lungs and skin), 1,000 ml, and in the form of urine (minimum), 100 ml, a total of 1,100 ml. So the body loses water at a rate of about 2% of body weight per day. Death when the loss reaches approximately 15% of body or 20 to 22% of body water—in about 7 to 10 days.

Urine Water Minimum Excretory Volume

Ordinarily, urine water consists of two parts (a) minimum volume for excretion of waste products ("obligatoire" of Ambard and Papin, 1909), and (b) surplus

water The minimum volume depends on the concentrating power of the kidneys and the amount of waste products The relation of required minimum volume to maximum attainable specific gravity is shown in Fig 5, constructed from the data of Newburgh *et al* (1932, 1933, 1935)

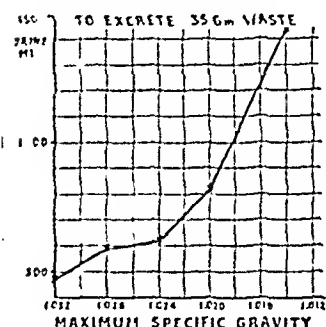


FIG 5—Chart to show the relation of required minimum volume to maximum specific gravity of urine

solutes, and concentration is dealt with by Gamble and Butler (1944) Diminished renal concentrating power is common It occurs in infancy (McCance, 1946), in old age, in chronic nephritis, and in other pathological conditions of the urinary tract, such as obstructive lesions—especially prostatic obstruction It also occurs as a sequel to many conditions of severe illness or 'shock' (Macgrath, 1945) Of particular relevance is that it follows

upon any episode of severe or prolonged dehydration, especially of the salt-depletion type Such episodes are often recurrent Patients who can secrete only dilute urine may need to pass nearly 2 litres (3½ pints) daily, they very readily enter the common vicious circle shown in Fig 6 It happens in many cases

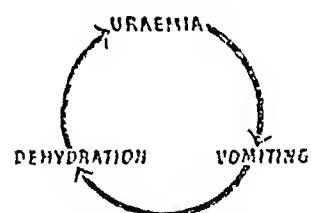


FIG 6—Vicious circle due to inadequate volume of urine

A useful device suggested itself to me some ten years ago in regard to a man 80 years of age with damaged kidneys who invariably forgot to carry out instructions to drink 6 pints (3.4 litres) a day On three occasions he became uraemic and passed into the vicious circle of Fig 6 each time he was rescued by intravenous infusions After the third attack he was supplied with a large measuring cylinder with a red ring painted round it at the 2000 ml mark, and he was told to pass all his urine into it and reach the red ring every 24 hours or he would die This clear demonstration of the purpose before him plus its automatic action as a reminder achieved what exhortation had failed to do The same device using old glass

was secured an adequate output of urine from sweating soldiers on sulphamidates in hospitals in India and Burma It is especially applicable to the conditions of general practice but is also very useful in hospital work

The other factor which determines the minimum excretory volume of urine is the quantity of waste products This is relatively much greater in infants and children because of their greater metabolism It is raised in any condition increasing metabolism in individuals of any age, such as muscular exertion fever and thyrotoxicosis it is also increased in water depletion (Black *et al* 1944) It is particularly raised after haemorrhage into the alimentary tract (Black 1939 1940 1942 Chunn *et al*, 1941a and b) A severe haemorrhage from a peptic ulcer may discharge as much protein into the gut as a meal of 5 or 6 lb (2.26-2.7 kg) of meat Raised blood urea is important when dehydration enters into the picture because it produces forced diuresis (Avery Jones, 1939, Black, 1942)

Water Balance in Children

I introduce this subject with confidence as I have little personal experience However no consideration of water

and salt depletion would be complete that did not mention these states in children, in whom they are doubly important The relatively greater metabolism of infants and children causes greater loss of water by vaporization, since this is a function of energy metabolism It also, as already stated, causes a proportionately greater amount of waste products, necessitating a relatively larger minimum excretory urine volume Gamble (1942) estimates the unavoidable water losses of a 7-kg (15½-lb) infant as

Vaporization (lungs and skin)	ml
Minimum urine	200
Total	300

The total unavoidable losses for a 70 kg (11-stone) man have been put at 1,500 ml Therefore the unavoidable water depletion of an infant is proportionately twice as great and represents a daily loss of 4% of body weight Recent work showing the inability of infants to secrete concentrated urine (McCance and Young, 1941, McCance 1946) suggests that the figure for minimum urine is higher than that stated above It is evident why infants ingest so much more water, in proportion to relative body weights, in their milk than do adults from their beverages and solid food The relative amounts are between three and four times as great It is also evident why infants withstand water deprivation so badly their total store is depleted at twice, or more than twice, the rate of adults and so they die in less than half the time

Causation and Effects of Pure Water Depletion

Pure water depletion may be caused by (1) Conditions in which water is unavailable, as in the case of shipwrecked men in boats, men lost in the desert, or immobilized by injuries and unable to reach a water supply (2) Inability to swallow, due to (a) dysphagia from such causes as quinsy diphtheria, or carcinoma of the oesophagus, (b) coma of any causation, (c) great weakness In practice the last the chief cause, for great weakness may arise in any serious medical or surgical condition 'Extremely enfeebled patients cannot make their need for water effective Thirst, the normal protection against dehydration, loses its insistence, and their weak state renders the satisfaction of even such thirst as they do feel an intolerable effort They really cannot rouse themselves to the exertion of drinking a few sips and they give up and feebly shake their heads' (Marriott and Kekwick, 1937)

Knowledge of the effects of pure water depletion is derived partly from clinical observations on patients, but more precise information has come from experimental water deprivation of animals and of volunteers (Coller and Maddock, 1935, Black, McCance, and Young, 1944, McCance, 1945) Thirst is the earliest symptom and tends to be progressive (Dill, 1938) Dryness of the mouth, due to decreased salivation, soon follows and is also progressive, it may make the swallowing of dry food impossible The urine volume falls to the minimum and the urine becomes as concentrated as the renal concentrating power will allow Given normal kidneys and a normal solute load, the volume will be approximately 500 ml, the content of dissolved solids 6 to 8 g per 100 ml, and the specific gravity will rise to more than 1030 and may even exceed 1040 The kidneys are faced with the dilemma of having to attempt simultaneously to excrete waste and salt and yet to economize water Loss of weight is proportional to the water deficit Weakness is progressive but is not marked until three or four days have passed Patients look ill and their faces have a 'pinched' grey appearance Temperamental peculiarities become exaggerated Black, McCance, and Young (1944) state 'Serious people become sombre

while others, normally cheerful, exhibit a somewhat hollow vivacity. Mental power is eventually impaired and the patient may suffer from confusion and hallucinations.

The sodium chloride content of the plasma tends to rise, according to Black *et al* (1944) plasma sodium increases by 30 mg per 100 ml after three or four days. The blood urea slowly rises, though normal glomerular filtration tends to be maintained—at least up to moderately severe hydropenia (Black, McCance, and Young, 1942, McCance, 1945). Evidence of alteration in the plasma volume, so far as I have been able to discover, is scanty. There seems to be very little shrinkage of plasma volume, and consequent haemoconcentration, at levels of water depletion around 6% of body weight (Coller and Maddock, 1935, Black, McCance, and Young, 1944). It would be of great interest to know the facts in regard to the late stages. Evidence of circulatory changes is also inadequate. Water absorption is very rapid and the patient's condition improves within a matter of minutes after water ingestion.

The mechanism of death is far from being finally settled. Kerpel-Fronius (1935) and Black, McCance, and Young (1944) consider the probable cause of death to be a rise of the osmotic pressure of the body.

Quantitative Correlation of Manifestations and Deficit

Existing information permits the division of cases of water depletion into three grades:

(1) *Early*—Thirst definite but other effects not yet present. A deficit of approximately 2% of body weight, equivalent to 1.5 litres or 3 pints in a 70 kg man.

(2) *Moderately Severe (three to four days without water)*—Marked thirst and dryness of mouth, oliguria, weakness, ill appearance, slight personality changes, still capable of fair mental and physical performance. A deficit of approximately 6% of body weight (4.2 litres, or 1 gallon, in a 70 kg man).

(3) *Very Severe*—All the above manifestations with in addition marked impairment of mental and physical capacity. A deficit of 7 to 14% of body weight (5 to 10 litres, or 1 to 2½ gallons, in a 70-kg man).

Body Salt Balance

Salt balance is normally maintained in a similar way to water balance, that is, intake (average, 8 to 15 g daily) exceeds requirements and the surplus is excreted in the urine. The intake is derived from salt combined in food or added during cooking or as a condiment. Considering the importance of salt, it is odd how often official or authoritative publications omit definition of sodium and chlorine requirements from recommendations regarding dietary allowances, and also leave out of nutritional tables the amount of these elements present in various foods. This is even true in tropical countries, where salt deficiency is perhaps the commonest of all deficiency states. A most important practical point of difference between water and salt, in regard to balance maintenance, is that, whereas water intake is safeguarded by thirst, there is no similar insistent sensory warning when salt is deficient.

If neither water nor food is taken, the effects of water depletion dominate the picture because unavoidable water losses continue while salt loss, assuming no abnormal losses are occurring, is relatively slight. The body economizes salt more efficiently than water. If only intake of food ceases and water continues to be taken it is a considerable time, in the absence of abnormal salt losses, before serious salt depletion occurs. The kidneys practically stop excreting salt as soon as plasma levels fall below normal—that is, sodium, 320 to 350 mg per 100 ml or 139 to 152 meq/litre; chlorine, 340 to 385 mg per 100 ml or 97 to 110 meq/litre. Benedict (1915) in his study of Levanzin who fasted and drank only distilled water for

31 days, found sodium and chlorine in the urine to be as follows:

Period	Sodium	Chlorine
First 10 days	8.96	8.44
Second 10 days	0.89*	2.13
Third 10 days	0.59	1.57
Total	7.44	12.14

* Benedict's figures for sodium were incomplete for 4 days of the middle period. I have assumed an average for these 4 days.

This represents a total loss of less than 20 g of salt in 30 days.

Abnormal Salt Balance

Deviations from normal balance may be negative or positive. In the former salt depletion arises from abnormal losses of salt in alimentary secretions, sweat, or urine (Addison's disease). Half, or even slightly more, of the total body salt may be lost. The salt of extracellular fluid may fall to one-third or even one-quarter of normal, this statement is not based on direct measurement but on deductions from data regarding the amount of salt needed to restore normal balance (Marsh, 1937, Bartlett *et al*, 1938, Sanchez-Vegas and Collins, 1946, Marriott, 1946). Such depletion in a 70-kg man represents 3 oz (85 g) of salt, or the amount in 10 litres (18 pints) of isotonic saline. The causation and effects of salt depletion will later be more fully discussed.

Some consideration of positive deviation from balance (salt retention) is necessary because it has a bearing on the treatment of salt depletion. It occurs from excessive administration of saline or from inefficient renal excretion of salt. It also arises, still more commonly, when imbalance of hydrostatic and osmotic pressures causes a relative shift of fluid from the vascular to the interstitial compartment. This may be due to rise of intravascular hydrostatic pressure, as in congestive cardiac failure or venous obstruction, or to decrease of plasma protein osmotic pressure from hypoproteinaemia (albumin less than 3 g per 100 ml; Bruckman and Peters, 1930, Weech *et al*, 1931, 1933, Humsforth, 1946) due to starvation, insufficient absorption, inadequate hepatic synthesis, or abnormal protein loss in urine or exudate. Frequently an important part is played by increased capillary permeability, permitting escape of protein, due to mechanical, thermal, anoxic, or toxic damage (Landis, 1937). Whenever salt is retained water is also retained to the extent of 1 litre for every 6 or 7 g of sodium chloride (De Wesselow, 1924). The body tolerates a gross excess of extracellular fluid far better than it does any change in its salt concentration (Stewart and Rourke, 1942). In severe generalized oedema there may be more than 100 lb (45.3 kg) of additional extracellular fluid, and the extra salt within the body may cause the body's total to be three times as much as normal. For example, a man normally weighing 70 kg may contain over 1 lb (453.6 g) of salt instead of 6 oz (170 g).

In oedematous states the restriction of water intake, so long practised, tends merely to cause the extracellular fluid to become hypertonic because the kidneys are provided with insufficient water to excrete the excess of salt. In consequence water tends to be sucked out of the cells. Hence the patient, though massively oedematous, may actually suffer from cellular dehydration (Schemm, 1942, 1944) and complain of thirst and dry mouth, which are symptomatic of cellular desiccation (Dill, 1938). Every clinician of experience has seen such cases in which the water in the great pool of tissue fluid is not available to the kidneys and thus a policy of water restriction has

little influence on the oedema but causes oliguria and may produce uraemia. Such patients are better regarded as brine-loaded (Schemm, 1942) rather than water-loaded. The really important consideration in their treatment, apart from rectification of the fundamental cause of the oedema, is restriction of daily intake of sodium chloride to not more than 15 g. The kidneys will not, save in exceptional circumstances, retain water in the absence of salt, for they obey their fundamental law, as chief regulators of the internal environment, that extracellular isotonicity is the prime consideration. For example, it is very difficult under experimental conditions to produce oedema from hypoproteinaemia if salt is restricted (Kerlhof, 1938). In patients suffering from cardiac failure, and on a regimen of severe salt restriction, daily water intake may exceed 6 litres (Leevy *et al*, 1946) and even reach 10 litres (Schemm 1942) without increase of the oedema. Actually in such cases it would seem that the right course is neither to restrict nor to force water intake but to allow the patient whatever water he desires (Leevy *et al*, 1946).

Salt in Alimentary Secretions and Sweat

The salt content, with the relative sodium and chlorine ratios, in the alimentary secretions and sweat is shown in Fig. 7 (after Gamble, 1923, 1942, and McCance, 1936).

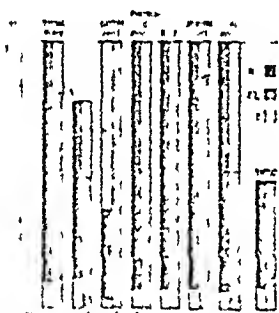


FIG. 7—Salt content of alimentary secretions and sweat with relative sodium and chloride ratios.

The great predominance of these ions should be noted. The quantity of the various secretions daily secreted into and reabsorbed from the alimentary tract is shown in Table III (Rowntree 1922, Gamble, 1942; Abbott, 1946). So far as sweat is concerned, it needs to be appreciated that there are two kinds—insensible and sensible. Insensible sweat (Sanctorius 1614, Newburgh and Johnston, 1942) vaporizes continuously and invisibly from the body even under cold atmospheric conditions. Its average amount is about 600 ml. daily. Its sodium content is said to be negligible and it may be regarded as practically distilled water (Nadal, Pedersen, and Maddock, 1941). Sensible sweat is secreted when the body becomes heated. In the tropics its volume may reach 3 gallons (13.5 litres) a day.

TABLE III—The Alimentary Secretions

	ml.
Saliva	1,500
Gastric juice	2,500
Pancreatic juice	700
Bile	500
Intestinal juice	3,000
Total	8,200*

* Amount of 2 pints with 2 oz. of sodium chloride.

(Harris 1912). It is virtually isotonic saline, since sodium and chloride are its main constituents. The concentration of sodium chloride varies from 1 to 5 g. per litre in different individuals (Moss 1923, Kuro 1934, McCance, 1936, Dill 1938, Madel, Viceroy, and Hudson 1944). The average concentration for Europeans is usually around 2.5 to 3.0 g. per litre or 1.3 to 1.4 oz. per gallon.

Under normal conditions in Britain nearly all salt excretion is by way of the urine and individuals lose only a very small proportion of their daily salt intake from the sweat. This is true even from the tropics.

Physiological Functions of Salt

As already shown, sodium and chlorine are the chief components of extracellular fluid (tissue fluid + plasma), the alimentary secretions, and sweat. In the extracellular fluid the main function, already discussed, of these ions appears to be to supply osmotic pressure so that isotonicity with intracellular fluid is preserved. Another function is that sodium and chlorine play principal parts in the acid-base balance of extracellular fluid. As is well known, the general tissue cells require an environment of constant slight alkalinity, and the various acid-base regulating mechanisms work to preserve it. In Figs 2 and 7 basic and acid radicals occupy respectively the left and right columns of each diagram. Reference to Fig. 2 shows that in extracellular fluid more than 90% of the total base is represented by sodium and more than 70% of the total acid by chlorine.

In the alimentary secretions the chief functions of sodium and chlorine again appear to be concerned with osmotic pressure and acid-base adjustment. As regards osmotic pressure, the cells lining the alimentary tract, particularly in its upper part, are adapted to withstand non-isotonic fluids. Nevertheless isotonicity appears to be an important consideration, since with the exception of saliva, these secretions are all approximately isotonic with tissue fluid (see column heights in Fig. 7). As regards acid-base adjustment, the various digestive enzymes need widely differing conditions of acidity and alkalinity. In consequence sodium and chlorine are secreted in the varied ratios shown in Fig. 7.

In sensible sweat sodium and chlorine seem almost accidental constituents and not to have important functions. The reason for this statement is that there is such a wide individual difference in the salt concentration of the sweat of different persons that it seems hard to believe that any particular concentration matters. In tropical countries the salt content of the sweat of natives or long-time residents appears to be much lower than that of new arrivals (Dill, 1938, Lee *et al*, 1941).

Renal Regulation of Extracellular Sodium and Chlorine

As Gamble (1937) has said "The kidney is very inadequately described as an organ of excretion. Were removal of waste products its only function, a much simpler mechanism would suffice. Its complexity of design and intricacy of function are required for the construction and accurate defence of extracellular fluid on the chemical constancy of which depends the successful operation of intracellular processes. Renal conservation of the constancy of the internal environment is achieved by selective reabsorption of the components of the glomerular filtrate. First in importance among them are water, sodium, and chlorine. In normal adults the maximum attainable urinary concentration of chlorine is about 0.33 N (Davies, Haldane, and Plesent, 1922). Expressed as NaCl this concentration equals approximately 2% of salt in urine. The concentration of chlorine and HCO_3 equals 0.33 N of either or of both together. The maximum for sodium seems to be of the same order or a little higher. The ability of the kidneys to excrete sodium and chlorine, together or separately, has an important bearing on the administration of saline. In adults the renal concentrating power may be damaged in the common conditions mentioned in the section on minimum urine volume, and in these conditions patients may be unable to excrete salt in concentrations exceeding 0.4% (approximately 1/2 isotonic saline). In normal infants the ability to excrete salt is much less than in adults (McCance and Young, 1941, 1942; McCance 1946). This explains why the...

and Young found the sodium and chlorine clearances in full-term babies aged 7-14 days to be about one-fifth of the value they would be likely to acquire in later life. Still lower clearances were found in premature babies (Young, Hallum, and McCance, 1941).

As is now well known, the cortex of the suprarenal glands plays an important part in regard to renal excretion of salt. In experimental adrenalectomy or in Addison's disease there is an excessive excretion of sodium chloride, and in consequence the plasma level falls. Excretion may continue in Addison's disease even when the plasma chloride, expressed as NaCl, is below 500 mg per 100 ml (Anderson and Lyall, 1937). The subject has been reviewed by Loeb (1941), whose own work in this field has been of such importance. Detection of the tendency to excessive salt excretion, under standard conditions of salt restriction, is the basis of the well-known test for Addison's disease which has been devised by Cutler *et al* (1938a, b). There is similarity in failure of hormonal control causing excessive excretion respectively of water and salt in diabetes insipidus and in Addison's disease. However, in the former the body is saved from very serious consequences by the protective mechanism of thirst, while in the latter there is no equivalent salt-craving. In passing it should be observed that in diabetes insipidus there is no increase of salt excretion or fall in plasma chloride level—this was the finding of Blotner (1941) in 22 cases of that disease.

(Part II will be published in the next issue)

THERAPEUTIC POSSIBILITIES OF RADIO-PHOSPHORUS

BY

J S MITCHELL, M.B., Ph.D

Radio-phosphorus (P^{32}) has been used since 1936 in the treatment of patients with chronic myeloid and lymphatic leukaemia, polycythaemia vera, lymphosarcoma, and various related diseases. Most of this work has been done in the U.S.A. Important summaries of the American results have been given by Low-Beer, Lawrence, and Stone (1942), Kenney (1942), and Reinhard, Moore, Bierbaum, Moore, and Kamen (1946). Of great interest is a paper from Stockholm by Lindgren (1944).

Clinical trials of the therapeutic possibilities of radio-phosphorus have not yet been carried out in Great Britain although tracer studies with P^{32} made by cyclotrons are in progress. However, it now seems reasonably certain that within the next year we shall be fortunate enough to obtain adequate and regular supplies of P^{32} made by means of a "pile". The isotope P^{32} is produced in the pile from ordinary phosphorus (P^{31}) by slow neutron capture and is used in the form of isotonic Na_2HPO_4 solution (15 mg per ml), with initial radioactivity of about 300 microcuries per ml. The pile can produce a specific gravity of one-third curie of P^{32} per g of phosphorus. The P^{32} given therapeutically should be accompanied by the smallest possible amount of P^{31} .

Dosage

The radioactivity of the phosphate solutions used can be determined by means of a Laursen electroscope calibrated with a uranium standard, but for clinical investigations a Geiger counter is essential. It appears most satisfactory to give the radioactive phosphate solution intravenously, usually in unit doses of the order of 0.5-2 millicuries. However, oral administration is possible, and it is stated

that "it is the practice of most workers who give P^{32} orally to assume that 75% of any given dose is absorbed."

The physical properties of P^{32} are well known. This isotope has a half-life of 14.3 days and emits only beta particles. The maximum energy of the beta particles is 1.71 mev, the mean energy of the beta particles is of great importance in clinical applications and has the approximate value of 0.70 mev.

Although as yet most of the clinical dosage of P^{32} has been necessarily empirical, it seems highly desirable to correlate the dose of radioactive isotopes with the roentgen unit. An important paper on this subject was published by Marinelli (1942). It can be shown that 1 microcurie of P^{32} per g of tissue delivers 43 r per day, 1 g roentgen corresponds to 1.13 microcuries destroyed per kilogram of tissue, and if 1 millicurie is retained for 24 hours by a patient weighing 70 kg, approximately 0.6 roentgen equivalents of whole body radiation are delivered. In radioactive isotope therapy it is useful to measure the differential absorption ratio for the isotope, which may be defined as the ratio of the concentration of the radioactive material in a particular tissue to the mean concentration in the body as a whole. The possibility of delivering useful doses of radiation in any particular case may be determined by measuring the differential absorption ratio by means of tracer studies (Kenney, Marinelli, and Woodard, 1941). In this way it was found impossible to deliver therapeutically useful doses of beta radiation from P^{32} to the primary tumour or metastases in cases of carcinoma of the breast and of osteogenic sarcoma. The present tendency in all diseases except polycythaemia vera appears to be to follow the "fractional method" of dosage of P^{32} outlined by Low-Beer, Lawrence, and Stone (1942). It seems that one can treat a typical case of chronic myeloid leukaemia with an initial dose of perhaps 1 millicurie of P^{32} , followed by five doses of 0.5 millicurie at three- to four-day intervals, and then doses of 0.5 millicurie weekly until the total white cell count has fallen to about 30,000 per cmm. Then one or two fractions may be given subsequently at longer intervals. The whole clinical and haematological picture must obviously be taken into account. It seems likely that the above unit doses can be safely doubled in some cases, with reduction of the over-all time of treatment. The average treatment for the 39 cases of chronic myeloid leukaemia reported by Reinhard *et al* (1946) corresponds to 11.8 millicuries of P^{32} administered in 78 days. In the treatment of polycythaemia vera it is recommended that the initial dose is 3.5 to 4 millicuries of P^{32} . This may suffice, but in some cases it is necessary, after waiting three months, to give a second dose of 1 to 3 millicuries; ancillary venesection is often advisable.

Therapeutic Value

It is not yet possible to assess with confidence the therapeutic value of radio-phosphorus, but it is evident that the earlier optimism is not yet justified. The conclusion reached by Reinhard *et al* (1946) may be summarized as follows:

- 1 Radio-phosphorus is probably the best therapeutic agent available at the present time for polycythaemia vera.
- 2 The results of treatment by radio-phosphorus of patients with chronic myeloid leukaemia are probably comparable with those of the usual x-ray therapy but are not substantially better. With P^{32} , freedom from radiation sickness is a practical advantage which patients who have had previous x-ray therapy appreciate. Great care appears to be necessary in treatment with P^{32} to avoid serious damage to the bone marrow.
- 3 "In the treatment of chronic lymphatic leukaemia radio-phosphorus is probably as satisfactory as, but not better than, roentgen radiation."

4 Radio phosphorus is of no value in the treatment of acute leukaemias or of monocytic leukaemia

5 Hodgkin's disease lymphosarcoma reticulum cell sarcoma and multiple myeloma do not respond as favourably as P³² as they do to x radiation

6 The limited evidence available suggests that radio phosphorus is not likely to prove to be a satisfactory agent for the treatment of carcinoma of the breast malignant melanoma lympho epithelioma Ewing's tumour or mycosis fungoides

However, the work of Kenney (1942) suggests that further clinical trials of radio phosphorus in lymphosarcoma are desirable

It seems doubtful whether radio-phosphorus, in the form of inorganic phosphate, will stand the test of time even in the treatment of chronic myeloid leukaemia. In his report to the United Nations Atomic Energy Commission on Sept. 23, 1946, Dr C P Rhoads, the Director of the Memorial Hospital, New York, discussed the treatment of chronic myeloid leukaemia and concluded that 'a tendency in most institutions is to discard the use of radio-phosphorus and to stick to conventional x ray as being somewhat safer and more predictable in its results and attended by less hazards to the patient even though it does cause some illness in the course of treatment'

In conclusion, one can quote again from Dr Rhoads report. To have expected inorganic elements to be picked up so selectively and concentrated so adequately by cancer tissue as compared to normal tissue was a very optimistic hope. I am not surprised that we are somewhat disappointed, but we have a vast field before us. We are beginning to study the selective pick-up by cancer of a vast variety of organic compounds which can be synthesized in the laboratories of organic chemistry to contain radioactive isotopes of a variety of elements. I am very hopeful.

A final aspect of the therapeutic application of radio-phosphorus is the possibility of development of beta-ray applicators using P³² perhaps incorporated in plastics. A report on human skin reactions produced by the external use of radio phosphorus has been published recently by Low Beer (1946). The estimated number of roentgen equivalents dissipated in the first millimetre of tissue is 4.3 per hour per microcurie per square centimetre area. The maximum range of the beta-particles from P³² is approximately 8 mm in water or unit-density tissue. It is stated that half-value layer measurements have shown that about 48% of the radiation is absorbed in the first millimetre of tissue. The results of these studies suggest that the use of radioactive phosphorus in the local treatment of certain superficial skin diseases is reasonable.

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Summary: The author has added to the average life span of Americans a one per cent made by Dr James A. Crabtree as the Surgeon-General of the U.S. Public Health Service in a recent report. The author has also added to the average life span of Americans a one per cent made by Dr James A. Crabtree as the Surgeon-General of the U.S. Public Health Service in a recent report. The author has also added to the average life span of Americans a one per cent made by Dr James A. Crabtree as the Surgeon-General of the U.S. Public Health Service in a recent report.

PINK DISEASE: A REVIEW OF 65 CASES

BY

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Pink disease sprang into prominence in medical literature in the early years of the century and seems to have established itself in this country as a not very common but nevertheless, regularly recurring member of the group of diseases incident to infancy and early childhood. I have reviewed the case histories of patients who attended my out-patient clinic at the Royal Manchester Children's Hospital during the 14 years from 1932 to 1945 to see if any further light can be thrown on the nature of this still somewhat puzzling ailment. During this period 65 infants and young children—27 males and 38 females—suffering from the disease came under my observation. I followed the progress of 48 of these from the time of their first attendance to the end of their illness. The remaining 17 I saw on only one or two occasions, but I ascertained the subsequent progress of 14, the other three I was unable to trace. Of the 62 children whose subsequent progress is known 53 made a complete recovery and 9 died.

Incidence of the Disease

Year	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945
No. of cases	3	4	5	4	1	5	3	7	6	6	7	2	5	7

There was a fairly even distribution over the whole period. The drop in numbers in 1936 and 1943 can have no significance where such small numbers are concerned unless other observers have noted a similar feature.

Month of Onset of the Disease

Month	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
No. of cases	8	4	6	5	4	6	5	4	7	6	2	5

These figures embrace the whole period and show that there was no demonstrable variation in seasonal incidence. The impression that it is commoner during the winter months can, I think, be explained by the greater severity of the disease due to intercurrent infection, during that period of the year.

Age of Onset

Age in Months	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	25	38	50
No. of cases	1	4	3	6	6	9	2	8	7	0	4	2	1	1	2	2	1	1	3	1	1

The figures show a rapid increase from the age of 4 months (the earliest age at which the disease occurred) to the end of the first year, and thereafter a sharp decline. The two children who succumbed to the disease in their fourth and fifth years were quite outside the usual age period in this series. A calculation of the average age of onset in each year throughout the period shows no significant trend in the behaviour of the disease towards an earlier or later susceptible age of choice.

Average Duration for Each Year

Year	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945
Duration in months	3.5	3.3	3.7	3.8	—	4.1	3.0	3.7	4.7	3.0	4.6	—	5.3	3.9

In 1936 one case was seen (duration 3.5 months). Two cases were seen in 1943 but the duration of the disease could not be determined for one of the children.

The average duration in 46 infants recovering from the disease was four months. The shortest was six weeks, the longest nine months. Here, again, there is no demonstrable change in behaviour, and little to support the impression I had formed that the disease tends to strike at an earlier age and to run a more protracted but milder course in recent years.

Age of onset did not have any significant influence on the duration of the disease, though it may be remarked that all infants whose symptoms persisted for more than five months had the ailment before the end of their first year. The eighth month seems to be the most common, and from the point of view of duration and morbidity the most unfavourable, age at which to contract the disease. The patients came indiscriminately from the whole area (predominantly industrial) served by the hospital, and no predilection for any particular region or district was detected. Nor could social or financial status be shown to have any obvious influence. No evidence remotely suggesting transmission of the disease from one child to another came to light, and the theory of dietetic deficiency or lack of balance received no support from a study of the case histories.

Symptoms

The disease develops insidiously and is usually well established when the infant is brought to hospital. No first-hand observations can therefore be made concerning the onset, beyond noting that there is seldom any history of previous ill-health or serious dietetic mismanagement. A study of the case notes and of the clinical course of the disease as it unfolds itself readily suggests a natural division of the symptoms into two groups: the basic symptoms, constant and persisting throughout the duration of the disease, and the inconstant and variable cutaneous manifestations. The troublesome and dangerous intercurrent infections to which infants suffering from this disease are particularly susceptible are always ready to take advantage of any carelessness in management. There are three basic symptoms: a profound change in temperament, muscular hypotonia, and tachycardia.

The hitherto thriving infant loses his normal contented disposition and gradually comes to present a picture of unhappiness far exceeding in intensity and duration the intermittent fractiousness of teething, to which process the symptoms of the disease are at first too readily ascribed. The unhappiness increases until, finally, he exhibits a continuous, miserable, peevish resentfulness or an active, militant fury against all the agencies of the external world and particularly its immediate representatives, his mother or the examining physician. Muscular hypotonia may be extreme. The art of walking if already attained is lost. The infant slumps spinelessly in his mother's arms, with his face buried in her shoulder. The hypotonia is most characteristically seen in the thigh muscles, which lie flaccidly on either side of the femur and may, in severe cases, have almost a semi-fluid consistency on palpation. A persistently rapid pulse rate of between 144 and 168, rising to 192 under the provocation of examination or other interference, completes the basic pattern of the disease.

Superimposed on this sustained picture of infantile distress the cutaneous symptoms vary considerably in their time of onset, intensity, and duration. They include the vasomotor phenomena of the extremities: the rash, excessive perspiration and the special manifestations affecting the buccal and conjunctival mucous membranes. The puffy, pink or bluish red, cold clammy hands and feet and the sudaminal eruption on the trunk and limbs, criss-crossed by excoriation from the constant scratching, are the two most regularly appearing features. The rash may be transient and of only a few days' duration or may persist for

several weeks. In 12 of 32 infants whose history could be regarded as reliable the rash and swollen extremities were said to have been present from the onset. In the remaining 20 they appeared at varying periods from two to eight weeks after the onset. Profuse sweating is a commonly associated feature which exacerbates the rash and helps to give the moist, cold, flabby, almost reptilian feel to the infant's skin. Desquamation appears from two to three weeks later, and reflects, in the extent and depth of the exfoliation, the intensity of the rash.

Buccal irritation, which is often rather to be inferred from the infant's facial expression of profound disgust or distaste and his obstinate refusal of food and drink than from any obvious lesion of the mucous membrane, may be the cause of most intractable and distressing anorexia, which is overcome only by the exercise of much patient perseverance on the part of the child's attendants. Conjunctival irritation, resulting in photophobia but with no visible evidence of conjunctival inflammation, is the most inconstant of the cutaneous symptoms. It may be entirely absent barely perceptible, or quite a leading feature of the disease. In two infants it was a most troublesome symptom, persisting for some weeks after the other signs and symptoms had subsided, but finally disappearing without any evidence of organic ocular disease.

In only one case the child of 4 years, was there an opportunity of getting any subjective account of the symptoms. He complained that his back was always itching and his hands and feet were smarting; he also complained of vague pains in his arms and legs. The majority can give no verbal interpretation of their feelings, but contemplation of the intense erythema and swelling of the extremities to be seen in many sufferers and the exercise of a little imagination should provide a completely adequate explanation for the extreme state of misery to which they are reduced.

The intercurrent infections to which infants suffering from this disease are particularly prone comprise low-grade superficial skin infections, deeper ulcerations in the flexures of the hands and feet when desquamation takes the severe exfoliative form, ulcerative stomatitis, which in two infants culminated in sloughing of the gums, shedding of teeth, and septic bronchopneumonia, and respiratory infections, always badly tolerated owing to the hypotonic condition of the thoracic musculature.

Deaths

There were nine deaths in this series: one infant collapsed quite suddenly in hospital at the height of the disease (1935), one died from the effects of a severe skin infection and widespread furunculosis (1940), two died from septic bronchopneumonia secondary to ulcerative stomatitis (1939, 1940) and three died from acute respiratory infections (1933, 1937, 1938). The exact cause of death in two infants could not be ascertained. Post-mortem examinations performed on two of these infants did not throw any light on the pathology of the disease. This inordinately high death rate is almost entirely attributable to intercurrent infection and underlines the vast importance of most careful precautions against the incidence of these dangerous complications.

Treatment

The precise cause of the disease is as yet unknown and treatment has been symptomatic with special emphasis on prevention of secondary infections. It is generally agreed that home nursing is the method of choice. The enhanced dangers of infection in hospital (unless strict cubicle nursing is feasible) the impossibility at present of nurses devoting the necessary time and attention to feeding and maintenance, and the increase in misery and impotent fury, and

the consequent increase in tachycardia, brought about by separation from familiar surroundings and perhaps frequent changes of attendants all weigh heavily in favour of nursing the infant at home unless circumstances make this quite impossible. However exacting the task the mother should be persuaded to make the extra effort. It should be explained to her that in no disease is patient devotion to the interests of the child better rewarded in the end.

Intensive parenteral vitamin or liver therapy was not employed in this series. A high vitamin intake has been advised as a measure of protection against superimposed infection rather than from a predilection for any particular theory of causation. The main principles in management are scrupulous attention to bodily hygiene, particularly when desquamation is in process, most careful segregation from any human source of nasopharyngeal or respiratory infection, and immense patience in feeding—all food should be boiled or cooked and served as cold as possible (sometimes the only way food or fluid will be taken at all), and food should not be forced into the mouth because of the danger of injury to the buccal mucous membrane and subsequent stomatitis.

The judicious use of sedatives and the local application of such soothing and cooling preparations or physiotherapeutic measures as seem to bring the greatest relief to the patient without causing maceration of the tissues must be a matter of individual experiment and ingenuity. There is no single royal road to success in easing the intense discomfort which is often the most harrowing feature of the disease.

Summary

A review of 65 cases of pink disease is presented. The progress in 62 was ascertained. 53 completely recovered and nine were fatal.

The incidence, age of onset and duration of the disease are given.

The symptoms are divided into two groups and these are discussed.

Treatment and the prevention of secondary infections are dealt with and the advantages of home nursing are emphasized.

PELLAGROUS ENCEPHALOPATHY

BY

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The following account deals with a deficiency syndrome which occurred among prisoners of war in Singapore. As the title indicates, the clinical manifestations suggested a brain lesion; the only pathological support for this contention was the naked eye appearances of the brain and spinal cord at the necropsies on the fatal cases. No histological examination was possible. The syndrome occurred in the form of a comparatively small outbreak after large epidemics of vitamin B₁ deficiency resulting in neuritic and oedematous beriberi and Wernicke's encephalopathy, and later epidemics of B₁-complex deficiencies giving rise to angular stomatitis, glossitis, scrotal dermatitis, pellagra dermal lesions, retrobulbar neuritis, and the painful feet syndrome. So far as I am aware, no such outbreak as this has been previously reported.

This neurological disorder was remarkable for the appearance of spastic paraplegia and for the sake of description and recognition among the medical officers of the camp it was termed the "spastic syndrome". The initial illness varied in severity from a state of deep coma to some effects so slight as to be recognized only by the existence of extensor plantar responses. The residual symptoms similarly varied from a persistent spastic paraplegia so severe as to disable walking to a recovery so complete that no signs remained.

With the assistance of the ward medical officers who had charge of them I was able to keep a close watch on the first

group of cases to be admitted to hospital between August and November 1942. Other cases arising later I saw at less frequent intervals but the total number under close personal observation was 29. In January 1944 I extracted from the hospital records data from 34 undoubted cases of this syndrome which were not included in my previous number. Under the prevailing circumstances it was impossible to see or arrange to see every case suspected of the condition so that this report of 63 cases fails to embrace the total number figuring in the official camp statistics.

In this series there were 6 deaths. Four of these patients after an insidious onset deteriorated rapidly and died within 3, 8, 17 and 18 days of admission to hospital. Necropses were performed by Capt. Lennox, R.A.M.C. and the naked-eye findings are included in the case reports. One patient died of pulmonary tuberculosis and no necropsy was carried out. The sixth died a year after onset with progressive mental deterioration; no changes were found in his brain comparable with those in the other cases.

The records I managed to keep with me and finally brought home in October 1945 were of the briefest. As my notes on various diseases grew in number, so the records needed to be condensed still further to reduce their bulk for there was the ever present possibility of confiscation.

Fatal Cases

Case I

This patient, who was admitted on Aug. 31, 1942, had complained for one week of double vision, burning pains in the feet and left hand, general weakness and difficulty in chewing his food. Mentally he was retarded, and was easily moved to laughter by unamusing remarks. There was general weakness of his limbs of moderate degree, most marked in the grip of the left hand. No changes in sensation were observed.

When I next saw him eight days later, generalized rigidity of his limbs had developed and he was unable to sit up. His tendon reflexes were exaggerated and there was ill-sustained clonus at both ankles. The abdominal reflexes were weak, and the plantar reflex was extensor on the left side. He was given marmite 2 oz. (56.7 g.) daily, from then on.

Six days later he became incontinent of urine and during the next few days he was mentally confused. By Sept. 16 his legs had become extended and his arms flexed rigidly across the chest. There was some weakness of the left facial muscles. His temperature rose to 101 F (38.3°C). The following day he became incontinent of stools consisting of blood and mucus, lapsed into unconsciousness and died on Sept. 18.

At necropsy small translucent dots were to be seen scattered about the white matter of the frontal parietal and occipital regions of the cerebral hemispheres. These dots were 2-3 mm in diameter and had the appearance of snow grains in milk. In the colon there was patchy erosion of the crests of the mucous membrane at the distal part of the sigmoid and rectum.

Case II

For a fortnight before his admission on Sept. 4, 1942, this patient had noticed dimness of vision and for a week uneasiness of feet and pain in the neck. On examination there was marked dulling of his mental faculties, with disorientation for time and place. Weakness and rigidity were present in all his limbs with exaggerated tendon reflexes and extensor plantar responses. Other evidence of dietary deficiency was manifested by angular stomatitis, glossitis and scrotal dermatitis. For three days he was given 17 ml (1 anipoule) of nicotinic acid diethylamide intramuscularly and 17 ml by mouth daily. For the next three days 34 ml was given by mouth daily, and subsequently "marmite" 3 oz. (85 g.) daily.

Five days after admission he became incontinent of urine and faeces, he could not speak or swallow, but could understand simple requests and statements. Within the next two days he deteriorated rapidly, his legs became rigidly extended and his arms flexed across his chest. His face was expressionless and practically immobile. The blinking reflex was lost but some vision was present. He moaned continuously so far as could be gathered because of pain in his limbs. This pitiful condition gave place to coma in which he died on Sept. 21.

Changes in the cerebral hemispheres identical with those in Case I were found at necropsy.

Case III

This patient was admitted from another camp on March 22, 1943, in a stuporous condition with a slip attached to his shirt with the words "Fever, Choking feeling and failing vision." He

be roused only to the extent of complaining of headache when asked his symptoms. His temperature was 104° F (40° C). There was an extensive stomatitis with angular fissures, pharyngitis, scrotal dermatitis, and keratitis of the right eye. The latter was occurring in epidemic form and was undoubtedly a deficiency manifestation. His heart sounds were of the tic tac variety, and his blood pressure 120/90. Examination of his nervous system showed that the reaction of the pupils to light was sluggish, reaction to accommodation could not be tested owing to lack of co-operation. There was weakness of the left side of the face and generalized weakness of the limbs, which, so far as could be ascertained, was most marked in the left arm. The abdominal and cremasteric reflexes were absent, as was the right knee jerk. The tendon reflexes of the arms and left patella were normal, but there were bilateral ankle clonus and extensor plantar responses. For treatment he was ordered 'marmite,' 3 oz (85 g) daily, in addition to milk and eggs.

The following day he became incontinent and passed seven semi-solid stools. A lumbar puncture was performed unsuccessfully by two competent medical officers. I could obtain spinal fluid only by aspiration. Examination of the cells and protein showed no deviation from the normal. On March 24 it was noticed that a keratitis had developed in the other cornea, and on the 25th he became deeply comatose and died.

At necropsy similar changes were found in the cerebral hemispheres to those in the two preceding cases. The colon showed extensive mild lesions of bacillary dysentery, with ulcers up to 8 mm in diameter in the upper half of the large bowel.

Case IV

This patient, who was admitted to hospital on March 16 1943, presented what became recognized as the most typical triad—difficulty in walking, dimness of vision, and mental dullness. These symptoms had preceded his admission by two to three weeks. He appeared quite normal mentally, but stated that his memory was poor and his mental faculties slow and dulled. His cranial nerves were normal, and the only objective changes in his nervous system were the absence of abdominal reflexes on the right side and exaggeration of knee and ankle jerks. His diet was supplemented by 'marmite' 3 oz (85 g) daily.

On the 22nd, six days after admission, he became quite rapidly confused. Within a few hours his limbs had taken up the position noticed in the previous cases—legs extended and arms flexed. With this there were associated exaggeration of all tendon reflexes, bilateral ankle clonus and extensor plantar responses, and loss of the abdominal and cremasteric reflexes. Two days later he developed double incontinence, and died, with a temperature rising above 105° F (40.6° C), eight days after admission. A lumbar puncture before death showed fluid under normal pressure and a normal protein and cell content.

At necropsy identical changes were found in the cerebral hemispheres to those in the three previous cases. In the colon there was recent necrosis of the crests of the mucous folds.

Comment

Perusal of these case histories shows (1) a fatal course terminating in from four to five weeks from the onset of the first symptom, (2) clinical evidence of interruption of conduction in the pyramidal system, (3) macroscopical evidence of a pathological process in the white matter of the cerebral hemispheres which would account for most of the physical signs and symptoms including failure of vision. In three out of the four cases there was an ulcerative condition of the colon. Two showed other evidence of deficiency of part of the B₁₂ complex. None of them, to my knowledge had recently suffered from dysentery, malaria or other fever, and repeated blood films failed to reveal parasites. Other negative findings that call for comment are (1) the absence of sensory loss in Cases I, II and IV, from whom some co-operation was possible, (2) no naked-eye changes in the spinal cord, (3) an absence of meningeal reaction, as found by lumbar puncture on two of these cases.

The differentiation from the other neurological disorders—namely Wernicke's encephalopathy and an acute encephalitis—which were occurring fairly often never gave rise to much difficulty as the early symptoms and signs of this syndrome had become well recognized in the less acute cases which had preceded these four fatal ones. It is appreciated that difficulty might arise especially in the case of acute encephalitis, and the history and nature of the early symptoms preceding by some days or weeks the more urgent manifestations of acute disorder of the nervous system are important to the diagnosis of the present syndrome. Wernicke's encephalopathy can be recognized by the symptoms of vomiting and

unsteadiness of the body or eyes and the characteristic nystagmus and ocular palsies. The tendon reflexes are more frequently lost than increased. Only in encephalitis is any deviation from normal expected in the spinal fluid.

The association of this syndrome with other deficiency manifestations and the argument for its recognition as such will be adduced later.

Severe Cases with Ultimate Recovery

Case V

This man was admitted on Sept 7, 1942. He had suffered from the very prevalent complaint of 'pains in the feet' for six weeks. During the preceding three weeks he had developed general weakness, mental depression, anorexia, and failure of vision. On examination he was seen to be suffering from angular stomatitis and glossitis. He was mentally depressed and anxious and apprehensive about himself. His face was without expression and almost immobile. His visual acuity was reduced to an inability to read newspaper print. There was general muscular weakness and rigidity with exaggerated tendon reflexes, ankle clonus, and bilateral extensor plantar responses. The abdominal and cremasteric reflexes remained. No sensory loss, deep or superficial, was found. In addition to a general improvement of his diet he was given 'hepatex,' 4 ml intramuscularly, and 'marmite,' 2 oz (56.7 g) daily.

Two days later he was unable to feed himself and became incontinent of urine. A week later he had developed dysphagia and dysarthria, and his limbs had taken up the characteristic position of flexion of the arms and extension of the legs. He moaned continually and became rather drowsy. His condition at this stage exactly resembled that of Case II during the last ten days of his illness. However, during the next week he began to improve, with a reduction in the rigidity and drowsiness, and in less than a month he was walking about unaided. Within a few days of the commencement of his recovery he developed an inversion of emotional expression and would cry when amused. Although his tendon reflexes remained abnormally brisk until June 1943, his plantar responses had reverted to normal within a fortnight of his first sign of improvement. When last seen, in June, 1943, he was normal in all respects.

Case VI

This patient had noticed double vision and a tight feeling around the head for a fortnight before his admission on Aug 3, 1942. He also described feelings of 'pins and needles' and 'shocks' all over his body. There was general slowing of his mental processes, he was easily amused and was slow in his speech. He exhibited general muscular weakness and rigidity, with exaggeration of all tendon reflexes and knee and ankle clonus. The abdominal reflexes were absent except in the right upper quadrant, as was the right cremasteric reflex. The right plantar response was equivocal, the left flexor. No sensory disturbance was discovered. 'Marmite' 1½ oz (42.5 g) daily, was added to an improved diet.

Four days after admission he had become quite euphoric. The muscular weakness and rigidity had increased and he could not stand up. His physical and mental states deteriorated for the next twelve days, during which time he received intravenous vitamin B₁₂, 2 mg daily. Incontinence of faeces developed. His spinal fluid was examined and found normal. On Aug 20 there were signs of improvement in his general condition, but he was unable to move his ankle or foot joints, and his plantar responses had become extensor. From then onwards his mental condition improved and except for occasional attacks of depression, returned to normal but he was still bedridden in August 1945 with a severe spastic paraplegia.

Case VII

This man, who was admitted on Aug 12, 1942, had been weak and unsteady on his legs for two weeks, had become forgetful and had developed a stutter. His condition at the onset was unique among the cases seen and presented a picture usually the result of congenital cerebral injury or disease. At rest his face presented a vacant expression with open mouth, but this was distorted repeatedly by grimaces and rolling of his eyes and head, accompanied by athetotic movements of the limbs. His gait could only be described as fantastic—a combination of ataxia with the athetotic movements previously mentioned. He was disinterested in his food and was quiet and reserved in his relations with other patients and friends. He was uncommunicative with everyone and very little information could be got from him. Apart from increased activity of his tendon reflexes I could find no other abnormal signs.

Three days later there was no change in his condition, but I found that by taking a forceful line with him I could get him to walk normally. I erred in diagnosing his condition as hysteria and discharging him on the 19th. In mitigation I would like to point out that he was only the third case of this series to be admitted and that he presented a new clinical picture.

A month later he was readmitted with the history that he had been very quiet in his quarters until Sept 12 when for some hours he became violently agitated with much rolling of his head and eyes. He was then quiet again until the 18th when he started screaming and throwing himself about on his bed. He was completely disorientated, and was found to have a temperature of 102° F (38.9° C). Later in the day, after his admission he had an epileptiform seizure with twitching of the right side of the face and right arm, and incontinence. On recovery he behaved in a noisy hysterical manner, but ceased on being reprimanded. For some hours afterwards he exhibited athetotic movements of his limbs and was incapable of speech. On lumbar puncture the fluid was found to be under normal pressure with a normal cell and protein content.

When seen on Sept 26 he had recovered some power of speech using simple words slowly. His limbs were weak and rigid with exaggerated tendon reflexes, ankle clonus and extensor plantar responses were present but the abdominal and cremasteric reflexes were absent. During the next fortnight he became rather emotional and would have fits of crying for no apparent reason. By March 23, 1943, he was able to walk about, but with a fantastic heaving gait as if weights were attached to his feet. All the athetotic movements and rolling of his head and eyes had disappeared. When last seen in August, 1945, he had a spastic paraplegia which just allowed him to get about unaided.

Comment

The symptoms and progress of these three severe cases, while differing in some respects both from each other and from those in the previous group, record well enough to be recognized as belonging to the same syndrome. Case V reached most nearly to the condition seen in the fatal cases just before death. All developed a spastic paraplegia.

General Description

The syndrome, as exemplified by the majority of cases, is ushered in by various combinations of the following symptoms: locomotor disability—taking the form of weakness, stiffness or unsteadiness of the legs; failure of vision; diplopia; pains in the feet; pain in the back; paraesthesiae in the feet; cramps; changes in the mental sphere such as depression or mental dulling. Nocturnal incontinence of urine occurred as an early symptom in three cases. Two had epileptiform seizures. Only one or two complained of cramps. Marked spasticity with or without extensor plantar responses were present in all cases. The following is an analysis of the commoner symptoms.

Symptoms	% of Cases
Difficulty in walking	53.9
Loss of visual acuity	46.0
Mental changes	41.2
Pains in feet (painful feet syndrome)	38.0
Paraesthesiae in limbs	17.4
Pain in spine	6.3
Diplopia	5.0

In the early stages there may be no objective signs apart from unusually brisk reflexes and a rather hysterical behaviour. It was observed on several occasions that on examination men who had walked to the outpatient department complaining of pains in the feet revealed exaggerated knee and ankle jerks and extensor plantar responses. After a night's rest in hospital these signs would disappear. I assumed that in these cases there was only a minimal degree of the condition under discussion.

When this nervous affliction became well recognized medical officers began to report the occurrence of increased tendon reflexes sometimes accompanied by clonus and extensor plantar responses, in ward patients suffering especially from dysentery and prolonged fevers. Both these groups of patients—those suffering from pains in the feet and those just mentioned—received special care, and I am not aware of any that failed to recover fully.

The difficulty in walking was due to a progressive spastic paraplegia with the development of the signs usually associated with it—viz., spasticity, weakness, exaggerated tendon reflexes, extensor plantar responses, and loss of abdominal and cremasteric reflexes. In just over 50% the signs of pyramidal tract involvement were confined to the lower half of the body, in about 28% the upper limbs were included, and in the remainder there were signs of involvement of the highest part of the system, with loss of facial expression, facial immobility, dysarthria, and dysphagia.

Under the conditions which prevailed it was not possible to test the visual acuity of all these patients; the loss was never severe and vision recovered rapidly which was in striking contrast to the chronicity of the cases suffering from retinobulbar neuritis. In only two patients did I find any abnormality on ophthalmoscopic examination: in one the discs were very pink and the edges ill defined; he later developed further impairment of visual acuity and became established as a case of retinobulbar neuritis. The other had well marked papillitis with exudate close to the discs; in this case the spastic syndrome was complicated by oedema of the legs and pellagra skin lesions: facial diptheria, ST malaria and later a polyneuritis affecting all limbs and both sides of the face. He made a satisfactory recovery without visual defects.

The mental changes comprised general dulling, depression, loss of emotional control, and hysterical behaviour. One patient developed ideas of persecution which persisted until his death a year later, by which time there had been considerable physical and mental deterioration. Another developed grandiose ideas which lasted many months, and a third became confused and aggressive for a few weeks.

Pains in the feet were common but this syndrome was widespread at the time as were the other signs of deficiency disease which were found associated in the spastic syndrome in not more than one third of the cases. The painful feet syndrome has been well described by J. A. Page (1946). The paraesthesiae comprised numbness and tingling and were unaccompanied by objective signs. These symptoms tended to disappear rapidly after admission to hospital. The loss of bladder control arose early in some cases as nocturnal enuresis. Pain in the spine was usually located in the cervical or lumbar region and occurred in severe cases with much rigidity and helplessness. The diplopia was usually of short duration and disappeared soon after admission. In some cases this symptom was intermittent.

Investigations

Laboratory facilities were limited and the staff was continuously at work on blood films and stool examinations. Fractional test meals were performed on three cases; the results showing one to be achlorhydric and two normal. Lumbar punctures were done on six cases and the cells and protein were normal in all.

A survey in respect of age, length of service in the East, previous illnesses, habits in regard to consumption of alcohol and type of work as a P.O.W. failed to produce any facts of significance.

Course and Treatment

The onset and progress were fairly rapid in the majority of cases and my records show that in 18 where information is available an average period of 18 days illness preceded admission to hospital; the extremes being 3 and 42 days. All non-fatal cases deteriorated for an average period of 21 days after admission. The shortest period from onset to recovery when a paraplegia had developed was 9 weeks.

Owing to the later division of the main Changi Hospital into two separate camps I am unable to give exact figures bearing on the late results of the disease in all cases. Of my original 29, 6 died (one from pulmonary tuberculosis), 9 recovered completely and 14 were left with signs of paraplegia of varying extent, of which 2 were bedridden when last seen in September, 1945.

The means available for the treatment of the earlier cases consisted in an addition to their diets of reconstituted milk (1-2 pints 0.56-1.1 litre), marmite (1-3 oz 25.3-85 g), 'marmite' (34 ml daily) for a maximum of 11 days, parenteral vitamin B₁ up to a maximum of 16 mg per case, liver extract up to a maximum of 12 ml and red palm oil (1-3 oz 28.3-85 g daily). Rice polishes, per nuts, eggs, tinned meat and fresh vegetables were given as available. It was not apparent that any addition affected the course of the disease.

Discussion

Evidence is presented that under certain conditions of nutritional deprivation a disorder characterized by signs of damage to the cortico spinal innervation makes its appearance. When severe this condition is responsible for widespread disorder of cerebral function resulting in disturbance of memory, control with quadriplegic rigidity characteristic of the decorticate animal and in some cases convulsions. As recovery occurred spastic paraplegia was the common residual state. In minor affections less evidence of the initial cerebral illness may yet be followed by a crippling spastic paraplegia or a lesser degree of spastic weakness. Complete recovery may ensue after a severe initial onset.

Spastic paralysis has been reported in severe classical pellagra. Thus Heatley-Spencer and Biggs in the *British Encyclopaedia of Medical Practice* state 'Sensory changes are common in the lower limbs and consist of various paraesthesiae and numbness. Objective sensation usually remains intact and there is no alteration of deep sensibility. Romberg's sign is rare. Pain in the dorsal or lumbar regions is common. Peripheral neuritic pain may be severe and is often a late symptom. Stiffness and some loss of power, with painful cramps in the lower limbs, are common. The reflexes are variable, the knee-jerks being in some cases exaggerated, with a spastic rigidity, and in others lost. Mental changes are important and begin with mental dullness, slow response, and loss of memory.'

Manson-Bahr, in his *Tropical Diseases* includes ptosis, diplopia, amblyopia, and rarely epileptiform convulsions among the signs and symptoms, and states that later the gait becomes uncertain and of the spastic paraplegic type. This author mentions a very acute form of pellagra, described under the title of "pellagra typhus," characterized by intense prostration, high temperature, muttering delirium, pronounced nervous tremors, generalized rigidity and convulsions. The acute cases reported in this paper seem not dissimilar.

The additional point that this syndrome arose in the course of other manifestations of vitamin B deficiency which are recognized as part of the classical picture of pellagra lends support to the view that it is itself an isolated manifestation of that disease. The B complex comprises several factors, and the experience gained in our camp suggested that there was a different time factor for each before evidence of deprivation showed itself, the mucous membrane and dermal lesions of pellagra appearing first and the nervous lesions later. It is of interest that not more than one third of the cases of pellagrous encephalopathy here reported showed other evidence of deficiency, but this lack of association was reported by Spillane and Scott (1945) in their account of deficiency manifestations among German prisoners of war in the Middle East.

Conclusion

The above findings are based on 63 cases of a deficiency syndrome, which has been given the name of pellagrous encephalopathy, occurring among prisoners of war in Singapore. There appears to be sufficient evidence to include it among the manifestations of vitamin B deficiency and as part of the pellagra symptom complex. Previous reports have been made in the literature of limb weakness and spasticity with and without extensor plantar responses (Wilkinson, 1944, Spillane and Scott, 1945, Clarke and Sneddon, 1946, Pallister, 1940), in association with other deficiency manifestations but a clear-cut syndrome as reported here appears to be unique.

My thanks are due to all those medical officers in the Changi Prisoner of War Hospital under whose care these patients were admitted, and to Dr D. Denny Brown, of the Department of Neurology, Boston City Hospital, for his help and encouragement in the writing of this article.

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A scientific meeting and the resumed annual general meeting (for members only) of the Nutrition Society will be held at the London School of Hygiene and Tropical Medicine, Keppel Street, W.C., on Saturday, Feb 22, at 11 a.m. The speakers and subjects at the scientific meeting are as follows: G. Fraenkel, Requirements of Insects of Known and Unknown Members of the Vitamin B Complex; O. Kestner, Importance of Mixed Food for Nutrition; T. F. Macrae and G. A. Childs, Nutritive Value of Food Served in the R.A.F. during the War; J. Ganguly, S. K. Kon and S. Y. Thompson, Form of Vitamin A in Cow's Milk; R. Braude, Stimulation of Growth and/or Fattening of Pigs by Synthetic Oestrogens; G. Dunlop, Nutritional Variation of Soils and Pastures on Scottish Hill Grazings; E. M. Hickmans, S. Bishop, and Y. Williams, Effect of High Protein Feeding on Marasmic Infants following Operation for Pyloric Stenosis; Z. A. Leitner, T. Moore and I. M. Sharman, Vitamin A in Rheumatic Fever. Non members are admitted to meetings of the society only by the introduction of a member. Meetings of the society are private and no unauthorized account of its proceedings may appear in the Press. Further details of the society can be obtained from the honorary secretary Dr Leslie J. Harris, Nutritional Laboratory, Milton Road, Cambridge.

Medical Memoranda

Case of Ectopia Testis with Seminomatous Change and Torsion

The following case is interesting in that it illustrates three pathological conditions: first, ectopia testis of an unusual type; secondly, a malignant tumour of that organ; and, finally, torsion. The liability of malignant change in an ectopic testis is a statistically supported, albeit disputed, fact. Gordon Taylor (1938) states that 15 out of 50 testicular tumours occurred in undescended testes. Tumours of the testis, however, are not common, and Barrington (1939) remarks that out of 9,714 admissions to St Peter's Hospital for diseases of the male genital system only 14 were testicular tumours. In our case an extreme example of undescended testicle had undergone both malignant change and torsion.

CASE HISTORY

A man aged 38, married but with no children, had recently been discharged from the Army with a clean bill of health. He had once during his service—in June, 1945—had an attack of abdominal pain, but after 24 hours' observation had completely recovered. In June, 1946, he called in his doctor one morning because of slight abdominal pain and having had several loose stools during the night. On examination there was a generalized abdominal tenderness with considerable rigidity, but temperature and pulse were normal. His doctor therefore decided to see him later in the day before coming to any conclusion. When seen during the afternoon he had increased pain, together with nausea, and there was marked tenderness in the right iliac fossa. There was also a rise of temperature to 101° F (38.3° C). He was then admitted to the Victoria Infirmary, Northwich. Here examination confirmed these findings, and a provisional diagnosis of acute appendicitis was made. It was, however, noted that the right testis was absent from the scrotum and the inguinal canal was not patent to the exploring finger. Consequently a reservation was made that there was a possibility of some morbid change in an ectopic testis accounting for the symptoms.

The abdomen was opened by a pararectal incision in the right iliac fossa. When the peritoneum was opened a quantity of blood stained fluid escaped and on exploring the pelvis with the hand a rounded mass was found in the retrovesical pouch. This was delivered and seen to be a globular mass the size of a cricket ball, which was plum coloured and had the appearance of a twisted ovarian cyst. It had a twisted pedicle 1½ in. (3.75 cm) long which emerged from the parietes at about the site of the internal inguinal ring. It was clamped, ligated, and divided near its base and the mass removed. There were no adhesions, and no difficulty was encountered. There was no sign of pelvic or lumbar glands, and the liver was palpated and felt quite normal. The wound was closed without drainage and the patient returned to bed. He recovered uneventfully.

The tumour was incised, revealing that it was the missing testis. It was sent for section to Dr W. H. Grace, who reported that it was a seminoma which had undergone torsion. The patient's urine was later also submitted to Dr Grace, who determined that the Aschheim-Zondek reaction was negative, but as this was about three weeks after the removal it could only be an indication that there was no large metastasis as yet. After discussion it was decided not to recommend deep x-ray therapy at this stage, and on this point we invite criticism.

COMMENT

Perhaps the chief interest of this case lies in the abnormal anatomy of the testis and in the complete, or almost complete, absence of symptoms as demonstrated by a successful service in the Army. The testis had picked up a complete visceral peritoneum and had come to be a free intraperitoneal organ—a very unusual state of affairs. That it had undergone torsion was perhaps not surprising after, owing to the seminomatous change it had attained the size and weight it had. Nevertheless it must be assumed that the symptoms which led to operation and ultimate diagnosis of the condition were due to torsion as no doubt was his attack in June, 1945 although this must have corrected itself, and to this fact the patient may, we hope owe his life.

We wish to thank Dr W. H. Grace for his pathology report.

Harford, Cheshire

A. H. BENNETT MRCS, LRCP
 W. G. SHAW MRCS, LRCP

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Reviews

A TEXTBOOK OF GYNAECOLOGY

Textbook of Gynaecology By J H Peel, BM FRCS
FRCOG Second edition (Pp 467, illustrated 21s)
London William Heinemann Medical Books 1946

This textbook is of convenient size, and the paper and print are of excellent quality for a modern publication, though the illustrations are not perhaps of a high enough standard. The original Forsdike illustrations have been retained to a large extent, and though they do not equal those of modern American publications they are fairly satisfactory. The main criticism should be directed towards the new illustrations, particularly the photomicrographs, some of which are very poor.

The arrangement of the book is unusual and the chapter on symptoms in gynaecology is introduced towards the end. The chapter on gynaecological operations is possibly too condensed. Most teachers will agree that students do not need too much detail, but they probably want to know more than Mr Peel has included in his textbook. There is a tendency to over stress endocrinology, and some of the ingenious suggestions for the classification of disorders of menstrual function are not universally accepted. The subject is notoriously difficult, and anyone familiar with the American literature knows only too well that widely different opinions are held in that country. Another difficulty is the use of the word oestrogen in a wide sense to include all oestrogenic substances. The practice is popular with some American authors but may be confusing to medical students.

On the whole the book is well written, but there are occasional lapses in literary style. For example on page 43 there is the sentence, "The primary function of oestrogen in the body is that of a sexual growth stimulating one." Nevertheless the book is interesting, with a good classification, and medical students will be able to obtain a fair knowledge of gynaecology from it.

NURSING RECRUITMENT

Why No Nurses? By James Barclay (Pp 176 6s) London
Faber and Faber 1946

Although nursing conditions have been surveyed in recent years first by the *Lancet* Commission and then by the Athlone and the Rushcliffe Committees, and many recommendations have been made and some have been acted upon, the profession still remains under recruited. The fate of the hospital part of the National Health Service scheme depends upon the success with which Mr Bevan can court the young woman of 18 who knows quite well what she wants and has many other opportunities open to her. Mr James Barclay's well written little book *Why No Nurses?* suggests that the difficulty is not so much a question of pay—the worsening of nursing recruitment has run parallel with increase in remuneration—as a lack of private life which is supposed to be inherent in the nurse's calling. Even in her off duty hours in the nurses' home she is still psychologically attached to the hospital in a sense in which the typist is not attached to her office or the teacher to her school, but he does not make the obvious suggestion that nurses should be recruited so far as possible from the locality of the hospital in which they are to serve and be allowed to live at home. One of his proposals is that the nurse should be trained in a hospital unit rather than in an individual hospital—a conception which may be realizable through the regional hospital boards. He is critical of many things in the nurse's life, especially the matrons and their lieutenants the home sisters, and hospital administration in certain respects, he even drags in the British Medical Association for uncomplimentary reference. The author is an officer of a public health authority and sees the matter from that point of view. His 'left' sympathies are indicated by the fact that the new permanent committee which he would have the Ministry of Health set up to make constant surveys and reports on the position would include TUC representatives, a delegate member of the Socialist Medical Association and a representative of the *New Statesman and Nation*. He seems to recede a little from this advanced attitude when he says that the composition should be predominantly male.

BOOKS RECEIVED

(Review is not precluded by notice here of books recently received)

Essai de Neuro endocrinologie P G Roussy and M Mosinger (Pp 1,106 2 200 francs) Paris Masson 1946

An account of the hypothalamic hypophyseal mechanism and its nervous and hormonal connections

Man The Verdict of Science By G N Ridley (Pp 156 2s 6d) London Watts 1946

A popular exposition of the scientific study of man and society

One Hour of Justice By A C Mport MD FRCP (Pp 311 8s 6d) London Dorothy Crisp 1946

A denunciation of the conditions in which the Egyptian poor live, by the late professor of clinical medicine at the University of Cairo

Ophthalmic Surgery and Sight testing By M A Kanchan MB, CM (Pp 297 Rs 6) Mangalore Starada Press 1946

A manual intended for the use of students and practitioners

On Gout and Allied Diseases By John Hertz MD (Pp 400) London Geoffrey Cumberlege 1946

A monograph with illustrations some in colour and extensive bibliography on the normal and diseased thyroid gland. Translated from the Danish

Effect of a Carcinogenic Hydrocarbon on Manifest Malignant Tumors in Mice By S Sæmer (Pp 158 12s) London Geoffrey Cumberlege 1946

Includes accounts of experiments with 9,10 dimethyl-1,2 benzanthracene by injection and ingestion and its effect on the Crooke sarcoma, Street sarcoma and transplanted leukaemia. Translated from the Danish

Serological Studies on the Pneumococci By Erna Møller (Pp 192 10s) London Geoffrey Cumberlege 1946

An account of the author's studies of pneumococci at the State Serum Institute, Copenhagen with previous work summarized in a list of references. In English

Studies on the Risk of Infection with Bovine Tuberculosis to the Rural Population By Jon Sigurdsson (Pp 250 15s) London Geoffrey Cumberlege 1946

After an introduction on the bacteriology of the tuberculosis bacillus the author discusses ways of infection in pulmonary tuberculosis, distribution of bovine tuberculosis in man and cattle and the spread of the bovine form. In English

Studies on Impaired Fertility in Man with Special Reference to the Mite By Rieh Hammen (Pp 206 10s) London Geoffrey Cumberlege 1944

An investigation into the morphology, motility, viscosity, and virility of spermatozoa and how these and other factors are related to fertility. In English

The Dental Assistant's Handbook By G I West (Pp 104 6s) London Wm Heinemann 1946

A simple account of the dental assistant's duties and the knowledge required in performing them. Includes chapters on radiology, the psychological approach to patients and dental instruments

The Epidemiological Significance of Grouping and Typing the Haemolytic Streptococci By Jorgen Ernst (Pp 377 25s) London Geoffrey Cumberlege 1942

Part I contains a classification of haemolytic streptococci, in Part II the spread of streptococcal infections is considered, and also malarial epidemics, scarlet fever in schools and the occurrence of streptococci in the throats of healthy people. In English

The Duodenal Glands of Branner in Man By I Lindboe Christensen (Pp 267 20s) London Geoffrey Cumberlege 1944

An investigation into the distribution and quantity of the Branner glands. The parenchymal mass was found to be relatively greatest in childhood, absolutely so in middle age

Medical Disorders of the Locomotor System By F Huel-M.A., MD, MRCP (Pp 625 45s) Edinburgh Livingstone 1947

The author discusses rheumatic diseases at length and has two chapters on osteoarthritis, fibrositis, brachial neuritis, and the anatomy and physiology of the locomotor system. Many illustrations

BRITISH MEDICAL JOURNAL

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PRINTING OF THE B M J

The printers of the *British Medical Journal* on Monday this week had no electricity to turn over the machines, and by 7 p.m. on Monday night the Editor was still unable to learn from the Ministry of Fuel and Power whether it would be possible to produce this week's *Journal*. On Tuesday permission was granted to go to press this week, but the printers were still short of electrical power. For the resulting imperfections in this week's issue we apologize.

At the time of going to press we understand that we shall not be able to publish the next two issues of the *Journal*, which during the two recent world wars was regarded as indispensable to the national effort. On May 10, 1941, the *Journal's* printers were destroyed by German bombs, but production of the *Journal* continued uninterrupted. We regret that this time it looks as if it will be impossible to repeat "Operation Phoenix".

DISCUSSIONS BEGIN

The Negotiating Committee met on Feb 7 to consider the Minister of Health's response to the resolution recently passed at the Special Representative Meeting on Jan 28. This resolution was as follows:

That the British Medical Association, having considered the final results of the plebiscite and the Minister's letter of Jan 6 to the Presidents of the Royal Colleges, and desiring to secure for the people the best possible Health Service, is willing that discussions be entered into with the Minister to that end, provided that such discussions are comprehensive in their scope and that the possibility that they may lead to further legislation is not excluded, and that after the conclusion of these discussions a second plebiscite of the profession be taken on the issue of entering the Service.

Mr Bevan responded to this in the following words, as expressed in a letter from the Secretary to the Ministry to the Secretary of the B M A: "The Minister wishes me to say that he has considered the terms of the resolution and will be glad if the Negotiating Committee will resume discussions with him, in the light of that resolution, at their early convenience." As was pointed out in last week's *Journal*, the various constituent bodies of the Negotiating Committee, which, it may be repeated, is a Committee representing the whole profession and not just the B M A, had different views on the terms on which discussions on the National Health Service Act should be conducted. The three English Royal Colleges and the Society of Medical Officers of Health, for example, were in favour of the negotiations on the Regulations without any proviso. The important element in the resolution of the Special Repre-

sentative Meeting was that discussions should be comprehensive and that a possibility of further legislation be not excluded. The final point made was that another plebiscite should be taken on the issue of entering the new Service when its full details were known.

It is highly gratifying that the representatives of the constituent bodies at last week's meeting of the Negotiating Committee, at which the Presidents of the three English Royal Colleges were present, had the wisdom and statesmanship to sink their differences of opinion by accepting the terms of the Minister's invitation. The Minister wants to enter into discussions in the light of the resolution of the Special Representative Meeting, and in agreeing to this without dissent the constituent bodies of the Negotiating Committee have, by their decision, agreed to the terms of the resolution of the Special Representative Meeting. This happy solution of recent acute dissension within the profession has unified its forces and intention. The essential thing now is to foster this unity and to preserve it unimpaired through the coming months of trial by discussion. Only if this unity can be preserved will suspicion be dissipated and an effective settlement of a difficult problem be reached.

KING EDWARD'S FUND

Fifty years ago the country was preparing to celebrate Queen Victoria's Diamond Jubilee, and it was the Prince of Wales, later to become King Edward VII, who finally selected, as a suitable form of commemoration, from the various proposals put before him, the establishment of a fund to assist the London voluntary hospitals. It was called the Prince of Wales Hospital Fund, and on his accession to the throne was renamed the *King Edward Hospital Fund* for London. Contributions, many of them large legacies, have created a capital sum that now exceeds £5,000,000; about £300,000 are distributed yearly.

A characteristic feature of the Fund and one that greatly enhances its value is the care with which it investigates precisely the hospital conditions that most urgently need improvement. The Fund is not a goose laying a golden egg occasionally on the breakfast-table of some fortunate hospital, on the contrary, detailed information of two kinds is sought before a grant is made. First the hospital must disclose its financial position—the Fund insists upon a uniform system of accountancy in all hospitals seeking its support—and, secondly, visitors meet representatives of the hospital staff and discuss with them such topics as the cooking and serving of meals, the amenities of the nurses and domestic servants' quarters, the comfort of the patients, and arrangements for supervising the health of the staff. These visitors, from whose reports much valuable information has been gathered and published for the guidance of hospitals, are not necessarily technical experts and include laymen in their number as well as doctors; they are men and women of wide experience in medical and lay administration, and they usually work in pairs—one medical member and one lay. Inspectors the visitors certainly are not: there is no question of their imposing regulations on the hospitals seeking the Fund's help. They bring a knowledge

of the latest developments in administration and welfare, and the hospitals are always willing to follow their advice.¹ Various inquiries have been carried out through the visitors and recommendations made on the evidence collected by them. For example, several years ago it was found that the catering in some hospitals had lagged behind the standards set by modern knowledge of nutrition, and that whereas the special diets were often carefully designed the general catering was done with obsolete and wasteful methods of cooking, and food was served in an unappetizing manner. The once familiar patients' lament that "they always starve you in hospital" has been muted by the Fund's efforts. The Ministry of Food, under Sir Jack Drummond, analysed the meals served to patients and staff at certain co-operating hospitals, and the Fund prepared two memoranda.² The influence of these publications has extended far beyond the hospitals in the London area, and additional information for those hospitals unable to employ a full-time dietitian is supplied by a dietetic advisory service set up by the Fund. More recently the Fund has investigated the welfare, health, and recruitment of nurses,³ and it has also held a special inquiry into the prevention of tuberculosis in nurses. Its recommendations include a separate bedroom for each nurse, a pension scheme, which has been adopted by almost all voluntary hospitals, and regular medical examination. The Nursing Recruitment Service, the advisory work of which is done entirely by nurses, is designed to present nursing as the attractive and satisfying profession it can be (and to the creation of which the Fund has itself contributed so much), and to encourage and advise those many girls who at the age of 13 to 16 desire to enter it but who drift away before reaching the most suitable age for beginning training, 18, either because they are discouraged by being refused admission to the particular hospital that they had set their hearts on or because other employment at which they can start at a younger age engages their attention. The Fund has also established six preliminary training schools in London, each used by a group of the smaller hospitals, to give girls an introductory training for 9 to 12 weeks before they enter the wards.⁴ The latest special inquiry is into hospital domestic staff.⁵ The most important recommendation in this connexion is that hospitals should appoint a trained lay supervisor who would work under the general supervision of the matron.

Apart from these investigations the Fund runs certain services. Hospitals may borrow from the radium "pool," and the Radium Committee, under Sir Ernest Rock Carling, offers the services of a panel of physicists to advise radio-therapists. The Emergency Bed Service, which was started in 1938, relieves doctors in the Metropolitan area of much anxiety and vexation by informing them of where beds are available and arranging ambulance transport. In addition information given in the timetable of out-patient clinics eliminates some of the waiting that used to be a feature frequently commented upon by the patients attending them.

The passing of the National Health Service Act does not directly affect the Fund. It has, however, a most important part to play in a State health service, for money that is now allocated to the routine upkeep of hospitals will be available to benefit directly the welfare of the patients. It will be able to introduce a humanizing influence into conditions that some have feared may become mummified in the arid air of bureaucracy, its gifts will be free from Treasury control and can be the means of providing those individual attentions and comforts that prevent a patient from feeling merely a case and which no amount of paper organization ever conduces to. All hospitals within its area, including those that are now under local authority control, will be eligible for grants from the Fund, and the personal relationship maintained by its visitors will do much to keep alive the humane tradition in hospital medicine.

BURNS AND SCALDS

At this time of the year home fires are kept burning as brightly as the coal ration permits, and with this goes an increased risk of burns, especially to old people. Although the number of fatalities from burns and scalds has progressively diminished during the last forty or fifty years, avoidable tragedies still occur. In the last quinquennium of the nineteenth century the average annual number of deaths from these causes in England and Wales was 2 534, in the last peacetime quinquennium (1935-9) the number was 1,303. Nine out of ten of these fatalities, if the experience of two large hospitals is representative, arise out of accidents in the home most of which might have been prevented by simple precautions. Among elderly people the annual average of these fatalities has increased by 75% over forty years. The reduction has been chiefly among child victims, although even here the deaths from burns and scalds of the under-fives outnumber the deaths from road accidents. No doubt the elimination of the naked gaslight and the oil lamp has been helpful, on the other hand, gas and electric fires have brought new dangers, and fireguards which may be adequate for a coal fire may be unsatisfactory for the new heating. The universal cigarette cannot be exonerated. The shortening of women's skirts and the wearing of trousers has made for safety, but the change from woollens and tweeds to inflammable cotton and silk frocks and nightdresses brings new perils. Far more women than men die from burns and scalds, in 1936 the proportion was 460 to 175.

Dr Leonard Colebrook contributed to the October *Bulletin of the Ministry of Health and the Emergency Public Health Laboratory Service* a brief survey of the subject. Deaths represent only a small proportion of the accidents. For every fatality probably 20 cases are admitted to hospital, and up to 50 more treated as out-patients. Dr Colebrook estimates that the in-patients alone account for about a million days of hospital occupation every year. On the basis of an analysis of cases admitted to Birmingham Accident Hospital over two recent years he attributes many of the cases in children to lack of housing room for play except around the grate, to the absence or inefficiency of fireguards (the Children's Act, 1908, makes it a punishable offence to be without a fireguard when there are children under seven in the home, but this is often not enforced until after an accident has occurred), and in women and children to the wearing of flannelette or winecypette, which are not only dangerous by reason of their inflammability but because they tend to stand away from the body, so that they become ignited before the wearer is aware of it.

¹ *Hospital Diet* 1943

² *Hospital Diet* 1945

³ *Supervision of Nurses' Health* 1943

⁴ *Nursing Staff: Considerations on Standard of Staffing*, 1945

⁵ *Preliminary Training Schools for Nurses* 1944

⁶ *Domestic Staff in Hospitals*, 1946

chief preventive measures must be to encourage well-designed fireguards, relatively fireproof clothing, and the use of sunken wells in the top of gas and electric stoves which would make it difficult for saucepans or kettles to be upset, and generally to inculcate a "heat sense," in the same way as training in "road sense" is given to both children and adults

HUMAN HEREDITY INFORMATION CENTRE

The International Centre for Information on Human Heredity has now been transferred from London to the University Institute for Human Genetics in Copenhagen under Prof Tage Kemp. Inquiries on detailed aspects of human heredity should be addressed to the Centre at 14, Tragensvej, Copenhagen North.

Prof F A E Crew, of Edinburgh University, in outlining the history and activities of the International Centre the other day, said that the Centre was opened in London in 1939 under the title of the Bureau of Human Heredity. The idea of forming such an international centre for the exchange of information on the subject came from Dutch geneticists at the International Congress of Genetics in 1930. During the war the Centre carried on under difficulties—at one period the staff worked in the caves at Chislehurst—but a survey of the whole field of genetics in relation to cancer was completed in collaboration with the Department of Medical Genetics of Ohio State University. The material was published in the form of a preliminary report by Fritz Blank¹ and a summary by Dr Anthony Feiling². The work on cancer included occupational cancers and chemical and physical data on irritants, hormonal imbalance, and coexistent disease. Racial data have proved of great value, and the Bureau organized a large statistical division. Among other things the Centre has compiled a synonym index, with definitions. Ultimate responsibility for the International Centre rests with the Human Section of the International Congress of Genetics, and it is this group which at the next meeting of the Congress will decide its future. The need for international financial support is emphasized.

DERELICT FAMILIES

Though the methods of anthropology were being applied to the study of our own culture before the war, sometimes in a misleading and even politically biased manner, little was revealed about that tenth of the population whose families are unable to adapt themselves to modern civilization. The mass evacuations in wartime brought to light the existence of large numbers of people who are habitually filthy, lousy, and feckless. They are the slum dwellers of town and country, and their particular characteristic is that when they are transferred to better conditions they are unable to change their ways of living: they create another slum in their new abode. Chronic ill-health afflicts them, and consequently the wage earners are usually fit only for casual labour. Low wages combined with prodigal expenditure on cigarettes and the cinema and, to a less extent, on drink lead to constant indebtedness, bills and pawn tickets accumulate like autumn leaves, and a summons to appear at the magistrate's court is a common occurrence. In their derelict and insanitary homes the drains are often choked, windows broken, and banisters long ago thrown on the fire. Father and mother (who is often pregnant) and the children (who are often enuretic) sleep in one bed. In the daytime the children play in the streets, running in at irregular hours for scraps of food at night they go to bed

late. Family discipline consists of alternate bribes and cuffs—"Chaos umpire sits."

The cost of these people to the community is out of all proportion to their numbers. They breed prolifically, the negative correlation between the intelligence quotient of a child and the size of the family to which he belongs was discussed in these columns on Feb 1 (p 185), in addition the children's education is so defective that they have little opportunity to develop their inborn faculties. Moreover large numbers of juvenile delinquents come from these homes, and, as Lord Templewood pointed out in a speech at Cambridge University recently, juvenile delinquency is the fundamental problem of crime, for the young most easily become recidivists, men and women of mature age do not as a rule become criminals.

Merely rehousing such families is a waste of time and money, they require re-education, and so encouraging were the results obtained by the Pacifist Service Units¹ during the war that it is proposed to extend the work. The Family Service Units, from whose chairman and honorary treasurer we publish a letter on page 271 of this issue, is a service formed from various organizations to take over and co-ordinate the work already being done in Liverpool and Manchester and then to extend it to London. Immediate results are not expected, for the fruits of education even in the best material, are slow to ripen, and nothing but complete re-education is of value. However, by persistent and personal endeavour it is hoped to prevent the decay spreading, to shore up the ruins, and gradually to adapt these families to a civilized way of life so that in a generation or two they will no longer exist.

JOHN HATTON, OF BATH

Mr John Hatton has now retired from the office of Spa Director at Bath, which he has filled with such distinction and ability for 36 years. Not only did he promote the efficiency and amenities of Bath as a spa, but he always strove to the best of his ability to implement the ideas of his medical colleagues and further their interests. The British Medical Association owes him a debt of gratitude for all the hard work which he put in on the occasion of the Annual Meeting in 1925, which was a conspicuous success, and since then he has been the mainspring of the many important and successful conferences, both medical and those of other professions, which have been held in the city. Visiting doctors and their patients always found in Mr Hatton a friend, anxious to give them all the help and information in his power, and everyone who has been in any way concerned in the public life of Bath will miss him sadly. His services, however, were not confined to local interests, for as chairman of the Spa Federation he did much to raise the status and reputation of British health resorts. Recently, in collaboration with Capt Cox R N (ret.), registrar of the Royal National Hospital for Rheumatic Diseases, he has compiled a report on the future organization of hydrotherapeutic treatment in Bath which is a document of outstanding merit. He has now been elected vice-president of the Federation, so can continue his interest in and give the help which he is so well qualified to afford to British spas. His successor at Bath is Mr Boddington of Buxton, who can be relied on to uphold the high tradition established by John Hatton, for whom all his friends wish every happiness in retirement.

The next session of the General Medical Council will open on Tuesday, Feb 25 at 2 p.m., when the President Sir Herbert Lightfoot Eason will take the chair.

¹ Archives of Surgery (1944) 49 301 Chicago
² Nature (1945) 155 487

¹ Problem Families Pacifist Service Units 1945

PHYSICS IN MEDICINE

BY

Prof F L HOPWOOD, Dr J READ, Dr F W SPIERS,
and Dr C W WILSON

This is a summary of four papers read at the September meeting of the Hospital Physicists' Association. The discussion was prompted by the recent publication of an American volume, *Medical Physics* which by its comprehensive scope and list of contributors, suggested that physics played a far more important part in American than in British medicine¹. However, the wider service to medicine which physics can provide is recognized in a recent leading article in the *British Medical Journal*² which states "At present the application of physics to medicine is limited to radiology the electrocardiograph and the electroencephalograph in diagnosis and the somewhat empirical use of various forms of radiant energy in treatment, but it is highly unlikely that these represent more than a fraction of the contribution physics might make to human biology". This medical opinion which recognizes that the possibilities of physics in medicine are very much wider than the present almost exclusive concentration on radiotherapy by x and radium radiations, is widely held by hospital physicists, and has been admirably expressed by Prof W V Mayneord³. The most natural extension from this field would be the physics of diagnostic radiography, and of therapy by infra red and ultra-violet radiations, and high frequency currents, though there are probably many spheres of medical research in which physical measurement can play an important part—as illustrated, for example, by the recent research by Rundle and Wilson⁴ upon the eye signs exophthalmos and ophthalmoplegia.

Historical

The almost exclusive restriction of physics to radiotherapy can be understood from a study of its development in hospitals. The employment of physicists in the London hospitals and medical schools is a comparatively recent innovation. Early in the history of medical schools the lectures in all subjects were given by medical men. At Bart's the first subjects taught by specialists were chemistry and biology. Some time in the 1880's Donald MacAlister, later Vice Chancellor of Glasgow University, was appointed Demonstrator in Physics. He was succeeded by the late Dr Womack, immediate predecessor of the present Professor, F L Hopwood. Contemporary with Womack were Dr Fison of Guy's Dr Stone of St Thomas's, and, later, Dr Lehfeldt of the London Hospital. All of these, it is believed, were on the medical college staff and not on the hospital staff. It seems that the first professional physicist to take up a hospital appointment was the late Major Phillips, Honorary Physicist to the x-ray department of the Cancer Hospital for some years prior to 1914. Prof S Russ on relinquishing a Beit Fellowship, became Physicist to the Middlesex Hospital later head of the physics department of the Middlesex Hospital Medical College and Honorary Physicist to the hospital. Prof Hopwood was in 1919, one of the first physicists to become a paid member of the staff of a London hospital. He had been Demonstrator of Physics at Bart's from 1906, and an Honorary Clinical Assistant in the x-ray department, 1914-15. The immediate reason for his appointment was the contemplated development of deep x-ray therapy and this was reinforced almost immediately by the establishment of a radium research department to use radium recovered from war appliances and lent to the Medical Research Council by the Government. Somewhat later Prof W V Mayneord was appointed Physicist to the Cancer Hospital and subsequently such appointments at hospitals with large radiotherapy centres and at the National Radium Centres have become general.

From the first all hospital physicists have been concerned mainly with the x-ray and radium departments and to a less extent with the electrical and ultra-violet light departments. Prof Hopwood especially interested in units and standards, became secretary of the British X-Ray Unit Committee while Prof Russ became the first secretary of the Radium Committee of the Medical Research Council the Radium Commission, and the British X-Ray and Radium Protection Committee. In those early days mercury interrupters induction coils, and Lodge valves were general, and clinical dosage was based upon

the Sabouraud pastille, Kienbock photographic strips, milli-ampere-seconds, and milligramme-hours. The contrast with to-day is striking. It is probably not too much to claim that the present international units for x-ray and radium dosage, and the international recommendations for x-ray and radium protection, are due chiefly to the labours of the respective British committees.

Routine and Development Work of the Physicist in Hospitals and National Radium Centres

The use of x-ray and radium equipment has so far made the most direct claim on the services of the physicist. He must ensure its physical perfection and detect aberrations before they have affected treatments. The electrical and radiation protection of patients and staff, and supervision of the care of radium needles and tubes and their recovery if lost are his responsibility. He has developed convenient apparatus for the measurement of x-ray and gamma ray dosage, with which the output of x-ray tubes and needles can be calibrated and with the aid of substandards should be able to hold his accuracy near that of the standards of the National Physical Laboratory.

This accuracy is the foundation of control of radiation dosage and on it have been elaborated methods of computing and mapping the extent of the field of 'tumour lethal' dosage with respect to the tumour and its site. This field is as important in a radiation treatment as the operation field in a radical surgical excision, and is equally relevant to the question of the patient's survival. From a study of cases of frequent occurrence the best arrangement of beams can be chosen, the methods standardized and the radiation field computed initially for future routine use. Other cases may require individual study. Here particularly the physicist must have sufficient acquaintance with the anatomy and the nature of tumours to collaborate understandingly with the radiotherapist. This knowledge is best gained by first hand clinical contact and both can profit much from the partnership, the physicist must relate his calculations and measurements to actual lesions and medical practice while the radiotherapist modifies his technique towards the more precise ideas of the physicist—so far as human anatomy will allow. The construction of radium moulds with physical measurements to ensure the realization of the desired dose distribution, the determination of dose in interstitial radium therapy and the planning and assessment of x-ray and radium beam treatments require the closest collaboration of physicist and radiotherapist.

In addition to clinical work, work of a developmental or semi-research nature is an important function of the physicist. Apparatus has been developed for a great variety of purposes—to hold constant the x-ray output of a tube to measure dose rate and integrated dose under a variety of circumstances, to give mechanical aid in the computation of dose and the summation of radiation fields beam-direction devices callipers jigs etc. Empirical techniques have been investigated and improvements suggested—e.g. the needling of the larynx and radium treatment of the cervix.

Although for the reasons outlined the physicist's work is largely confined to radiotherapy, in a general hospital requests for assistance in other fields are received from time to time. A few random examples are the supply and calibration of thermocouples for measurement of the rate of recovery of defective circulation of a limb after sympathectomy and of skin temperatures following other neurological experiments, the installation of monochromatic illuminants for use with the slit microscope in the eye department, assistance with the polarimeter used to test the purity of insulin compounds, the development of pressure gauges to test the recovery of normal function in patients operated upon for cleft palate apparatus for the drip method of blood transfusion and for aspiration of bladders and wounds, sound insulation of Wehnelt interrupters, investigation of the protection of goggles from ultra-violet light and measurement of the heating produced by diathermy.

Teaching

There are advantages in the use of physicists directly concerned in radiological work as teachers of physics courses for the diplomas in radiology. The practical background of the physics of radiology is thus assured, and the first step

in the collaboration between radiologist and hospital physicist which is so desirable later. It is also desirable that the medical student should have a better acquaintance with the applications of physics to medical work than can usually be gained from the pre-clinical course, and the University of Leeds now provides a short course of lectures on the uses in medicine to which physics can be put. The practical experience of hospital physicists is also an advantage in the teaching of physics to student radiographers and physiotherapists.

Research

The attractiveness and efficiency of any physics department depend on the atmosphere and facilities for research. The Goodenough Committee contemplates that in a medical college the members of the staff should for half their time be free to pursue research. However, though the implementation of the Cancer Act is bound to exert a profound influence on the role and status of the hospital physicist, a former Minister of Health has stated that it is *not* the function of the authorities responsible for administering the Act to undertake research. There is thus a probability that only at some of the cancer centres will any research be undertaken. It is difficult to draw a sharp distinction between research and development. A great deal of valuable work, perhaps more of the nature of the latter, has been done in radiotherapy centres, but there has been some work of a fundamental character. The provision of *ad hoc* solutions for the succession of practical difficulties which arise in a radiotherapy department, or the development of techniques or appliances at the request of the radiotherapist should not be regarded as research. Rather it is the investigation of a problem freely chosen by the individual to satisfy his own curiosity, and followed wherever it leads. There is little danger that such problems will not be related to the work of the department in which the physicist is employed, and without the freedom of choice the best men will not find the work attractive.

If time and facilities were available much could be done in a radiotherapy department in tracing the chain of events between absorption of ionizing radiation and the biological effects produced, and this need not necessarily involve elaborate experimental work, as there is a considerable amount of knowledge regarding the processes of absorption of radiation, the energies of the electrons produced, the distribution of ions along their tracks, and the dependence of a number of biological effects on this ion density, which needs sifting, analysing, and studying with special reference to its implications for radiotherapy. Many profitable researches, not requiring great space or equipment, could be undertaken at radiotherapy centres, such as cloud chamber studies, or chemical and colloid effects of radiations, while the availability of induced radioactive chemicals will open to the hospital physicist a wide opportunity of collaborating in the study of therapy by these chemicals, or in the study of physiology.

However, many recent physical developments likely to have great importance in medicine require space and apparatus of considerable magnitude and knowledge of special techniques. There are machines for the production of beams of the heavier ionizing particles—protons, alpha particles, etc.—notably the cyclotron or ion tube energized by a high-voltage source such as a Van de Graaff machine. These beams may possibly be used directly in therapy or indirectly to produce supplies of induced radioactive chemicals or neutron beams. The betatron is being developed in the U.S.A. to give x-rays corresponding to exciting voltages of 100 million volts, while other methods are proposed which should give electron beams of very great energy, able to penetrate to the deepest tumour so that perhaps the electron beam itself may be used in therapy, rather than x-rays produced by the electrons. Radar research has developed means of generating and transmitting radio waves of very short wave-length—the order of centimetres—of energy vastly greater than has so far been available in these wave-lengths. Not only may such waves be superior for the customary purpose of diathermy, since heat could probably be far better localized than is possible in the case of longer waves but it is also likely that resonance of complex molecules will occur, with an associated biological effect. Lastly, the electron microscope provides a means of “seeing” biological structures far smaller than the resolution of the optical microscope permits.

A noteworthy point concerning these developments is that certain techniques are common to several—e.g., high vacuum technique, high-voltage technique, the generation and transmission of high-frequency oscillations, the focusing of ion or electron beams and so on. This suggests that it would be better if they were all tackled centrally, at a Radiological Research Institute by a team of men, each a specialist in one of these techniques rather than each separately at a different institution. Such an institute could also undertake the task of the development of more reliable and serviceable x-ray and associated equipment, and investigate desirable standardizations. Many industries have each established a research institute, and there seems good reason why the British x-ray industry should co-operate with the various interested medical bodies for a like purpose. Such an institution should have a hostel attached, so that visiting research workers could spend six months or so pursuing particular researches with the aid of the induced radioactive chemicals or other facilities of the institute. Hospital physicists should spend a period, from time to time, at the institute, assisting in the work, and so return to their hospital abreast of the latest developments and stimulated by association with the other workers there. In addition a hospital physicist of wide experience should be appointed to the staff of the institute, to provide a close liaison between the institute and the hospitals and indicate from his experience what techniques, etc., are feasible for routine hospital use.

Summary of Points Raised by the Four Speakers

Physics could play a much wider and more valuable part in medicine than at present, as it is now largely concentrated on radiotherapy.

The extension of physics into other branches of medicine in a general hospital is frequently hindered by points of administration and habit, which are due to the historical close association of radiotherapy and physics.

To be fully effective the physics in a general hospital should be the responsibility of one physics department, directed by a physicist under the general control of the hospital committees.

In order to serve all departments, rather than the radiotherapy departments alone, commensurate staff and laboratory and workshop facilities would be necessary. A common defect in the organization of physics in a hospital is failure to ensure that the physicist spends his time on work of the calibre for which he is paid by providing adequate clerical laboratory and workshop assistance to cope with the mass of odd jobs that continually arise.

Research provides a worth-while stimulus, and those permitted to do research work should have freedom in their choice of problem and in its development.

The large scale physical developments of great promise in their application in medicine would be best served by a research institute with a staff of specialists in the different techniques involved. The x-ray industry should co-operate, so that the institute could also undertake research into the improvement of x-ray and associated equipment, and any desirable standardization.

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- ³ Mayneord W V *Brit med Bull* 1945, 3 129
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By a new rule of the General Nursing Council for Scotland assistant nurses who had received training for the State Register and had passed the preliminary examination before they were admitted to the Roll of Assistant Nurses will have their course shortened by at least six months if they again start training for the State Register. This concession, which shortens the normal course of three years training to two and a half years (or less in cases where the General Nursing Council permit), is confined to Scotland. In both Scotland and England, however, men and women who have had two years experience of nursing in a hospital under the supervision of trained nurses in the Services, the Civil Nursing Reserve, or other organizations can also apply to have their course of training for State registration shortened to two and a half years. Assistant nurses who want to take advantage of this new concession should apply, before they resume their training, to the Registrar of the General Nursing Council for Scotland, 5, Darnaway Street, Edinburgh, 3. #

ATOMIC ENERGY AND MEDICINE

LLOYD ROBERTS LECTURE BY SIR JAMES CHADWICK

The Lloyd Roberts Lecture of the Medical Society of London was delivered on Dec 16 by Sir James Chadwick, of the University of Liverpool. It was Sir James who in 1932 demonstrated the existence of the neutron, a discovery which made an essential contribution to the later release of nuclear energy. He took as his subject "Atomic Energy," dealing in the first part of his lecture with the nature and control of the fission process by which energy is released and in the second with its applications in medicine and biology. A summary, necessarily condensed is published below.

The Fission Process

Sir James began by pointing out that the designation 'atomic energy' lacked precision in that the energy of any fuel was latent in the atoms concerned. The characteristic of atomic energy was that it originated in the nucleus of the atom. Processes had been found which could cause a disruption of the nucleus and a rearrangement of the particles which constituted it and this rearrangement resulted in the release of a large amount of energy. For a chain reaction analogous to the lighting of a fire it was necessary that the particles emitted should be of the same kind as those that initiated it and in sufficient numbers to affect neighbouring nuclei. The fission reaction which opened up this possibility was discovered early in 1939 by Hahn and Strassmann.

In this process a neutron was captured by a nucleus of uranium²³⁵, forming a nucleus of uranium²³⁶ in a highly excited state. This immediately divided into two nuclei of roughly equal mass and at the same time some 1 to 3 neutrons were emitted and some gamma radiation. The fragments flew apart with great speed and in their passage through matter this energy was transformed into heat. They were unstable and might pass through a series of transformations emitting beta particles and gamma radiations, before reaching a stable configuration. The important aspects of the process were first, the great amount of energy released, and, second, more than one neutron was emitted in the fission.

In spite of this last fact, however, natural uranium was unable by itself to sustain a chain reaction. The reason was that the common isotope uranium²³⁸ underwent fission only when the bombarding neutrons had a high energy. It was uranium²³⁵, present only to the extent of 0.7%, which was particularly susceptible to fission. In order to make a small and efficient system which would sustain a chain reaction it was therefore necessary to undertake the difficult operation of separating uranium²³⁵ from ordinary uranium. For those purposes, however, which were of interest in biology and medicine, the limitation of size was of small importance, and it was possible by a special device to build an atomic reactor which used natural uranium.

Maintenance and Control of Reaction

To make the reaction self-propagating, Sir James pointed out, it was necessary to limit the number of neutrons which were lost to the reactor—whether from physical escape, due to either the fissile material or the system as a whole being of too small size or by absorption of neutrons by other materials which did not undergo fission. For peaceful applications it was necessary in addition to control the reaction so that the release of energy was not only continuous but took place at a predetermined rate.

Maintenance of the reaction was achieved with natural uranium by making use of the fact that slow neutrons were much more effective in producing fission in uranium²³⁵ than were fast neutrons. Slowing down was achieved by causing them to collide with light atoms, such as hydrogen, deuterium, helium, carbon etc., a proportion of the initial energy of the neutrons being transferred at each collision. The only two 'moderators' which had been successfully used were deuterium in the form of heavy water and graphite which was relatively cheap and abundant. The working margin, as regards loss of neutrons, was small, however, and some tons of uranium and graphite were therefore required.

Control depended on a delay, averaging a few seconds, in the emission of a very small fraction of the neutrons. The essence of control was therefore to make the assembly only a very small degree above the critical size for the maintenance of the reaction. The contribution of the 'delayed' neutrons was then necessary, and the control devices were given time in which to act and take charge. Instruments were used to measure neutron density and power level, and control effected by the mechanical movement of rods made of cadmium or boron both of which absorbed slow neutrons very strongly.

The power level was limited by the rate at which heat could be removed, and by the physical and chemical properties of the materials. It was a point of some importance that, whereas a large graphite pile dissipating some hundreds of thousands of kilowatts was required to produce plutonium in the amounts needed for reactors, a pile of only a few thousand kilowatts which could be cooled by air was sufficient for all general scientific purposes including medicine and biology. Peaceful applications could thus be pursued without setting up a plant to produce weapons of destruction.

Applications in Medicine and Biology

There were various ways, Sir James proceeded, not all of equal importance in which such a pile could be used in medicine and biology.

DIRECT IRRADIATION

By making a channel in the concrete wall enclosing the pile, a beam of neutrons and gamma rays could be allowed to escape. The latter alone were equivalent to those from a few tons of radium. These could be used for experimental purposes both physical and medical, but had probably very little value for any therapeutic applications.

PRODUCTION OF RADIOACTIVE SUBSTANCES

These could be produced in either of two ways.

(a) *Utilization of Fission Products*—The fission products from the uranium nucleus were themselves radioactive. Since fission took place in a variety of ways and could lead to a whole series of transformations a wide variety of radioactive isotopes was produced from zinc to the heavier rare earths, with the majority in the region of barium and strontium. The amounts measured by radioactivity were so large that it might not be practicable to deal with the main bulk.

(b) *Preparations of Radioactive Isotopes*—Radioactive isotopes of nearly all the elements could be made by inserting substances into the pile for neutron bombardment. By absorbing surplus neutrons the substances inserted were assuming part of the function of the control rods. The amount of radioactive substances which could be so produced depended on several factors, but on the average were at least a thousand times greater than with the largest cyclotron. The latter, however offered more variety, since protons, deuterons and alpha particles could all be used as bombarding particles as well as neutrons. The total number of known radioactive isotopes was about 450.

There were three main uses of radioactive substances.

(1) GENERAL USE IN RADIOTHERAPY

There was a possible general use in radiotherapy as an alternative to radium and radon, both in beam therapy and also in interstitial and intracavitary therapy.

If the hundreds of curies of mixed fission products yielded daily by the pile were separated from the uranium metal in which they were formed highly concentrated sources of radiation could be prepared which would be very suitable to replace radium in telerradium therapy. Alternatively, small blocks of uranium metal could be irradiated in the pile and used without separation. The source would not be so concentrated but the dangerous and costly separation process was avoided. In addition both cobalt⁶⁰ and tantalum¹⁸², which were suitable substitutes for radium in beam therapy could be prepared in sufficient quantity while for interstitial and intracavitary therapy several of the radio-elements would be satisfactory substitutes. A single pile of a few thousand kilowatts should produce enough material to treat at least 10,000 cases a year and to maintain several large beam units as well for telerradium therapy. It should thus provide for all requirements.

(2) SELECTIVE IRRADIATION

This type of action, on specific cells and tissues, depended on the selective absorption of suitable radioactive isotopes. For this purpose the chemical and physiological properties of the substance were of first importance, since these determined the selective absorption in the tissues which it was desired to irradiate. Further, an isotope which emitted beta particles of low energy would in general be desirable in order to limit the action to those specific tissues or cells. So far only radio-phosphorus and radio-iodine had been proved of therapeutic use.

Radio-phosphorus had been found very effective in the treatment of polycythaemia, useful in the case of myelogenous leukaemia, and of no apparent advantage whatever for lymphatic leukaemia. In polycythaemia, doses of 2 to 4 mc of radio-phosphorus caused disappearance of the symptoms and enormous relief to the patient, and remission might last for two years without further treatment. In myelogenous leukaemia results with some 150 patients had been fairly good. Growth was restrained to some extent, symptoms lessened, and there was less radiation sickness than with conventional x-ray treatment. On the other hand there was some difficulty in arriving at the correct dose, an indefinite hazard from the effects of the radiations, and life was not prolonged by more than a few months at most.

Radio-iodine had been shown to be effective in the treatment of overactivity of the thyroid, and of a particular but rather unusual form of thyroid cancer. Because of the great avidity of the thyroid for iodine, especially when overactive, the radiation could be placed within the cells which it was desired to irradiate. About 50 cases of hyperthyroidism had been treated, and in 80% the disorder had been controlled, although the duration of remission was not yet established. In the case of carcinoma only a small fraction of thyroid cancers picked up iodine preferentially, and the more malignant the tumour the less was the possibility of affecting it with radio-iodine.

On the whole, Sir James summed up, the results of this new method of selective irradiation might appear disappointing. It must be remembered, however, that the method was still in its infancy, and that its development and scope had so far been limited.

(3) USE AS "TRACERS"

This last, Sir James suggested, was the most promising medical application. Radioactive isotopes of normal chemical elements, he pointed out, had exactly the same chemical properties as the usual forms, so that if a radio isotope was mixed with a sample of the same element it would accompany the stable form through any series of chemical processes, however complicated, and could always be recognized by its radioactivity. The use of radio-isotopes also increased sensitivity of detection and estimation by a very large factor, which might be important with very toxic metals or drugs, and also permitted detection at a distance, without special purification, and sometimes without removal from the experimental animal. There was also the possibility of a continuous examination of the natural accumulation of material.

The first use of tracer methods was by Hevesy in 1923, when he employed a radioactive isotope of lead to investigate the metabolism of that element in plants. The first use of artificial radioactivity was by Chiewitz and Hevesy in 1935. They investigated the metabolism of phosphorus in rats, using radio-phosphorus as a "tracer". Since then much new and significant information had been secured some of which could not have been acquired by former methods.

EMPLOYMENT OF TRACER TECHNIQUE

There were three general ways in which tracer technique had been applied.

1 *Quantitative Measurement of Radioactivity in Samples Removed from the Body*—This was the most widely used technique and one applicable to all radio-elements. Radio-phosphorus for example could be mixed with inactive phosphorus and administered mixed with food or as an injection. Later the rat was killed the various organs and tissues removed, complex organic compounds might be isolated and the radio-activity of particular tissues or compounds measured. Findings

covered the distribution of phosphorus to the bones, teeth, liver, kidneys, etc., as to both rate and amount, conversion to cephalin and lecithin, formation of phosphatides, origin of milk phosphorus, the synthesis of haemoglobin from iron and of thyroxine and di-iodotyrosine from iodine, and many similar questions. Complex organic compounds, similarly labelled, could also be administered. Thus thiamine (vitamin B₁) had been labelled by synthesis from radio sulphur and its fate in the body had been followed.

2 *Remote Detection by Gamma Radiation*—Isotopes which emitted penetrating gamma rays could be detected through several centimetres of tissue. Their presence in a particular organ could then be detected by placing a Geiger-Muller counter over the organ. An extensive study of the iodine metabolism of the thyroid gland, in both normal and goitrous human beings, had been made by this method without surgical disturbance.

3 *Use of Photographic Action of Radiations*—Sections of tissue under examination could be placed against a photographic plate. Areas of darkening corresponded with the regions in which the radio isotope had been deposited. The sections could then be stained, and histological correlation established.

EXAMPLES OF USE OF RADIO ISOTOPES

Sir James then proceeded to illustrate by examples the use of radio isotopes towards the solution of particular problems.

1 *Permeability of Membrane of Red Cell*—The problem here was to explain the fact that, whereas the concentration of sodium ions was about twenty times as great in human blood plasma as inside a red cell, the potassium concentration inside the cell was about twenty times as great as in the plasma. To account for the maintenance of this difference, in spite of the broadly similar chemical behaviour of potassium and sodium ions and in face of the evident permeability of the cell membrane to chloride and bicarbonate ions, it had earlier been suggested that the red cell was selectively impermeable to the positively charged basic cations. By means of the tracer technique Cohn had been able to show, using "labelled" sodium and potassium atoms, that ions of both these elements could in fact penetrate the red cell, and that some other mechanism than impermeability must therefore be at work.

2 *Effect of X Rays on Cellular Division*—Hevesy had shown, using radio-phosphorus as indicator, that x rays inhibited the formation of desoxyribose nucleotides from ribose, both in growing and in full grown tissues—this conversion being one of the changes involved in the preliminary stages of mitosis. The greater part of the inhibiting reaction disappeared within a few hours of irradiation, and full grown tissue had time to recover.

3 *Blood Transfusion*—Some interesting examples of tracer technique were afforded by work carried out in the United States during the war in the study of surgical shock, and the development of methods for the preservation of whole blood for transfusion.

Two different forms of radio-iron were available. Fe⁵⁴ with a half-life of 4 years and Fe⁵⁹ with a half-life of 44 days. Both were used, one to label the red corpuscles of the recipient, and the other those of the donor, and they were distinguished by the difference in rate of decay. This device enables important investigations on the interaction of blood types to be carried out. These had clarified some points in blood transfusion and had proved to have applications in certain situations in childbirth as well as in surgery.

In addition, important and direct evidence was obtained on the potency of blood after various periods of storage when admixed with various suggested preservatives. It was by means of this method that the U.S.A. standards of blood storage were established.

Conclusion

"It can hardly be questioned," Sir James concluded, "that the development and wider use of this technique will bring rapid and remarkable progress in our knowledge of the fundamental chemical processes of the body and in our knowledge of health and disease. To derive the full benefit from this new method we must have ample supplies of these radioactive

materials. A single pile of moderate power would be able to supply all the tracer elements needed in this country. It is essentially a safe development of atomic energy, and one which, by enabling us to discover quickly more and more about the human body, may bring untold benefits in its train."

INTERNATIONAL SOCIETY OF SURGERY

The twelfth congress of the International Society of Surgery will be held in London from Sept 14 to 20. Discussions on the following subjects have been arranged by the secretariat in Brussels: Role of Penicillin in Surgical Practice (Opener, Sir Alexander Fleming FRS), "Recent Advances in Arteriography and Venography" (Opener, Prof. Dos Santos Lisbon), "Recent Advances in Vascular Surgery" (Opener, Prof. René Leriche, Paris), "Surgical Treatment of Pulmonary Stenosis" (Opener, Prof. Blalock, Baltimore), "Operative Treatment of Fractures" (Opener, Prof. Danis Brussels), "Results of Early Operation in War Wounds of the Lungs" (Opener, Dr. Rastos Ansart, Barcelona), "Results of Heparine in Surgery" (Opener, Dr. Crafoord Stockholm), "Role of Vasodilatation in Arterial Disease" (Opener, Dr. Diez, Buenos Aires), "Skin Defects Their Repair by Flaps and Free Skin Grafts" (Opener, Prof. T. Pomfret Kilner), "Recent Progress in the Treatment of Burns" (Opener, a Russian surgeon).

Members of the society who wish to take part in these discussions should send their names to the Secretary Mr. H. W. S. Wright, MS, FRCS, 9 Weymouth Street, London W1 or to the general secretary, Dr. Leo Dejardin, 141, Rue Belliard, Brussels, Belgium.

The society has a number of vacancies for members in Great Britain and Northern Ireland and for surgeons of consultant standing. Applications to join should reach the local secretary (Mr. Wright) as soon as possible. Junior surgeons who are not eligible for full membership may be accepted as associate members with all the privileges of membership except that of voting at general meetings. The entrance fee is 400 Belgian francs and the subscription payable every three years, is 1,000 Belgian francs. Subscriptions from present members should be sent to the British treasurer, Mr. Victor H. Riddell, FRCS, 68, Chester Square, London, SW1.

LADY TATA MEMORIAL TRUST

The trustees of the Lady Tata Memorial Fund invite applications for grants and scholarships for research in diseases of the blood, with special reference to leukaemia in the academic year beginning on Oct 1. Grants of varying amounts are made for research expenses or to provide scientific assistants to senior workers. Scholarships are awarded as personal remuneration, and their normal value has been £400 per annum for whole time research, with proportionate adjustment for work on a part-time basis where this has been approved. Applications must be submitted before March 31, and the awards will be announced in June. Further particulars and forms of application may be obtained from the secretary of the Scientific Advisory Committee, c/o Medical Research Council, 38 Old Queen Street, Westminster, London, SW1. The grants and scholarships are open to workers of any nationality and in any country in which it will be possible to make payments in the coming academic year. The available information on this point, regarding particular countries outside the British Empire, will be supplied to intending applicants on request.

LEVERHULME RESEARCH FELLOWSHIPS, 1947

Application is invited for Fellowships and Grants in aid of research, which are intended for senior workers who are prevented by routine duties or pressure of other work from carrying out research. They are limited to British born subjects normally resident in Great Britain, but in exceptional circumstances the trustees may waive the condition as to residence. The trustees are also prepared to consider applications from groups of workers engaged upon co-operative programmes of research, particularly from those engaged upon long-distance programmes or in institutions in which the normal facilities for research have been curtailed by the war. The duration of the awards will not normally extend over more than two years or less than three months, and the amount will depend

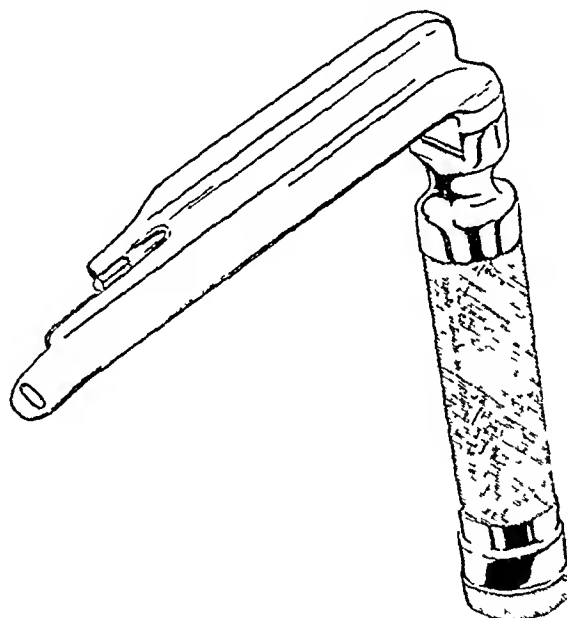
on the nature of the research and the circumstances of the applicant. Forms of application may be obtained from the secretary, Dr. L. Haden Guest, M.P., Leverhulme Research Fellowships, 7, Bedford Row, London, WC1. Applications must be received by March 1. Awards will be announced in July and will date from September 1.

Preparations and Appliances

A NEW LARYNGOSCOPE FOR ANAESTHETISTS

Wing-Commander R. L. SOPER, senior specialist in anaesthetics, R.A.F. writes:

Most laryngoscopes of orthodox design (Magill, Goldman, etc.) have the blade made in "C" section and the lower (short) part of the blade greatly reduces the space for manipulating endotracheal tubes. This has been obviated in the Macintosh laryngoscope by making the blade "Z" section—i.e., the lower portion of the blade is bent in the reverse direction. However, the Macintosh laryngoscope has in my view, disadvantages of its own: the principle of elevating the epiglottis indirectly does not in every case result in a satisfactory exposure of the cords. This is so with the large flabby type of epiglottis with which one not infrequently meets. Also the curved blade, though it



most cases allowing a view of the laryngeal opening, sometimes necessitates a stiffener being placed within the endotracheal tube to allow this to be manipulated around the curve.

In my laryngoscope the "Z" section of the Macintosh instrument has been retained with a straight blade which is used to elevate the epiglottis in the usual way. The blade is of full length and has a tip similar to the Magill except that a slot is cut in it. This slot, it has been found, tends to prevent the epiglottis slipping off the blade without being in any way a cause of trauma.

The new blade is made to fit the standard Macintosh handle and may be obtained separately. A small size is also made. The manufacturers are the Longworth Scientific Instrument Co., Oxford.

The fourth International Cancer Research Congress will be held at St. Louis, Missouri, U.S.A., from Sept 2 to 7. The Union Internationale Contre le Cancer having accepted the invitation of the American Association for Cancer Research the congress will be held under the joint auspices of these two organizations, with Dr. E. V. Cowdry, professor of anatomy in the Washington University School of Medicine and director of research of the Barnard Free Skin and Cancer Hospital serving as president of the congress. Of the three congresses that have been held previously, the first was in Madrid in 1933, the second in Brussels in 1936, the third in Atlantic City in 1939. No meeting of the congress has been held during the past eight years owing to the war.

Correspondence

Care of Children in Hospital

SIR—I have read and re-read with interest and profit the lecture given by Prof. Spence on the care of children in hospital (Jan 25, p 125). I am sure it will be of great interest and a stimulus to all who are engaged in this important work. Prof. Spence has given us much food for thought—so much indeed that it would be impossible to comment fully upon it within the space of a letter. One hopes that it will be a basis of much serious discussion and, if necessary, controversy among people who are interested in children's hospitals. I should like, however, to comment on one feature, and that is the "atmosphere" of a children's ward, so ably described by Prof. Spence. This masterly description should cause serious reflection and perhaps give rise to a sense of guilt. The state of affairs described by Prof. Spence is unnecessary but often only too true, and I would suggest that we, as doctors, are not entirely without blame. Too often have we looked upon the sick child as a patient presenting interesting clinical features requiring investigation and treatment. Too often do we tend to forget that while the child is in hospital the ward which houses him is his temporary home. The child is entitled, while in hospital, to have that feeling of security and affection which every home should provide. I feel that we, as doctors, can set an example. If the doctor will try to make the children realize that he is their friend and interested in them as human beings as well as patients, then the ward round might cease to be a distraction and become an eagerly awaited event.

There are numerous other ways in which the medical staff can contribute to a "happy atmosphere," provided they have an intimate knowledge of the working of a children's ward. Would it be too much to suggest that the medical student might acquire some of this knowledge by working on a children's ward during his training in paediatrics—by working I mean carrying out nursing duties under the ward sister for several days. I venture to suggest that in this way the future paediatrician would learn some valuable lessons in practical paediatrics.

Prof. Spence has pointed out the demands made on a nurse's time in carrying out the nursing treatment of small children, and has stressed the importance of an adequate nursing staff. As he rightly says, we do not realize sufficiently the extent to which an inadequate nursing staff may adversely affect the welfare of sick children. How can we expect a nursing staff—whose numbers are insufficient for the job—to nurse the dangerously ill child, nurse and comfort the fretful not-so ill child, and nurse, comfort, and entertain the child in the convalescent stage of its illness? In his lecture Prof. Spence has shown one way by which the burden may be lightened. This has one disadvantage in that it is not always reliable. Many mothers of sick infants have other family responsibilities—especially the care of the young children—which they cannot lay aside easily. Could his suggestion be carried a stage further (or should I say backward?) and the help of expectant mothers be enlisted? I have in mind the mother expecting her first baby. Her family responsibilities are light, and the experience she would gain would be useful in the months to come. It might even be the means of avoiding a future case of "mismanagement and feeding error."

Another method of easing the burden on the nurses' shoulders would be to cater for the convalescent child by providing "diversional occupational therapy." This once fashionable term has fallen into desuetude. Let us revive it in the children's hospitals but with safeguards. I would suggest that every children's ward should have the services of a teacher specially trained in bedside education methods. Such a teacher must recognize that her duty as part of the hospital team, is the special care of the child in the convalescent stage and to render that stage as interesting, pleasant, and as profitable as possible.

No doubt, Sir, many of your readers have other and better suggestions than mine to render more tolerable "the daily rhythm of anxiety, wonder, apprehension, and sleep." To my

mind it is most important that the train of thought started by Prof. Spence should not be allowed to lapse. It is not necessary to wait for the structural alterations which most of us would like to see carried out. Let us remember that "four walls do not a hospital make", it is the character and capabilities of each member of the staff which alone can provide the right "atmosphere." Let us never be satisfied with any improvement we make but always keep in mind that "achievement is but a milestone in the march of progress, the end of the journey lies ever ahead"—I am, etc.,

W E CROSBIE
Medical Superintendent

SIR—I have read with great interest Prof. J. C. Spence's article (Jan 25, p 125) on the care of children in hospital especially the question of nursing, as I am myself faced with an incredible shortage of nurses in the babies ward, where there is barely one nurse for every seven ill babies. I was very anxious to try his method of getting their mothers to look after them and have surveyed the situation with that view in mind. I found that of eight bottle-fed babies who are in the ward at present, the mothers of four have five other children to look after at home the mothers of two are ill in other hospitals, another had a partial gastrectomy here the day before, and the last baby's mother is suffering from puerperal psychosis. I envy Prof. Spence in being able to treat babies whose mothers can spare all that time for them, but I doubt that it is a practicable proposition in most children's departments—I am, etc.,

Dartford Kent

JOHN LORBER

Chemotherapy of Virus Diseases

SIR,—May I say that I agree with Dr. W. N. Leak's letter (Jan 25, p 160) protesting against the statement in the leading article of Dec 7, 1946, that there is scarcely a hint that viruses are susceptible to chemotherapeutic attack? In the case of both vaccinia and smallpox viruses there is definite evidence that they are extremely susceptible to the action of potassium permanganate, which inactivates them even when diluted to 1/100,000. This extreme susceptibility to permanganate was described and illustrated in the Medical Research Council's Special Report, Series No. 98, 1925, and greatly interested the late Sir Andrew Balfour for the following reason. During an outbreak of severe smallpox in the Sudan the cases had been treated with compresses soaked in permanganate and applied to the skin lesions with amazingly successful result. The object of the doctors was to counteract any secondary infection, but Balfour saw at the time that something more than this must be involved to account for the beneficial effect. When he read the report in question and realized the high degree of susceptibility of smallpox virus itself to permanganate, Balfour was more delighted than I ever remember to have seen him. The pronounced viricidal action of permanganate on vaccinia virus *in vitro* ceases in the presence of glycerin. From this it would seem likely that the well-established value of glycerin in conserving viruses is due to the protection it affords at their weakest point—hypersensitivity to oxidation. Bacteria are far more resistant to permanganate than viruses—I am, etc.,

Molesey Surrey

M H GORDON

A Review of the Dietetic Factors in Liver Disease

SIR—While admiring the painstaking effort and industry of Prof. L. J. Wiggs in summarizing the existing knowledge on the above subject, I was a little surprised to read some of his categorical statements on the clinical features of acute necrosis of the liver (Jan 11, p 45). He states, "Jaundice is intense." Surely one of the most variable features of the condition is the depth of the jaundice. Sometimes it is slight in the acute stage, and in general experience it is seldom as deep as in cases with obstructive jaundice, such as is seen, for example in carcinoma of the pancreas or stricture of the common bile duct. It was perhaps for that reason that the old term "icterus gravis" long ago fell into disuse. This variability in the depth of the jaundice in acute liver necrosis was stressed by my father in his Lumleian lectures on toxic jaundice in 1931 (Willcox, W. *Lancet* 1931, 2: 57). He maintained that the grave signs were produced by the liver deficiency, which he ventured to call

hypohepatism and not to the retention of bile which is an associated feature. Nor did he, from his long personal experience of these cases, consider oedema and ascites as being found in this condition often enough to deserve mention, these two features would surely suggest cirrhosis rather than acute necrosis. I suggest that Prof Witts is too rigid with his 'rigid criteria' of the clinical feature of acute necrosis to convince those of us with experience of this distressing disorder.

Prof Witts definition of 'toxic jaundice' is also confusing. Hitherto this term has been popularly used to group together jaundice due to toxic hepatitis of all kinds—chemical poisons, bacterial infections, various infections (including infective hepatitis), as well as that associated, for example, with spirochaetosis, relapsing fever, and other infections. They are all classified together because the jaundice in all these conditions is caused in a similar way, that is by the toxic effect on the liver cells, and from the teaching point of view they fall naturally into one group. To confine the term 'toxic jaundice' to cover only jaundice due to chemical poisons is heterodox and confusing, it is best avoided. Thus we may avoid a classification confusing alike to the student and to those with a wide outlook on toxic jaundice, who regard the condition as one of toxic hepatitis from whatever cause—I am, etc.,

Windsor

PHILIP H WILLCOX

Enlightened Self-interest

SIR—Now that the Negotiating Committee is to be re-constituted it is pertinent to emphasize once again that the new Health Service affects the different groupings of the profession in varying respect and extent. In like manner certain of the principles laid down by the B.M.A. will be defended or conceded more readily by some sections than others. Why? Because they are or are not personally affected. The general practitioners are not only the very core of the scheme but are most radically affected. The question of the goodwill of practice, perhaps the most controversial of the principles is almost, if not entirely, concerned with general practice, and it may be argued with force that on this and other grounds the voice of the general practitioners should have a preponderating importance. Whereupon, no doubt, the purist will object on the score that we are considering our own interests rather than those of the public we serve. The obvious reply is that the public will best be served by promoting that service which will be most efficient and we believe—for many of us laying aside hypocrisy still dare to do—that the greatest spur to efficiency is self-interest.

The truth surely is that self-interest and ambition and desire for the public good are so interwoven that it is impossible to disintegrate them nor are they, properly regarded and blended, in any sense antipathetic, but rather complementary and working together for the best. Whether the purists or the puritans like it or not, the entirely disinterested person is a very rare individual indeed—a fact borne out at medical meetings as well as elsewhere. It is right therefore that they whose whole future will be vitally affected by what is decided should have an equitable and proportionate voice in that decision. General practitioners will not be satisfied to have their case sponsored by, for example, the Presidents of the Royal Colleges nor for that matter by those who are part-time consultants, part-time general practitioners, and who may look to become whole-time consultants. At such a crucial time the true general practitioner should be fully represented not only on the Negotiating Committee but on all the medical councils. Indeed it is not too much to ask that at all Divisional meetings the opinion of general practice should be sought and obtained by means of a special vote—I am, etc.,

Wirksworth Derby

E D BROSTER.

System or Person?

SIR—The older practitioners are more solidly opposed than those more recently qualified to the restrictive parts of the National Health Act. It is not fully realized that for seven years no doctor qualified after 1939 had a chance to treat a personal patient (private or N.H.I.) each patient was just a case under hospital or Service discipline without consideration for his or her personality, or home or family ties or background, or responsibilities. I have yet to meet anyone

who wishes to be other than a personal patient. Those who have been in the Services are unanimous in their dislike of the impersonal outlook. Oh the treatment is all right but you just don't count, and nobody worries until you are half-dead. It is interesting that for the most part they do not blame the M.O. but the system, though I have heard criticism of some of the younger men.

We are to be paid salaries to control certification. Thus can only mean that the State doctor will not be allowed to certify incapacity as he himself believes right and for the patient's good but to a schedule dictated by a Minister-appointed bureaucrat interested solely in keeping the sick fund solvent. Further, it implies that the certificate of a private (non-State, personal) practitioner will however honest and accurate, not be valid. Enter officialdom exit humanity—I am, etc.,

Newton Ferrers Devon

W F BENSTED-SMITH

The Plebiscite

SIR—The Council of the B.M.A. sent round a plebiscite to the members of the medical profession and we held Divisional meetings to discuss this plebiscite and sent our answer, which was "No". The Council decided to abide by the decision of the profession not to negotiate with Mr Bevan but the Presidents of the Royal Colleges then got into touch with Mr Bevan, and as a result the Council have now decided to ignore the plebiscite and to negotiate with Mr Bevan.

Would it not save a great deal of trouble in the future if the B.M.A. Council would take their orders from the Presidents of the Royal Colleges and so save us the time which we have, unfortunately, wasted at our executive and Divisional meetings? I am sure that there is no point in having any further plebiscites which will only have to be repeated until the Council get the result they desire—I am, etc.,

Camberley

LESLIE HARTLEY

* Neither the Council nor the Representative Body has ignored the plebiscite. Both have recognized that the Minister's letter has changed the situation and have responded to that change—ED B.M.J.

It's Happening Now

SIR—Had the Act provided a sound Health Service, with the interests of the patient at heart the profession would have co-operated wholeheartedly and there would have been no need for a plebiscite about Regulations. Many who abhor the political structure of the Act agreed to negotiation about details as they realized that to refuse negotiation would alienate public sympathy. To the lay Press the results of the plebiscite seem to suggest that nearly half the doctors are prepared to work the Act as it stands. Unfortunately the B.M.A. never put to us that straightforward question, or the Minister might have sent his representative along in a taxi for the second time.

The real meaning of the plebiscite is seen in the extraordinary number of doctors both in the public health service and the fighting Services who voted "No". Those in the public health service presumably chose that more sequestered life in preference to the hurly-burly of general practice and can be expected to have a fairly intimate knowledge of State medicine. But instead of 100% voting for negotiation more than a third voted against the newer and 'better' State medicine. Again, had the Act been sound one might have expected the Services to be 100% in favour with their freedom from having to send bills, collect bad debts and their assured salary independent of work done etc. The specialists (*vide* "Surgeons up in Arms" Dec 21 1946 p 960) seem to have had their birthright sold for them by their autocratic Presidents who would also appear to desire to sell the G.P.s birthright for the same mess of pottage and will have succeeded unless the B.M.A. takes an exceedingly firm line and in return for concessions to the Minister insists on amendments to the Act. The G.P.s voting showed the interesting result that the older they got the more firmly they voted against negotiation about details while the structure of the Act remained unsound. Even the youngsters voted 925 for and 1415 against but with increasing experience there were progressively more "Nos" until those in the oldest group—men who had seen their patients

marry, had delivered their children and their grandchildren, and had become family" practitioners in the true sense of the word—voted 2,782 for and 5,249 against

Unless the Act is amended what have our patients in store from the new Service under the present doctrine that the individual exists for the State? Willemsen was the opening gambit. The recent overriding of a GP who was acting on the hospital consultant's advice on diet for a patient is quite logical—if one admits the State doctrine. The patient had a cancer and would have died anyway so why feed a "useless mouth" when world rations are so short? The beloved physician does his traditional best for his patient. The State administrator to whom the patient is merely a "case" does his impersonal duty to the State. Granted the doctrine, what use has the State for incurable tuberculous patients? Why give them rations needed by the healthy? Indeed, why feed the useless mouths of those too old to work? This may become a major political problem when owing to the birth rate having fallen during the last decades there will not grow up a sufficient number of adults to support a rapidly increasing burden of old age pensioners. There is nothing illogical in the train of thought. Euthanasia for the useless to prevent the diversion of rationed food from the healthy and productive may not be so impossible as may seem once the State doctrine has been forced on us.

Before 1939 many believed that another war was too ghastly to be possible. Such "realists," with their heads in the sands of their daily round and trivial task, were disillusioned. Many could not believe Belsen to be anything but propaganda until the irrefutable facts unwillingly convinced them. In 1945 few would have thought that the Willemsen episode could happen here, but it has. It is our Munich, and we have to act now. What is the answer? Just that the individual does not exist entirely for the State, and the present political measure of potential tyranny disguised as a Health Act must be amended to give all a first-class Health Service—I am, etc.,

Dereham Norfolk

E PUDDY

Medical Certification

SIR,—I recently issued a patient of mine with a certificate stating that he required a "thermos" flask for medical reasons. On presenting his certificate he received the following letter from the Board of Trade:

Dear Sir/Madam,

I have your application for a "thermos" flask permit, with which you enclosed a medical certificate. In view of extremely limited supplies of flasks however, the exact nature of the illness must be advised, will you please therefore supply this information, stating in addition why a flask is essential.

As I was asked to deal with the matter I replied to the Board of Trade as follows:

Dear Sir

Reference application for "thermos" flask permit for Mr X, of Eastbourne, this patient is suffering from myocardial degeneration with oedema, cerebral thrombosis, and bronchitis. He is a very ill man and his health is failing. He requires an odd hot drink in the night, and since his wife is worn out by attending to him during the day it seems to me that a "thermos" flask is a reasonable request and that a permit should be forthcoming immediately.

I wish to lodge a personal protest. (1) The nature of a patient's illness is a personal matter, and I am at a loss to see why such private details as these should be disclosed to the Board of Trade (quotation from your letter, "the exact nature of the illness must be advised"). (2) Doctors these days are overburdened with the signing of certificates, forms, etc., and an effort should be made to lessen this work—I did not sign the initial certificate either indiscriminately or for fun. (3) I cannot understand how an officer of the Board of Trade behind a desk in London can possibly assess a patient's condition in Eastbourne. I earnestly plead that steps be taken to eliminate this bureaucratic stupidity.

These details I send you not as a moan from a doctor but simply to bring them to your notice in case you are not already aware of the situation. My letter alone obviously will do no good but backed by a protest from the B.M.A. it is just possible that the Board of Trade might remove their long noses from matters which do not concern them—I am, etc.,

Eastbourne

BASIL S KENT

To Negotiate or Not

SIR,—Contained in the annotation "Plebiscite Secret" (Nov 23, 1946 p 779) is the statement: "If the majority of the profession say 'No' on their plebiscite forms then the Minister will have no one else but himself to thank for such a refusal to operate the new Health Service Act, because this is what the answer 'No' will mean." Presumably this "refusal to operate" implied refusal to negotiate the Regulations of the Act as it stood and as it stands now. I do not know how closely this statement expressed the intentions of the Council but subsequent events showed that the Council was in fact prepared to follow the wishes of the simple majority in the plebiscite.

The more recent decision to reopen negotiations, so lamely represented as the result of a more conciliatory attitude of the Minister, has restored in the minds of many practitioners the old mistrust of the Council's ability to represent them, and aroused bitter recollections of previous vacillations in policy. If in fact the Council's change of tune does bear relation to the expressions of personal opinion by the Presidents of the Royal Colleges it seems reasonable to point out that these were only another three votes to offset the larger majority of "Noes" expressed by doctors with closer associations and deeper knowledge of the public, whose best interests are at the heart of us all. So yet again

"the native hue of resolution
Is sicklied o'er with the pale cast of thought"

—I am, etc.,

London EC1

ANTHONY ALMEN

Aspiration of Acute Pleural Effusions

SIR—I would like to congratulate Dr E A Wood on his letter (Jan 25, p 159) concerning the aspiration of pleural effusions. I wish that the indications and contraindications for removal were as clearly and correctly stated in all medical textbooks.

In the hospitals I visit I have often found that the M.O.s have only a vague idea of when and when not to aspirate. I do feel, however, that pleural effusion cases should always have a small specimen of fluid withdrawn for diagnostic purposes—I am, etc.,

London N7

J WALLACE CRAIG

Curare

SIR—I hesitate to enter into argument with Dr Massey Dawkins (Jan 18, p 111) and Dr A J Gray (Feb 1, p 196) on the subject of curare, for their experience with this drug must surely be much wider than mine. At the same time I cannot but disagree with Dr Massey Dawkins over the post-operative condition of patients who have been given curare. In my small series of cases I can only feel delighted with the results, and, on questioning, the nursing staff appear to be equally satisfied. Dr Gray, in his excellent reply, dealt with the points raised, but perhaps one might be allowed to elaborate further.

With each administration of an anaesthetic agent there are well-known difficulties and dangers to be borne in mind avoided, and, less frequently, remedied. When dealing with curare the points to be considered are profound muscular relaxation with limited respiratory excursion, which together lead to some degree of anoxaemia, increased carbon dioxide tension, decreased venous return to the heart, and some fall in blood pressure. All these are dependent upon the dose of curare and the speed with which it is given. Little has been written about the rate of administration, although L. Watter (1944) reports that in one case a rapid injection of 2 ml of "intocostryn" near completion of an operation resulted in severe respiratory depression and Lundy (1945) states that rapid injection can prove fatal. It would seem wise, then, always to inject the drug slowly. As regards size of dose there is a wide variation between 9 mg and 30 mg, in my experience required to produce upper abdominal relaxation in adults. The dose should not depend upon the patient's weight but rather upon the patient's needs.

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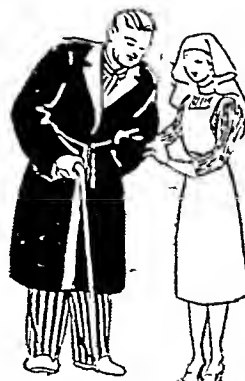
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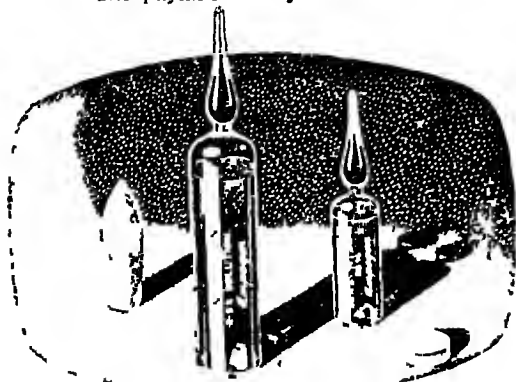
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With larger doses of curare there is considerable limitation of respiratory excursion, and it is not sufficient to stand some yards away from the patient and observe that he is breathing. There comes a time when this breathing is insufficient for the patient's metabolic needs and so it is imperative long before respiratory arrest is likely to set in that the anaesthetist intermittently compresses the rebreathing bag thereby favouring respiratory exchange and avoiding pulmonary stasis. A high concentration of oxygen in the inspired gases seems to be beneficial and should there still be shallow breathing at the end of the operation one should not hesitate to give prostigmin. When breathing has returned to normal hyperventilation with carbon dioxide and air will introduce the inert diluent nitrogen into the alveoli and thus help to guard against atelectasis. If these precautions are taken in every case then there should be no need to worry about respiratory depression during the immediate post-operative period and little fear of pulmonary complications at a later date.

Since curare is non-toxic, then in an anaesthetic sequence in which it is used one need only consider the slightly toxic effects of the small amount of anaesthetic agent required to keep the patient asleep. Dr Gray quite rightly states that Crile's theory has been invalidated. R. T. Knight (1944) goes further by saying that deep general anaesthesia is more damaging and more shock-producing than even the trauma of surgery. Surely then the maintenance of light anaesthesia is a prophylactic against shock. Light anaesthesia is easily maintained with non-toxic nitrous oxide but I do not think that this is entirely satisfactory with curare since the shallow breathing associated with the latter tends to increase the anaemia usually present with the former.

The majority of the cases in which I have used curare have been upper abdominal operations and/or ill patients and in these cases an intravenous drip is often required before, during, and after the operation. "Pentothal" is always used the initial dose being supplemented when rise in pulse rate—a sign of lightening anaesthesia—occurs. Usually an endotracheal tube is passed under direct vision and pure oxygen is administered throughout the operation. Under these conditions perfectly satisfactory anaesthesia and convalescence are ensured—I am, etc.,

Truro Cornwall

G. V. S. WRIGHT

SIR—Dr Massey Dawkins (Jan 18, p 111) has drawn attention to three post anaesthetic complications following the use of curare—viz shock, respiratory depression and paralytic ileus. While these conditions unfortunately do occur may they not be attributed to an overdose of curare—that is, a quantity in excess of that necessary to produce the desired effect?

At present there appears to be a tendency to use curare in dosage sufficient to produce immediate absolute relaxation, with little regard to individual susceptibility. The latter may be of more importance than the weight or physical fitness of the patient and the adoption of a small initial test dose" (5–10 mg tubocurarine chloride) followed by minimal additions may lessen these complications. I have observed marked hypotension following the administration of curare in light and deeper anaesthesia—even before the incision has been made. This is presumably due to the action on the autonomic nervous system in the curare-sensitive subject—I am, etc.,

Llanelli Carmarthenshire

D. S. JONES

Curare or Magnesium Sulphate?

SIR—We have used magnesium sulphate as a relaxing agent in anaesthesia in a few cases with unconvincing results. One woman aged 32 was given 'pentothal' 0.5 g followed by 20 ml of 25% magnesium sulphate solution intravenously and nitrous oxide and oxygen for appendicectomy. Relaxation appeared to be good but it is difficult to say what part the magnesium sulphate might have played in this. A man aged 38 was given 'pentothal' 0.5 g followed by 25 ml of 25% magnesium sulphate with cyclopropane and oxygen for repair of an incisional hernia of the upper abdomen. In spite of deep cyclopropane anaesthesia relaxation was not as good as with curare. In another case laryngoscopy and orotracheal intubation were performed without difficulty in a healthy woman

aged 24 after "pentothal" 0.5 g and 20 ml of 25% magnesium sulphate. Laryngeal irritability appeared to be less than after "pentothal" alone.

There were no adverse side-effects and respiration was not obviously affected in any of the cases. Magnesium sulphate has been used to mitigate convulsions in shock therapy,¹ and it is said to have bronchodilator and antihistamine effects.^{2,3,4} Anaesthesia has been produced with magnesium sulphate,⁵ but muscular relaxation appears first. It seems that if magnesium sulphate is to be used instead of curare much larger doses must be used than the 0.5–1 ml of 25% solution suggested by Dr W. F. Cooper (Feb 1, p 197)—We are, etc.,

GEOFFREY ORGANE
IAN C. W. ENGLISH

London SW 1

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Prognosis of Hypertension

SIR—Your contributor writes in the annotation on "Prognosis of Hypertension" (Jan 25, p 144) discussing Bechgaard's monograph: "By hypertension was meant a blood pressure of not less than 160/90, the average was 190/110 taken after 15 minutes' rest."

But although Bechgaard's material consists of patients who had a blood pressure of 160/100 or a systolic blood pressure of 180 mm at the first examination he defines normal blood pressure as being 140/90 mm. He regards people with a B.P. of more than 140/90 mm as hypertonics even if they be over 40 years of age. He admits that "with this limit a very large number of older people (in case of the oldest more than 50%) are regarded as hypertonics." This would hardly be accepted by English and American observers who regard as raised blood pressure in people over 50 a reading of 170/105 taken under proper precautions—I am, etc.,

London SW 3

V. C. MEDVEI

Gynaecomastia

SIR—It may be of interest to your readers to know that this condition is relatively common among lepers and cases may be seen in any large leper colony at almost any time. It has been described by Dr James L. Maxwell in his textbook *Leprosy: A Practical Textbook for Use in China*. It is associated with leprosy orchitis leading to atrophy of the testis followed by partial or complete sterility. It is commonly a bilateral condition and appears to be entirely painless—I am, etc.,

London SW 16

STEPHEN D. STURTON

"Anaesthesia" or "Analgesia"?

SIR—I am not concerned with the polemics of Dr F. W. Roberts (Dec 28 1946 p 1007) and Dr J. N. Fell (Jan 18 p 115) but I must take the latter to task for being misleading apparently because he thinks anaesthesia is more euphonious than analgesia and would make a more charming name for a girl than would the latter. The statements he makes might cause some members of the profession to think that those who chose these Greek words for descriptive purposes in their anglicized forms had been guilty of careless or bad selection whereas this is not the case.

Dr Fell states that there is no distinction between the words in Greek, that distinction does, however, exist in precisely the way which is intended in their anglicized forms. Anaesthesia (ἀναισθησία) is used by Plato as a noun to mean "want of perception" as meaning "stupor," and in the same work he uses it adjectivally to mean "not subject to the senses" or "insensible"; it is also used as an adverb in Isocrates in an exactly similar way. On the other hand analgesia (ἀνάλγησις) is used to describe "want of feeling," and the adjective ἀνάλγητος to describe "without pain", but let us discard the particle ἀν and look at the parent words αἰσθάνομαι and αἰσθησις are used without exception to describe "perception" in one form or another, while ἀνέω, ἀγγισις, and ἄλγος are always used to convey the "sense of pain."

I do not think I need to carry the matter further, but I would like to remark that spinal "anaesthesia" would be more properly described as spinal "analgesia." I admit that Liddell and Scott quote Demosthenes as having used ἀναλγησία in the sense of ἀνασθησία, but I do not think the compilers of the volume (even in their first edition of 1843) had in mind such a distinction being drawn, if they had I am sure they would have disagreed with Dr Fell, who selects this isolated instance to make the sweeping statement in his letter. Nowhere in Liddell and Scott can I find that "the adjective derived from analgesia was used to mean, 'very painful', the particle ἀν would necessarily cause it to have precisely the opposite meaning, however, my lexicon and I are of a much earlier vintage than Dr Fell and his edition of the lexicon and it may be that the translation of the classics is "sair altered noo." I am, however, συνπαθητικός with Dr Fell that he is a Cambridge man and has not enjoyed the advantages that accrue in the home of Liddell and Scott—I am, etc.,

Stourport on Severn
Worcestershire

GILBERT R. A. ARMSTRONG

Diet and Canine Hysteria

SIR,—In further reference to the letter (Feb 1, p 200) I sent you about a fortnight ago on the above subject it may interest your readers to know that I have just received a communication from the director of the National Veterinary School at Lyons, France. Prof. A. Brion says that "fright disease" or hysteria has been rife in France especially in the south. All ages and all breeds of dogs seemed equally susceptible. He says, further

"In France we do not believe there is any connexion between diet and canine hysteria. We have observed no reaction caused by the feeding of biscuits to dogs and it has been proved in practice that the biscuits for dogs which we have had at our disposal were not harmful. mongrels which received only the scraps from the kitchen were equally affected."

"These are the arguments upon which we have reached the conclusion that biscuits do not play any part in the cause of canine hysteria. In any case, in France flour is not subjected to any bleaching or improving treatment. We know only of a poor quality flour of 85-90% extraction and (during the occupation) no extraction. Therefore our dogs suffering from hysteria eat bread made without any addition of chemicals to the flour. That is why the work of Sir Edward Mellanby, although very interesting does not explain all cases of hysteria, and, in particular, the cause of the French hysteria is quite different."

These facts appear to bear great significance and seem to show that some other factor in the aetiology remains to be elucidated. In addition we do know that a large number of dogs in England subsist entirely upon horse flesh, and yet they too are not immune from hysteria—I am, etc.,

London N W 11

HAMILTON KIRK

Endocrine Receptors

SIR—In your editorial review (Jan 18, p 96) of the extremely valuable paper by Mr Aleck Bourne (p 79) on "Endocrines in Gynaecology"—a paper characterized by exceptionally wide experience and deep thought—you state, in relation to his conception of the reactivity of the organs to hormone stimulus (endocrine receptors), that "it seems strange that an idea so obvious should not have received closer attention in the great mass of work that has poured out in books and journals of all kinds in the last two decades."

I think that such a comment is probably doing an injustice to several endocrinologists. Certainly from my own writings I can with ease choose the following brief extracts to indicate that reactivity of the end organs has been considered as playing an important part in endocrinology, as in other branches of physiology and medicine. Thus, in the introduction to *Major Endocrine Disorders* London, published in 1938, I stated, "The reaction of the tissues to hormones, which is variable is also important", and then, after giving examples I end the paragraph with the sentence, "The reactivity of the tissues, therefore, is an important factor in determining the effects of hormone secretion." In a paper on "Endocrine Therapy" in 1939 (*Practitioner* 143, 502), I stated, in regard to psychological

impotence and the failure of testosterone propionate in this condition "Since these doses are much greater than those that are effective in a complete castrate, it would seem that psychological processes can not only prevent an endocrine gland from functioning (e.g., anorexia nervosa) but can apparently prevent a hormone circulating in the blood in supernormal concentrations from acting on an end organ." Finally in a 'Discussion on Exophthalmos' at the Royal Society of Medicine (*Proc Roy Soc Med* 1945 38 666) I put forward the theory that "if it was accepted that the pituitary thyrotrophic hormone produced exophthalmos both in Graves's disease and in the exophthalmic ophthalmoplegic group in the latter the thyroid was incapable of responding to the thyrotrophic hormone."

I think, therefore, you will agree that the importance of reactivity of tissues or of end-organs, has been emphasized in endocrine literature. These statements of fact in no way detract from the enormous value of Mr Bourne's fundamental observations nor from the usefulness of his term, endocrine receptors. May I add that I am very heartily in agreement with the views expressed in your leading article as to the need for a team of workers with adequate equipment to undertake fundamental research in this important field of endocrinology—mainly that dealing with the sex hormones—I am, etc.,

London W 1

S. L. SIMPSON

Trilene in Labour

SIR—I should like to make a few comments with regard to Mr D. M. Stern's letter (Feb 1, p 199). As long as the limitations of trilene are recognized the drug is, I think, a most useful addition to the armamentarium of the anaesthetist. I have not had any personal experience of its uses in labour but general practitioner friends are enthusiastic as to its efficiency as an analgesic and its simplicity of administration particularly by means of Freedman's inhaler, apart from cheapness and portability.

For general surgical procedures I find it a most useful adjuvant to nitrous oxide and oxygen in cases where these gases by themselves would not be of sufficient potency to produce a smooth anaesthetic, while a minimum amount of additional trilene is all that is needed in most cases. Trilene is relatively non-irritant, so that the introduction of the vapour into the circuit produces practically no disturbance of the respiratory rhythm, and induction is therefore rapid. This factor is, incidentally, of importance in a busy operative session. Trilene in small amounts appears to have very slight, if any, post-operative toxic effects. Again, its non-inflammability makes it a useful anaesthetic agent if diathermy is to be employed. But not only is any degree of relaxation very difficult to obtain with trilene, also it is generally recognized that it is dangerous to "push" the drug. My own practice is to decrease the flow of trilene directly an uncomfortable tachypnoea occurs and, if this still persists, to change over to ether or some other agent.

It therefore would appear likely that to procure the necessary relaxation a higher percentage of trilene was used in the cases of caesarean section quoted than was conducive with safety. It would be interesting to know whether there were any signs of cardiac abnormality prior to death. I have also found trilene most useful for inpatient dentistry. Used nasally as an adjuvant to gas-oxygen, a smooth anaesthetic can be procured for a total clearance allowing the dental surgeon ample time for careful and unhurried manipulations, while the patient recovers consciousness almost immediately after removal of the nose piece. Bleeding does not appear to be increased—I am, etc.,

Amersham Bucks

BERYL L. HARRISON

SIR—Mr D. M. Stern (Feb 1, p 199) has made some interesting comments on the use of trilene in midwifery. The figures given for mortality in caesarean section are certainly alarming—i.e., 5 deaths in 82 cases. One wonders why its use was persisted in after, say the first 2 or 3 fatalities.

I have used trilene for women in labour over a period of some years and I have not had reason to regret it. Some time ago I described my experiences using a Clover or Hewitt's inhaler. Since then a number of correspondents have written giving favourable impressions. I have used the drug in

approximately 150 cases, and I would say that it is safe if the following precautions are taken (1) An attendant should be present during the administration, (2) it should be given only in small quantities if uterine inertia is present, (3) probably it should be avoided if there is evidence of liver damage—I am, etc,

Northallerton Yorks

D C DEVITT

Endogenous Depression in General Practice

SIR—With reference to the two communications from Mr H I Deitch and Dr P E F Frossard (Feb 1, p 208) under the above heading I think it is only fair to point out that since early 1945 we have been running out-patient clinics at the mental hospital for just this type of case, and have now had to increase our clinics to four days per week (two male and two female), where electro-convulsion therapy is used on an average of about fifteen patients per day.

Since this out patient ECT clinic started we must have treated some 200 patients with good results. Patients of this type appreciate tremendously the fact that they are able to obtain treatment without having to enter a mental hospital as a voluntary patient, and, of course but for the day upon which they attend, they can continue their normal occupation for the remainder of the week. We ask them to have a light tea and toast breakfast, and stipulate that they must be accompanied by someone, owing to a confusion which may well occur after treatment. In fairness to other mental hospitals, I do not think the situation here is unique. No single patient has ever raised any objection to coming to a mental hospital for treatment as an out patient—I am, etc,

Broms Grove Works

A -SHEPHERD -

SIR—I am obliged to Dr A Knyvett Gordon for his letter (Feb 1, p 198) in reply to mine, and appreciate that he writes sincerely and honestly. I submit that all that I have said is perfectly accurate and that my desire is to be constructively helpful, which certainly cannot be obtained by burying one's head like an ostrich and pretending that all is well. Dr Gordon asks whether I have ever worked in a mental hospital. The answer is in the affirmative that I have seen many cases treated by electro convulsive therapy, that I have given this treatment to patients myself, that I have done most of the work for the DPM, and that I have refused temporarily several appointments as medical officer in mental hospitals for private reasons. I trust this will reassure Dr Gordon.

Under the term endogenous depression, as your correspondent will know, may be ranged a large number of conditions, among which anxiety neurosis and manic-depressive psychosis may be placed in their proper perspective. But I am concerned not so much with nomenclature but with the accuracy of the diagnosis, which of course depends on the diagnostician, but of paramount importance in my opinion, is a searching investigation into the conditions under which the diagnosis is made, which may make all the difference between tragedy and farce. A case of anxiety neurosis may be cured easily by an expert psychiatrist, but greatly aggravated by a bad psychiatrist. Circumstantial or false evidence may hang a man and this may happen also in a neurotic case, where inexperienced psychiatrists may be misled into giving a turn to the actual facts of the case. As regards conditions in some mental hospitals, Dr Gordon makes a very poor excuse for them. I myself have witnessed and can testify to unbelievable conditions which are corroborated by other people and a mass of correspondence. I quite agree that there are many intelligent medical officers who are keen on the curative side of their work, but I maintain that there are not a few who have been or are practising psychiatry or mental work who are quite unfitted for this dangerous subject for a variety of reasons.

Would Dr Gordon really have us believe that he is satisfied with the system and law in mental hospitals as it exists to-day? I myself would suggest that it is chaotic and that it is manifestly clear that a Royal Commission on the whole system and mental laws is long overdue. Obviously if doctors are implicated they must be strongly tempted to whitewash themselves. The present system is left wide open to the abuse of unscrupulous people or practices. A serious defect in the existing machinery is that doctors habitually are influenced

by statements by relatives, although such statements may be unknown to the doctor, be motivated by pure malice. As regards the relative doctor-patient relationship to which Dr Gordon alludes, I know of a case where a man was brought to the verge of a breakdown by the abominable and vicious behaviour of his wife, who caused him and his family unbelievable sorrow and anguish, and then by a fantastic chain of circumstances secured his admission into a mental hospital. Yet this type of case can be multiplied many times, it constitutes a grave social evil which we are tackling the wrong way. The man came out of hospital a shocking wreck but recovered by keeping as far away as possible from a psychiatrist. It is very nice for psychiatrists to smugly have armchair discussions on treatment, but they forget the elementary principles which are essential in the rehabilitation of an injured patient, and these are that a man should have complete and prompt rectification of a conglomeration of injustices, and that the guilty should be punished.

I would note a few extracts from recent editions of the *Journal* made by psychiatrists themselves to the effect that the mentality of the mental hospital doctor is often far below that of his patient, the use of indiscriminate electrical treatment without previous psychotherapy is far too prevalent and bad the tendency to ladle out electrical fits like aspirins must cease the admission by the superintendent of a mental hospital that out of several hundred cases receiving electrical treatment in that hospital there was not a single patient that did not look forward to it without fear, that we now stood at the dividing line in medicine about which there could be no compromise and that many experienced psychotherapists have stated that patients who have had electrical treatment have afterwards come to them without its having done them any good at all. Perhaps Dr Gordon would kindly let me have his observations—I am, etc,

London NW 11

A LIONEL ROWSON

Family Service Units

SIR—One of the most baffling and intractable problems in rehousing the population is to be found in the below standard families and homes still existing in our cities, the publication of *Our Towns* (Oxford University Press, 1943), with its revelations from wartime evacuation experience must have brought this home to many people who were unaware of the facts. During the war, at Liverpool and Manchester, pioneer experimental efforts to develop methods of rehabilitating such families through intensive and patient personal service, combined with practical assistance and social education in the home, have yielded encouraging results. Of the particular sub-standard homes dealt with in the majority of cases an improvement in conditions has been brought about, and in a number of cases radical and permanent change was effected. In addition definite instances can be cited in which families were saved from deterioration and squalor by the timely intervention of the service.

With these results before us the time has now come to establish on a wider scale a service which it is proposed to call Family Service Units, and a responsible National Committee has been formed with the co-operation of the following organizations, who are directly concerned with the problem: the National Council of Social Service, the Family Welfare Association, the National Society for the Prevention of Cruelty to Children, the National Association for Mental Health, the British Federation of Social Workers, the Committee on the Neglected Child, the Salvation Army. Individual members of the National Committee include the Archbishop of York, Cardinal Griffin, Mr John Watson (Chairman of the South-east London Juvenile Court), Sir Lancelot Keay (City Architect and the Director of Housing Liverpool), Rt Hon Margaret Bondfield, Mr Seebohm Rowntree. The co-operation of the Ministry of Health, the Ministry of Education, the Home Office and the Assistance Board has been promised.

The service will not be costly compared with the cost of these families to the community, to which to quote from *Our Towns* 'they are a menace out of all proportion to their numbers', or compared with the alternative cost of prisons, institutions, homes and other efforts to deal piecemeal with the problem, still less compared with the value of the

from disintegration and families enabled once again to take their place as self-directing and self-respecting members of the community. Co-ordination of existing work and the co-operation of all agencies concerned with the problem are essential. The aim of FSU is to provide a service at the disposal of other departments and bodies to be used by them on particular cases needing specialized treatment.

The committee plan first to take responsibility for the existing work in Liverpool and Manchester, and then to establish a new unit in London as soon as personnel becomes available. The keynote of successful work in this field must be friendship, and the work will call for personal self-sacrifice of a high order. The work of the committee will continue for some time to be experimental.

The problem family fails to utilize or benefit from such facilities for its betterment as exist at present. Rehousing, family allowances, and a national medical service are not enough. This is a task in which voluntary effort and personal service in the home must play a preponderant part, and it is a task in which personal service alone can be successful. Among the objects we have in view is a comprehensive investigation into the nature, extent, and causes of this form of social subnormality. A two years' period will, we think, be sufficient to establish the facts, and we ask for a sum of £15,000, which is sufficient to support the existing centres during that time and to establish one new centre in London.

Information will gladly be sent to anyone interested on application to the Secretary, Family Service Units, at 85, Clarendon Road, London, W 11. Donations will be gratefully acknowledged by the Honorary Treasurer, Lord Balfour of Burleigh at Lloyds Bank, Limited, 71, Lombard Street, London EC 3. Signed on behalf of the National Committee—We are, etc

D BOWES LYON,
Chairman
BALFOUR OF BURLEIGH
Honorary Treasurer

London W 11

Nylon for Buried Sutures

SIR—For many years silver wire and silk-worm gut have been used to suture fractured patellas. Silk of various types and linen thread have been used for strength in ligature of main vessels and as suture material in hernias. Then the autogenous fascial graft was hailed as the best method of repairing large or recurrent hernias. Kangaroo tendon was used for a time, but one hears very little of it now. Thin silver wire, silk, and linen have been used for suturing the abdominal fascia in elderly or debilitated patients or those with a chronic cough, to give added strength and allow the patient to get up safely with a shorter time in forced reclining posture.

For the past two years I have been using nylon as a buried suture, and felt it worthy of an added word to what has already been written about it. I have used it extensively to suture the abdominal fascia in debilitated patients with weakened musculature, for the mid-line incision in abdomino-perineal excisions for carcinoma of the rectum, in upper abdominal operations where a long incision is necessary, etc. I have also used it in direct, recurrent, and large inguinal hernias and in incisional hernias as a filigree mattress, first doing an ordinary repair with stout catgut and then making an interwoven mat of nylon without tension. So far, I am pleased to say, it has proved extremely satisfactory and has produced no ill effects except that some patients have noticed a small hard lump in the scar where the knot is made.

Comparing it with silk or linen it is more difficult to knot securely, but so far there has been no trouble should sepsis occur, which has often made it necessary to remove silk or linen from the wound weeks, or even months, later. One patient who required an extensive bowel resection and was very debilitated had marked sepsis, and the skin wound broke down on the eighth day. The nylon in the abdominal fascia was visible in the wound and we feared the worst, but the sepsis cleared up, the nylon held firm, and the wound healed over it by rapid granulation. Compared with fascial graft it is easier to suture with, it shortens the operation, avoids the damage to the fascia lata, and appears to be equally efficient. Compared with fine silver wire it is less rigid, easier to knot, and, I think, equally efficient.

Nylon has been found a very suitable material for buried sutures. I do not think it useful as a ligature for main vessels, as it might cut through the wall and is difficult to tie securely. It withstands sepsis without maintaining or prolonging it. It can be used for continuous suture or as a reinforcement filigree. I would be pleased to hear of the results of others who have tried it—I am, etc,

Tonbridge Kent

N R HOUSTON

Surgical Aspects of Roundworm Disease

SIR—Capt F Barber's article (Jan 11, p 49) under this heading interested me as I dealt with a case in 1934 in which the surgical aspects were definite and urgent. The two cases on which Capt Barber operated leave some doubt as to the connexion between the worm infestation and the surgical lesion. The removal of some of the worms by incising the intestine and milking them towards the opening is difficult to justify.

My case was a girl aged 9 years with classical symptoms and signs of acute appendicitis of obstructive type. On laparotomy a curious picture presented itself. The caecum and most of the small intestine were crowded with roundworms. The appendix and its mesentery had undergone torsion, and the whole length of the appendix was black but not oedematous—indicating that the arterial and venous circulations had been interrupted simultaneously. The cause of the torsion was the peregrination of a baffled roundworm after its adventurous head had reached the distal end of the appendix. The proximal half of the worm was extracted from the caecum as the appendix was removed the stump being ligatured and buried *secundum artem*. Recovery was uneventful, and anthelmintic treatment resulted in the passage of a satisfying number of roundworms—I am, etc

J F E GILLAM

Surgical Treatment of Chronic Frontal Sinusitis

SIR—Like Mr V E Negus (Jan 25, p 135) I am a strong advocate of the external operation for chronic frontal sinusitis and the procedure that he suggests is almost identical with the method that I described 25 years ago and have practised ever since. I think, however, that he dismisses somewhat too lightly the possibility of cure by intranasal means. There are many cases in which the outflow through the fronto nasal duct is hindered in addition to those mentioned by him, by groups of cells massed round and impinging on the duct itself. I agree that it is not possible to clear all the anterior ethmoidal cells by intranasal means, but the main mass can be dealt with safely and the way opened for the passage of graduated copper bougies into the sinus itself. These crush the high fronto ethmoidal cells out of the way without damaging unduly the mucous membrane of the duct. When the largest bougie that the bony ring guarding the floor of the sinus can take has been passed, it will be found that in many cases adequate drainage is assured.

The failure of the operations of Max Halle, Ingals, and others is due to the fact that the way into the frontal sinus is cut or rasped, with consequent formation of exuberant granulations from the raw surface, the formation of new bone, and subsequent stenosis. The 'bougeing' of the fronto nasal duct is not altogether easy, but with an appreciation of the anatomical disposition and a development of the tactile sense a considerable measure of success may be looked for—I am, etc,

London W 1

WALTER HOWARTH

Acceleration of Wound Healing

SIR—In the annotation "Acceleration of Wound Healing" (Oct 12, 1946 p 548) you refer to work on the effect of tissue extracts on wound healing. It has been known for a long time that embryonic extracts accelerate the growth of cells *in vitro*, and it was further found that extracts of adult tissue were very effective in this respect—i.e. the substances capable of stimulating cell multiplication *in vitro* are not limited to proliferating tissues but are also present in stable mitotically inactive tissues (Carrel, Walton, Trowell and Willmer, Doljanski and collaborators). Numerous experiments have

been reported on the application of embryonic extracts to experimental wounds in laboratory animals and to indolent wounds in humans (Amorosi, Bergami, Bugliari, Carnot and Terris, Goldberg, Kiaer, Morosov and Striganova, Nakamura, Nielsen, Roulet, Schloss, Wallich, Waugh). In most cases favourable results were claimed.

It was therefore natural to determine by animal experiments whether cell growth-promoting adult tissue extracts can also accelerate the course of wound healing. In 1944 Auerbach and Doljanski (*Brit J exp Path* 1944, 25 38) performed experiments on experimental wounds in rats treated by topical applications of saline heart extracts and alcohol precipitates therefrom, and on the basis of controlled experiments in 92 animals they stated "Extracts of adult hearts when applied locally did not, thus, accelerate the course of healing of treated wounds as compared with control wounds in the same animal, they would even appear to cause a slight inhibition." In 1946 Young, Cruickshank, and Martin (*J Path Bact*, 1946, 58, 63) reported similar results in rabbits.

The above observations do not settle the problem of promoting the wound healing *in vivo* by substances which activate cell multiplication *in vitro*. The possibility must be considered that the locally applied cell growth-promoting extracts do exert an accelerating action on the rate at which the wounds heal. This acceleration, however, could not be perceived from a comparison with control wounds in the same animal, since the healing process in the latter, too, might be hastened by growth-stimulating substances absorbed from the wound surface and entering the circulation. To elucidate the question if the cell-growth-stimulating substances introduced parenterally can affect the process of repair of healthy wounds the following experiments were undertaken (*Proc Soc exp Biol NY* 1945, 58, 111). Thirty rats with experimental skin wounds received intraperitoneal injections of a saline extract of adult chicken heart, the injections being repeated every second day until the wounds closed. The rate of wound healing in animals treated in this way was compared with that of wounds of equal size in untreated rats. The experiment shows that the parenteral treatment with cell-growth-promoting extracts of adult hearts caused a significant reduction (21.8%) in the mean time required for healing as compared with the controls. These findings relate to rats only and are on a small scale but they do indicate that the problem of the action of the cell-growth-promoting tissue extract on the process of normal wound healing is by no means settled and requires more intensive study—I am, etc.,

Jerusalem

L. DOLJANSKI

Adaptation of EMS Huts for Children's Wards

SIR—I was much interested in Dr Wilfrid Gaisford's and Mr C H Elkins's plan for adaptation of EMS huts for children's wards (Dec 7, 1946, p 867). The authors were good enough to refer to the plan for the same purpose prepared by my colleague, Mr Coales and myself and published in the *Monthly Bulletin* of the Ministry of Health (February, 1946) and I was grateful to them for quoting our remarks in favour of different methods of adaptation being explored. There are a great many of these huts in the country, and it is much to be desired that a number of people should exercise their ingenuity in devising different ways of adapting them and should make public the results of their efforts. Requirements differ and plans should differ with them. Stereotyping of hospital design is, above all, to be avoided and, whether adaptation of existing buildings or designing of new buildings is in question, it is by pooling ideas and by experiment and discussion that we shall arrive at the best results.

It may be worth while to say a few words about the chief differences between the Gaisford-Elkins and the *Bulletin* plans. I have been so much struck by the poor quality of most of the hospital accommodation for children throughout the country that, when Mr Coales and I came to the plan for children's wards in our hut adaptation series, we took the opportunity of trying to devise accommodation which should meet the special needs as well as could be done within the rigid framework at our disposal. Accordingly we thought it worth while to produce a rather elaborate plan involving quite a substantial amount of adaptation. Dr Gaisford and Mr Elkins, on the other hand, aimed at showing "how a typical EMS hutted ward may be modified at reasonable

cost and with minimal structural alterations to accommodate infants and children in surroundings where the chances of cross infection are lessened and other desiderata are provided." Both these lines of approach have their value. The essential differences between the two plans seem to me to be:

(1) The *Bulletin* plan provides a sluice room, a bathroom, and sanitary accommodation in a central position, while the Gaisford-Elkins plan has these conveniences at the end of the hut only.

(2) In the Gaisford-Elkins plan the single bed cubicles open into the main ward and are approached only through it, while the *Bulletin* plan contains a series of entirely separate single-bed rooms opening into a corridor.

The advantages (as they seem to me) of the above-mentioned features of the *Bulletin* plan have to be weighed against the undoubted merit of economy in cost, labour, and materials of the Gaisford-Elkins plan. Of the two main points of difference (2) is much the more important. The risk of spread of infection in children's wards is never absent, and my personal opinion is that the *Bulletin* plan gives greater safety in this respect, sufficient to warrant the extra cost and use of labour and materials. Dr Gaisford and Mr Elkins, however, have evidently had in mind circumstances which, in their view, would make the degree of separation shown in their plan sufficient. It would be interesting to learn the opinions of others of your readers on this question—I am, etc.

Ministry of Health
London SW 1

T S McINTOSH

The Filigree Operation for Hernia

SIR—The note upon the filigree operation for hernia by Mr D M Cooper (Feb 1 p 182) is valuable in that it brings into daylight a good method of hernia repair which has been obscured by a multitude of ingenious plastic manoeuvres for closing the inguinal canal. Many of the complications that he details in his paper appear to be hypothetical rather than probable.

Since the technique of Mr Percival Cole was introduced at the Yeatman Hospital, Sherborne, by Dr Richmond McIntosh about 15 years ago almost every inguinal hernia in adults operated upon by himself and by me has been treated by the filigree method. Out of some hundreds of cases I know personally of only one case that has suppurated and one that relapsed; in the latter I did not find it difficult to dissect out the old filigree nor to make a bed for a new one. Post-operative pain has never been more severe than that experienced after the Bassini type of repair. No patients have complained of pain when moving about in bed nor after leaving the hospital. Neither secondary haemorrhage nor faecal fistula has occurred. I am happy to subscribe myself as a humble disciple of Mr Percival Cole—I am, etc.,

Sherborne Dorset

JOHN WHITTINGDALE

Health Service in Rhodesia

SIR—As Director of Medical Services my attention has been drawn to the leading article (Nov 23, 1946, p 777) dealing very impartially with the health services in Rhodesia and more particularly with the recent National Health Commission's report. It is desirable, however, to contradict the last sentence of your article. This reads "the system whereby our voluntary hospitals are staffed by physicians and surgeons who give their services without payment" is quite out of the question in the Rhodesian scene."

On a point of fact for more than twenty years the two larger hospitals in Salisbury and Bulawayo have had staffs of honorary physicians and surgeons who have given their services without payment. Furthermore throughout the war these honorary consultants included in the scope of their work and equally without payment the medical and surgical care of all serving members of the Forces whether Rhodesian or members of the Royal Air Force training in the Colony under the Empire Training Scheme. Several of these consultants each performed hundreds of operations and the numbers of patients seen in consultation passed well into the thousands during the war years alone—I am, etc.,

Salisbury S Rhodesia

R M MORRIS
Director of Medical Services

Obituary

ARTHUR WHITFIELD, M.D., F.R.C.P.

British medicine lost an outstanding figure when Arthur Whitfield died at his home in Eastbourne on Jan 31. He was one of the most eminent of the group of physicians who followed Radcliffe Crocker, Tilbury, and Colcott Fox, and who finally established dermatology as a special subject demanding intensive study.

Born in London on Oct 13, 1868, he received his early education at King's College School. After qualifying from King's College Hospital in 1891 he took the London M.B. a year later. During the first three years after qualification he held several appointments at his own hospital, including that of Sambrooke Medical Registrar. He proceeded M.D. in 1893, and was admitted M.R.C.P. in the same year. Then followed a period of study in Berlin and Vienna. In 1896 he was appointed assistant physician at the West London Hospital but his interest in dermatology quickly led him to the Royal Northern Hospital. In 1899 he returned to King's College Hospital as assistant physician to the skin department. Thereafter he devoted his whole energies to the establishment of dermatology as an important specialty. At that time diseases of the skin were usually dealt with by one or other of the general physicians or surgeons of a hospital, a custom which at first led to some disapproval of this innovation. Whitfield also decided that his practice both in private and in hospital must be rigidly restricted to dermatology, no easy decision in those days but one which he deemed essential to the advancement of his subject. The success of these endeavours was seen seven years later when, after two years as Dean of the Medical School, he was appointed Professor of Dermatology in King's College only one year after he had been elected to the Fellowship of the Royal College of Physicians of London. Thereafter, such as that of Medical College,



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but there is no doubt that he gained the greatest pleasure from his work for St Dunstan's. He was elected a Fellow of King's College in 1909, and he was chairman of the Medical Board from 1914 to 1918 and again from 1926 to 1928. Although he suffered for many years from a disabling infirmity, Arthur Whitfield maintained his enthusiasm for work with an unflagging energy which often left him exhausted. For example, during the 1914-18 war he added to his labours by attending the Prince of Wales' Hospital for Officers, by assisting the greatly depleted King's staff as a general physician in charge of out-patients, and by spending his evenings in looking after the general practice of a great friend who had joined the Army. He was president of the Section of Dermatology of the Royal Society of Medicine from 1919-21 and received the unusual honour of election to an Honorary Fellowship of that society only last year. In 1924 he was secretary of the British Association of Dermatology and Syphilology, becoming president in 1927. During this period he received numerous other distinctions. He was Lumleian Lecturer at the Royal College of Physicians in 1921 and was a councillor of that College from 1922 until 1924. The French Society of Dermatology made him a corresponding member an honour which he valued greatly.

While his name is most generally associated with his work on fungous infections, he wrote many articles all of which were distinguished by acuteness of perception, clear reasoning, and a clarity of style which made his contributions to our knowledge outstanding. The same features distinguished his

Handbook of Skin Diseases and Their Treatment. All branches of mycology interested him, and he was one of the pioneers in the use of x rays for treatment of ringworm of the scalp. He published his discovery of the pathogenicity of fungi in *linea pedis* in 1908, thus anticipating Sabouraud by at least two years. Some years after this work had received general confirmation and acceptance he himself discovered that Djellaludin Muktar had made the same suggestion in a small journal about two years before his own work was published. Thereafter he made frequent public acknowledgments of this fact. The ointment which bears his name proved the starting point for all subsequent work along these lines. In later years its efficiency was called into question, largely because his original formula had been forgotten in a welter of modifications. Attention has recently been drawn to this fact in the *British Journal of Dermatology and Syphilology*. The corresponding lotion which he devised is even more valuable, although he left its publication to others. He made important contributions to the study of eczema, of animal parasites, and of dermatitis caloricæ among many other subjects. At the International Congress in Budapest in 1935 he introduced his conception of autophytic eczema, the importance of which in allergic skin manifestations is now generally recognized.

Arthur Whitfield's success was largely the result of the wideness of his interests. No subject was too trivial for consideration, particularly if it concerned an allied science. Always he sought its possible application to medicine. He first used benzoic acid after he had noted its value in dairy work. But behind everything else there was shrewd observation and a hatred of anything suggestive of carelessness. In one of his last letters he insisted on this point: "Always examine your cases thoroughly, thoroughly, thoroughly. Re-examine them. Re-examine your own deductions." Nevertheless he found time for outside interests. As a young man he was a keen lawn tennis player and he played golf though with decreasing frequency, until a year or two ago. His real hobby, however, was his beautiful garden in Beaconsfield, where he spent every weekend working and experimenting. To this he was able to give more time after he had left the active staff of King's in 1927, when he retired at an early age but with the titles of Emeritus Professor and Consulting Physician. He was a physician of deservedly international reputation. Dermatology as a whole owes a very great deal to him, but his past students from all over the Dominions and Colonies, as well as from this country, will always remember him as a man who won their affection and gratitude. In their work his memory lives on as a direct continuation of his precepts and encouragement. To his widow and family we extend our sympathy, a sympathy the more real as we acknowledge the loss of one who himself had extended friendship and help to so many.

Sir Archibald Gray writes: By the death of Arthur Whitfield British dermatology has lost an outstanding and much respected figure. Entering the field of dermatology some fifty years ago when knowledge of the bacteriology and mycology of the skin was in its infancy, Whitfield threw himself with vigour into the study of these subjects. Stimulated by the example of Colcott Fox, whose assistant and devout disciple he was, his work, whether in the clinic or the laboratory was characterized by meticulous attention to detail and by prolonged and careful study of the problem before him. It may not be remembered in these days that the credit of first finding fungus in ringworm of the toes was Whitfield's, and this discovery an epoch making one, was due to his habit of systematically examining scales under the microscope over a period of many years. It is to be hoped that as his name is likely to remain attached to a remedy which he introduced for this condition, and which has stood the test of time it may serve as a reminder that it was he who discovered the cause of the disease. It is not for me to describe here his contributions to dermatology which were many and important nor the various offices which he held but I should like to add a few impressions of the man. His most striking characteristic was that of perpetual youth. Throughout his active professional life he had all the alertness and inquisitiveness of a boy. Everything that he saw whether in his work or outside interested him and he always had to get to the bottom of any problem that he took up. I can remember him at breakfast in a Budapest Hotel discoursing on the varieties of Continental rolls, of which he had a complete knowledge

and on the method of determining the ripeness of peaches. It was my privilege to assist him in one of his clinics a good many years ago. A more stimulating experience it is difficult to imagine, especially as the clinic terminated in a long tram-ride during which he discoursed on every subject under the sun. We all missed him greatly when he retired from active work a few years ago, and now his death will bring sorrow to his many friends.

Dr A C Roxburgh writes: My generation of dermatologists greatly laments the death of Arthur Whitfield, whom we regarded as one of our most valued teachers. Those of us, like myself, who were never officially pupils of his learned much from listening to his remarks at dermatological meetings and especially from conversations with him about cases at such meetings. I saw a good deal of him at the International Dermatological Congress at Copenhagen in 1930 and afterwards in Stockholm, and at the Budapest Congress in 1935, which made these congresses all the more enjoyable. I am grateful to him for much helpful advice and information while I was editor of the *British Journal of Dermatology* and also when I was writing a certain small book on dermatology. He was always accessible and always ready to help with information or references. His fund of information was not confined to dermatology by any means, for he was knowledgeable on food and drink, gardens and dogs, among other subjects. Whitfield did not suffer fools gladly and had very definite views on most subjects, which he was in the habit of stating in a rather dogmatic manner. To younger dermatologists he was always most helpful, and all of us mourn the passing of one of the outstanding figures of a great generation of British dermatologists.

HERBERT H LANKESTER, M D

Herbert Henry Lankester died at Eastbourne on Jan 30, after a short illness. Dr Lankester, who was 84, was a founder and the first secretary of the Medical Mission Auxiliary of the Church Missionary Society. The eldest son of Dr Henry Lankester, of Leicester, he was born on March 20, 1862 and was educated at Tettenhall College, Wolverhampton. A student of St Thomas's Hospital, he took the L S A in 1863, the M R C S a year later, and the London M B in 1885. He proceeded M D in the following year after a period as house-physician and resident accoucheur at St Thomas's. He practised privately in South Kensington for a time before becoming secretary of the Medical Mission Auxiliary in 1891 and he served as secretary of the Medical Missionary Fund and physician to the Church Missionary Society from 1894 to 1903. He was then secretary of the C M S for the next seven years, financial secretary from 1910 to 1923, and finally general secretary for three years after that.

Dr Lankester was the first editor of the C M S magazines *Mercy and Truth* and the *Home Gazette*. He had been one of the representatives of the Diocese of Winchester in the House of Laymen, a member of the Southwark Diocesan Conference, and Diocesan Lay Reader for the Diocese of London. Since its foundation in 1908 he had been a member of the executive committee of the Central Board of Missions. Dr Lankester had been in retirement for about twenty years. He married in 1883 Gertrude, daughter of Col J S W H Farrer, Coldstream Guards, and had one son and two daughters. Mrs Lankester died in 1932.

HARRY EMSLIE SMITH died at his home in Dunfermline, Fife, on Dec 18, 1946. The youngest son of the late Alexander Emslie Smith, he graduated M B, Ch B at Aberdeen in 1900. He held resident appointments at the Great Northern Central Hospital and at Queen Charlotte's Hospital, London, before entering the I M S in 1902. After serving with a number of Indian regiments, he was appointed to various chemical examinerships between 1907 and 1910. During the latter part of this period he was professor of chemistry at the Medical College, Calcutta. Then followed a year as resident surgeon at the Eden Hospital, Calcutta. In 1912 he took the D T M & H at Cambridge and studied ophthalmic and general surgery in Leipzig. On returning to India he held various civil surgeoncies. His civil employment was interrupted by the first world war during the course of which he served in hospital ships, later in India, and from 1918 onwards in Iraq. He retired from the Service in 1923 with the rank of lieutenant-colonel. He had taken the D P H in the same year and he was then appointed lecturer in anatomy at the Dunfermline College of Hygiene

and Physical Education, later becoming administrative medical officer to the Carnegie Dunfermline Trust. He proceeded M D in 1930. During the second world war he was medical superintendent of the Inglis Street E M S hospital while continuing his work for the Carnegie Trust. An enthusiastic amateur musician, he is survived by his widow, two sons, both members of the profession, and one daughter.

VICTOR ROBINSON died in New York City on Jan 15, and the world of medical history has been robbed of one of its most striking figures. Born in the Ukraine on Aug 16, 1886, Victor was taken in infancy to the United States of America, where his father, Dr William J Robinson, became one of the early advocates of birth control. After studying for two years at the New York University Law School, he turned to pharmacy, taking the Ph G at the New York College of Pharmacy in 1910, the Ph C at Columbia in the following year, and the M D at the Chicago College of Medicine and Surgery in 1917. He entered the field of medical history as he had entered several others—out of curiosity. For thirty-eight years Victor Robinson devoted himself with dogged perseverance and unquenchable enthusiasm to the pursuit of this subject, successfully playing the part of author, editor, lecturer, and radio speaker. A prolific facile, and entertaining writer, one of his best-known works is *Pathfinders in Medicine* which appeared as early as 1912. His last book, *Victory over Pain*, was published just before his death. For many years he edited the monthly magazine *Medical Life* at one time the official organ of the American Society of Medical History. Though his fondness for over-dramatization and his almost childish delight in "purple patches" did not appeal to the palate of many historians, they all had to admit that he was always accurate, possessing a scholar's conscience in consulting the original sources. A retiring, sensitive little man, Victor Robinson was a charming and stimulating companion, whose mind seemed most active after midnight. He was appointed professor of the history of medicine at Temple University Medical School, Philadelphia, in 1929 and lecturer on the history of nursing in 1937.—W R B

Dr IAN STEWART MCGREGOR died suddenly at his home on Jan 23 at the age of 43. Ophthalmology has lost one of its most promising and faithful adherents. The first decade of the period since his graduation from the University of Glasgow in 1927 was spent in resident hospital appointments in general medicine and surgery and later in general practice on the Island of Bute. His sure knowledge of medicine, his keen mind and the sympathy which allowed him to assess patients and their problems truly but with charity combined with his catholic tastes in painting and literature to make him an ideal general practitioner esteemed by all. This, however, was but a period for the measurement of his own capacity and for his individual staking of the limits of medical practice. Once sure of these he confined his direct attention to ophthalmology with such zeal and concentration of purpose that within seven years he had become clinical assistant to the Glasgow Eye Infirmary, assistant to the professor of ophthalmology of the University, and visiting surgeon to the Ophthalmic Institution. Within that same brief period he took the M D and the D O M S and was admitted to the Fellowships of the Royal College of Surgeons of Edinburgh and Royal Faculty of Physicians and Surgeons of Glasgow. This despite an absence for several years on war service when he held the rank of squadron-leader in the R A F V R. His rapid acceptance in the highest ranks of his specialty in Glasgow was essentially due to those qualities which had made him so successful in general practice together with the growing evidence of his power of original thought. True to character, his publications awaited his precise knowledge of the known boundaries of ophthalmology, but when they came they had the true marks of developing originality and were a promise of greater things to come. His work on melanotic tumours of the choroid and on certain aspects of neuro-ophthalmology are of lasting value. But to many of us Ian McGregor will continue as the memory of an enchanting if at times unpredictable character. He could quickly sense the ridiculous, which gave him wit, and the unfair which made of him a hard-hitting opponent. Generous in things, thoughts and feelings, he was a true friend and a good companion. Much of his time in recent years was devoted to his widowed mother to whom the sympathy of his friends is extended now in her great loss.—I C M

Dr ERIC JOHN STADDON of Ipswich, Suffolk, died suddenly on Jan 22 at the age of 56. Dr Staddon was still continuing the practice which had been started by his grandfather, the late Dr John H Staddon. Educated at Ipswich School and St Thomas's Hospital, Dr Staddon took the M R C S L R C P in 1913 and was soon afterwards serving in Mesopotamia. In 1919 he returned to Ipswich to join his father in

general practice Dr Staddon was surgeon to the East Suffolk Constabulary, he was a vice-president of the British Legion, and he was well known as a member of the Ipswich Liberal Association. Although his work left him little time for other activities he was an enthusiastic gardener. He had been a member of the British Medical Association for twenty years, and he is survived by a widow and three sons.

Dr BARTHOLOMEW GIDLEY DERRY died at his home in Whinney Hill, Durham, on Jan 24 at the age of 58. His father was for many years prison surgeon at Bodmin, Cornwall. Dr Derry, who qualified in 1917 served in Russia and India during the first world war. He joined the prison service in 1922 and was medical officer at Holloway, at Brixton, and at Dartmoor before succeeding the late Dr R Stuart at Durham. Dr Derry, who had been ill for two or three weeks, was a familiar figure in the Northern Assize Courts, where he frequently gave evidence. He had been a member of the British Medical Association for twenty five years, and he was a warden at St Oswald's Church, and a member of the committee of the Durham Community Service Council.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

The Raymond Horton-Smith Prize for 1945-6 has been awarded to E E Pochin, MD (St John's College) for his paper on "The Mechanism of the Ocular Manifestations in Graves's Disease".

UNIVERSITY OF GLASGOW

At a Graduation Ceremony held on Jan 11 the following medical degrees were conferred:

MD—W T Walker *H Wapshaw *H Wyers G A Macgregor
MB ChB—R A Caldwell Winifred E Cameron J E Carlyle Eileen
Carroll A A Chazan Joan R Christison J I Cohen Anne L Craig K B M
Crawford A H Dives H B Farrell A Forrester D A Jack R R Kennedy
K B Lazarus J B Lister J McLenahan M C Macleod R M H McMin
W McNaught W C MacPherson A MacK Mathewson Mary D Milne
W A Mu *F S Preston W H D Scotland A Scott,
A L G *H Sproull Lesley MacD Stewart A A
Thomson, Agnes A M White

* With commendation

UNIVERSITY OF ST ANDREWS

The following candidates have been approved at the examinations indicated:

MD—W G Davidson (with honours)
FINAL MB ChB—Margaret J Davies (or Grewar) Helen M Dean A F
Fairlie Mary Gibson W J Halpin Betty I Lumsden Helen L W Espin
(or McLagan) R D Mills T W Roberts, Patricia A Scott (or Naylor) J A
Smith, Eileen Steel J M L Winton, Janet S Young

ROYAL COLLEGE OF PHYSICIANS OF LONDON

At a meeting of the Royal College of Physicians of London held on Jan 30 with the President, Lord Moran, in the chair, the following were elected representatives of the College: Dr A S Barnes on the court of governors of the University of Birmingham, Sir Reginald Bond on the council of the Professional Classes Aid Council, Dr W G Wyllie on the National Association for Mental Health, and Dr Janet Vaughan on the advisory board of nursing education of the Royal College of Nursing. Sir Allen Daley was nominated to represent the College at the Conference of the Royal Sanitary Institute to be held at Torquay from June 2 to 6.

The following, having satisfied the Censors Board, were elected Members of the College:

D G Abrahams M B Camb W B Alexander M B Camb J V Almeyda
LRCP C L Balf B M Oxon A H Baynes M B Camb Patricia L Bidstrup
MB Adelaide J H Burkinshaw M B Camb C R Burton MD Toronto
J Carson MD Belf A G C Cox M B Lond H D Crosswell M B Lond
P H Davison M B Birm J Dean M B Camb R B Franks M B Camb
B F Gins MD Lond R T Gaunt M B Sheff K B Gibson M B Liverp,
W Goldberg M B Witwatersrand K J Grice MD Melbourne G R Handy
M B Lond Margaret M Henderson, MD Melbourne R A Henson
MD Lond R D Hotson M B Liverp J Lowe MD Birm Anne E
McCandless M B Liverp J A Malloch M B Edin E P G Michell M B Camb
E P Morley M B Camb E J Moynahan LRCP A P Norman M B Camb
G Osborne M B Camb J H Pettit M B Lond W J E Phillips M B Camb
J R K Preedy M B Camb F Prescott LRCP W A Pritchard M B Lond
E G G Roberts M B Wales J B Robinson MD Lond N A Rossiter
M B Witwatersrand G Shneerson M B Lond J Simpson MD Durh
E Smith D M Oxon J B Stanton M B Camb T H Steel MD Melbourne
Cart G H Valentine M B Brist R A M C Venner M B Lond A P B
Waind M D Leeds C W M Whitty B M Oxon M H C Williams B M Oxon
H J J O Wolff M B Camb M Zoob M B Lond

Licences to practise were conferred upon 96 candidates (including 26 women) who had passed the Final Examinations in Medicine,

Surgery, and Midwifery of the Conjoint Board, and have complied with the necessary by laws.

D A B Ashcroft J H A ... D C B ...
N O Bennett P R B ...
Joyce M Buck Irene ...
Jeanne M Clements Mary M H Cogman C I Cohen J J Content
E Coupland K S Daber Sylvia Danks Barbara M Davey Joan M Denman
R Dryden K H Foord D S Foster Joan Frankton Angela D Fuller P R G
Graham G Hadfield M J Hargrave B M C Harris J A B Harrison A J
Harrold Mary W Hart F C B Harvey H Herbert G M Hogwood
Barbara M F Jacobs K E Jolles R T Jones B Karat R A Kershaw C S
Kirkham S A Lateef D D La Touche N Lees Ursula E K Leitner Lillian J
Letry A H Levy F M MacDonagh Anne J W Manley E D Marsh S
Mejzner Christine L Miller L G Nicol J Niwes C F Noon A G Norman
Vivienne Norman F G Orton M Panikkar Enid H Pettigrew G S Plu
J R D Proctor D R V Prys Jones H Rawlings M Redfern E N Rees
D E R Richardson Kathleen J Rigg Diana M Robinson Sontia Rolin
G W J Rothwell C D Rushworth R A Ryan A I Sahyoun Joan Seaman
H Shapiro F J Sharrod J G H Shaw S G A Shute N T Smith Joan E T
Spong Cynthia F Stephenson H S Trafford M Vies D Walker N H
Warburton J C Ward P A Woodward H D White R M C Williams
Elizabeth Williamson G M Woodwork

Diplomas in Public Health were conferred, jointly with the Royal College of Surgeons of England, to the following successful candidates:

J B Bramwell A Butterworth W A Cannell W J Christie C W Coffey
J S Coleman Eveline M Cumming C L Day H McD Forde A H T I
Fullerton Margaret R Gilmour D W T Harris R A Hoey E I Holloway
G J Laws C D L Lycett H G Magill J E Masterson B U Meyer R
Murray J J O Dwyer M J Pleydell I Reubin Arna E Rides R D Rutherford
Christina M Small T D Spencer Mair E M Thomas P de B Turtle G P
Wallace W M Walsh E R Winton

Diplomas in Anaesthetics were granted, jointly with the Royal College of Surgeons of England to the successful candidates whose names were printed in the report of the meeting of the Royal College of Surgeons of England in the *Journal* of Dec 28, 1946 (p 1008). The initials of D S Young were wrongly printed in this report.

Diplomas in Psychological Medicine were granted jointly with the Royal College of Surgeons of England, to the successful candidates whose names were printed in the report of the meeting of the Royal College of Surgeons of England in the *Journal* of Jan 18 (p 121).

Diplomas in Laryngology and Otology were granted, jointly with the Royal College of Surgeons of England, to W F Dickie Clark and to the successful candidates whose names were printed in the report of the meeting of the Royal College of Surgeons of England in the *Journal* of Jan 18 (p 121).

A Diploma in Industrial Health was granted to A L L Silver and a Diploma in Child Health to N F E Burrows, both jointly with the Royal College of Surgeons of England.

Medical Notes in Parliament

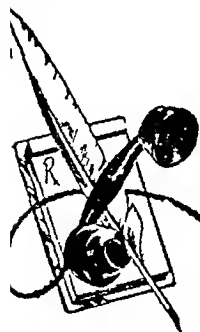
SCOTTISH HEALTH SERVICE BILL

The National Health Service (Scotland) Bill was again before the Standing Committee on Scottish Bills on Feb 4.

On a motion that Clause 4 should stand part of the Bill Mr WILLIS said members on the Government side of the Committee desired a definite assurance that the Secretary of State would look into the Clause again. It sought to carry into the new system a feature of the present system which Labour men had always opposed—the setting aside of accommodation for fee-paying patients in hospitals. His Party had fought against the introduction of this into the Edinburgh Royal Infirmary and have fought against it since. In practice the Clause would mean that part of a hospital was set aside for fee-paying patients. If the patient got there some thing which he would not otherwise get this was wrong and if he did not get anything which he would not otherwise get the Clause was a swindle. He suggested that on this point the Bill might with great advantage differ from the English Act.

Mr MCKINLAY said the reason in many cases why people got private accommodation was not because of the nature of their illness but because they had a desire for seclusion and could pay for specialist treatment. He could not understand why the Bill sought to perpetuate the existing system of payment for specialist services. It had been argued that if specialist services were not allowed in private apartments there would be a danger that the specialists would not come near the hospital. He doubted that. There were hospitals in Glasgow which took private patients who paid for the accommodation. He did not think that the patients received better treatment. He had too great an admiration for the medical profession to believe that a specialist's skill was at the disposal of a person only because of the remuneration. In spite of the opposition by the British Medical Association the medical profession was a body of men and women who gave their best to their patients without regard to what might come at the end of it.

Mr GALLACHER said he could not conceive a situation in which any hospital with single rooms would not always have



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References: Shortage of space precludes list of references, but full documentation may be obtained on application to Chemical Research Dept 6 A



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these rooms in demand on medical grounds. The Clause provided that such accommodation should be available for paying patients only when not needed by any patient on medical grounds.

Criticism of Pay-beds

Mr SCOLLAN said the practice of charging for rooms had grown up over the past twenty-five years. He could remember when in almost any hospital in Glasgow a patient was admitted without any suggestion of his paying for accommodation. The obnoxious practice of fee-paying began when there was grave scarcity of accommodation. A specialist who gave his services to a hospital found ways of getting his patient a bed if he could pay for it. People with serious diseases had to wait eighteen months while others who could afford to go to a specialist got the accommodation.

Mr BUCHANAN said there was strong feeling in the Trade Unions and among Labour members against the Clause, and if he had been sitting elsewhere in the Committee he might have been critical himself. Under the Bill there were no charges at all but a free medical service. If every bed was required Clause 4 would not operate. It was not the issue that somebody outside could say a person should have a bed on medical grounds. The Bill represented a compromise and the Committee had better face that fact. Most of the patients in Stobhill Hospital were now paying.

Mr BUCHANAN said he admitted that the Government would not abolish private nursing homes. These still went on. When the Bill began to work there would be among certain sections of the population a prejudice which if there were no accommodation of the kind contemplated by Clause 4 would drive that type of person into the private nursing home. Some specialists became attached to the nursing home as well as to the public hospital. The Government thought that if it could by this Clause bring that type of person in it would show to people prejudiced against it that the State-run hospital could be as kind and as open handed as any private nursing home. He thought that after some years of this service scarcely anybody would ask for a paid room. It was true that large numbers of poor people who could not pay needed single rooms, sometimes because of nervous trouble. Occasionally there cropped up someone who desired a room of his own for personal reasons. The late Mr Maxton, who entered the Victoria Infirmary, had a single room not on medical grounds but to get a little freedom from interference that was not meant unkindly. The Government made it crystal clear that nobody would be denied a bed. He promised that the Secretary of State would look at the Clause again before the Report stage. In four or five years when the Bill had started work Parliament would have to look at the whole Health Service again because this Bill was not the final word. Parliament could then review the working of this Clause.

Mr CARMICHAEL said the person to decide that the paying patient's case was not so pressing as that of the person who could not pay was the medical administrator. He was not without his prejudices. The medical practitioner or specialist would say he had examined the requirements of both and there was no doubt that one must be admitted, but Labour members knew from experience that the person most likely to be admitted was the man who could pay. The Bill provided little chance of seclusion for the person who was unable to pay. He had to be in a ward with twenty-four other people listening to music and discussing football pools all the time. The future medical service must reduce the size of wards. One of the things which had disturbed working-class people for many years was the differentiation in treatment afforded to people seeking to enter hospitals and after they had entered.

Col ELLIOT said the fundamental point was that it was desirable in the long run that all classes of the community should be served by these great institutions and that there should be no segregation with one section under the State Medical Service and another section going to the private nursing homes. Labour members seemed to desire that the system of private nursing homes should continue. He called that undemocratic.

Need for Privacy

Dr STEPHEN TAYLOR said it was because of the physical nature of hospital buildings that some priority for existing private accommodation had to be worked out in both the English Act and the present Bill. Persons just coming round from serious operations needed privacy as did dying patients. Under the new service they should not allow patients to die in the public ward. He thought most people would be prepared to pay 5s or 10s a week for privacy.

Mr WESTWOOD said that in framing the Clause the Government had been desirous of doing what was best. In view of

the assurance given by Mr Buchanan he asked the Committee to agree to the Clause.

Mr GALLACHER said he had never heard anything so absurd as the suggestion that an Act of Parliament should provide how to decide the use of rooms standing empty in a hospital if they were not needed for medical cases. Mr Herbert Morrison was in a private room of a London hospital. Why should he have to pay? Clause 4 was then ordered to stand part of the Bill.

Charges for Private Patients

Col ELLIOT moved an amendment to Clause 5 to ensure that the charges to be prescribed as payable for patients receiving special accommodation should take account of any revenue from endowments or other sources destined for the up-keep of such accommodation. He said the Bill as it stood proposed that the charge should cover the whole cost of the accommodation. In contrast with the English Act the Scottish Bill proposed that hospitals should retain the revenue from their endowments. Those who were willing to make further endowments might well be attracted by the possibility of providing help for those suffering from some ailment requiring special services.

Mr WESTWOOD said the amendment had been moved without taking Clause 8 into consideration. He would give the Endowments Commission no instructions of any kind except to keep in mind the intention of the donor. He expected the Commission to consider all relevant factors when dealing with endowments.

Mr J S C REID said that as the Bill stood the Commissioner was deprived of a free hand because under Clause 5 it was not permissible to diminish the full cost of the paid block by taking off something provided by the endowments. He agreed that paying wings in large hospitals were generally superior to nursing homes. Therefore such wings should be encouraged. As the middle classes always came off worst in what was called progress it would not be a bad thing that persons should be allowed to assist them if they wished to do so. If the Clause remained as it stood it would be impossible for a charitable donor to say that people in a certain district or people belonging to a certain profession should be assisted in a hospital.

Mr WESTWOOD said this would not be impossible because the Government was trying to safeguard anyone desirous of providing something more than the State provided. There was no legal impediment to his receiving as Secretary of State endowments on the lines now suggested.

The Lord Advocate (Mr G R THOMSON) said he doubted whether there would be any endowments which would cover the situation contemplated under Clause 5. There might be endowments covering the situation contemplated under Clause 4.

Mr REID said at present there were nursing homes not conducted for profit because they were subsidized, and the funds of these would fall automatically under the Bill.

The LORD ADVOCATE said that the existing endowments which would go to the Commission were endowments to wards providing additional amenities and privacy under Clause 4. He was prepared to look into the point which Mr Reid had made about benefactions to alleviate the position of nursing home patients in State hospitals. He recognized that Clause 5 might be read to say that the whole cost of the accommodation had to be charged.

Principle of Equal Treatment

Dr MORGAN said the point was not purely legal but involved a great social change. The whole basis of the principle of equal treatment would be destroyed if some man could leave an endowment in order that certain individuals of a certain class or a profession or a religion should have the right of going into certain wards and if payment were made from the Endowment Fund for the treatment and services given to those people. Did members wish a rich Catholic to give an endowment for an annexe in which only Catholics would be allowed? Or suppose some rich doctor who had made money through exploiting a drug which he had discovered wished to endow an annexe or a ward and keep it generally for the profession. Was that to be allowed under the Bill?

Mrs MANV said that in Norway and Sweden the State hospitals had gradually eliminated nursing homes which had become fifth-rate. All the best surgeons and specialists were in the big hospitals and an ever-increasing flow of the rich took advantage of the State hospitals. Similarly in Scotland patients would gradually flow to the State hospitals. The amendment would bring radiologists' and other equipment to some patients but not to the general ward assuming optimistically that some people would still have some money after this Labour Government had been in office for some years. Medical science had always been for all. Clause 7 laid it down

that the board of management of a hospital should determine how donations should be used but the Clause under discussion enjoined the Secretary of State to have regard to a donor who wanted to throw his money in this direction.

In view of an undertaking given by Mr Buchanan to look into the matter and to meet one of the points concerned Col Elliot withdrew his amendment.

Cmdr GALBRAITH moved an amendment to make applicable to all medical men the provision that the Secretary of State could permit any medical practitioner serving in an honorary or paid capacity on the staff of a hospital to make arrangements for the treatment of private patients of such a practitioner at a particular hospital. He said this widening of the scope of the Clause was necessary in the early stages of the National Health Service. It seemed wrong that a person who was paying for this service and also paying for a doctor of his own should not be allowed to have the service for which he paid through his subscriptions to the National Health Service. It should be possible for him to be admitted to the hospital for which he was contributing and still to be treated by his own doctor notwithstanding that this doctor had not seen fit to enter the Service.

Dr MORGAN remarked that this did not happen now.

Administrative Chaos

Mr WESTWOOD said if the amendment were accepted it would open the hospital to every doctor, including those who were not engaged in the State Service and were hostile to it. This would lead to chaos in administration and he could not accept the amendment.

Mr REID pointed out that a patient was entitled to bring into a hospital in Edinburgh a surgeon not connected with any National Health Service hospital in that city but with a hospital in some other part of Scotland. Yet a doctor who had no connexion with the hospital at all was not entitled to come in in those conditions. Mr Westwood's argument was nonsense.

Dr TAYLOR said there was no register of specialists and the qualification was to be on the staff of some main hospital. The amendment proposed by Cmdr Galbraith was strongly backed by the British Medical Association because that body largely represented the general practitioners, who were at war in a mild way with the specialists who were demanding the right to get into the hospitals because they would then collect a great deal more money. Patients would suffer because part-time surgery done once a week was not good surgery.

Mr THORNTON-KEMSLEY pointed out that the Clause was permissive but not mandatory. If the entry of these doctors into the hospitals would lead to administrative chaos the Secretary of State could prevent it.

Dr MORGAN said that if any general practitioner was on the verge of being a recognized specialist he should get on to the staff of his local hospital. In parts of Great Britain general practitioners were doing excellent work on the staffs of many hospitals and indeed better work than some of the specialists in well-known specialist hospitals. Under the present system it had already been found unworkable to allow any general practitioner to come to a hospital and treat his patient. Dr Taylor had said that this procedure would receive the blessing of the British Medical Association. That was not so. The British Medical Association was anxious that general practitioners should have the right to see their patients in hospital but only in consultation with the visiting surgeons and the staffs and not to treat them except in rural hospitals where a general practitioner had a specialist standing. To give a uniform standard of treatment to patients in hospitals a general practitioner could not be allowed at the wish of his patient to come to the hospital and treat the patient as he liked. Some doctors were in favour of treating cancers by the application of plasters.

The amendment was rejected by 29 to 13.

Ceiling for Plums

Mr REID moved as a further amendment to Clause 5 to leave out from subsection 2 the final section which provided for maximum charges to be made by specialists who were engaged under private arrangements by patients in paying blocks who were prepared to pay the whole of the charges for their treatment, including those of the specialist. He said that on the English Bill a proposal for a similar omission had been rejected and he recognized a certain difficulty in view of the integration of the profession in having different systems in England and Scotland. Nevertheless it was a pity that Parliament should impose a ceiling. The more the medical profession was deprived of plums by being prevented from overcharging the very rich the less opportunity it would have of giving service to others at cheap rates. If there was to be a ceiling in Scotland it should be the same as the English ceiling, which would be high.

Mr WESTWOOD said he would try in the administration and through the Regulations to dovetail with the English Act. He must resist the amendment.

Sir BASIL NEVEN-SPENCE said the provision was a blot on the Bill and was perhaps intended to put a ceiling on the specialists' income or as the thin end of the wedge to establish a whole time salaried specialist service. The Clause referred to specialist service but the definitions in the Bill made no reference to specialists. He suspected that what Mr Westwood had in mind was another class, the consultants. There was a very deep distinction between the consultant as ordinarily understood by members of the profession and the specialist. The Bill put great pressure on both to come into the Service. Why then depress the prospects of these men by the discouraging proviso in Clause 5?

The amendment was negative. On the motion that the Clause stand part of the Bill Mr MCKINLAY said Clause 5 was even more offensive than Clause 4. If Mr Westwood desired to avoid unpleasantness the Labour members of the Committee asked him to look at the Clause to see if it could be made less offensive or be eliminated altogether. There might be a possible justification for the Clause if there were a surplus of accommodation, but there would not be ample hospital accommodation in Scotland during Mr Westwood's lifetime.

Mr WESTWOOD said he was willing to look into the matter before the Report stage. The discussion was then adjourned.

Ideological Healing

Discussion of Clause 5 was resumed on Feb 6. In response to inquiries by Mr GALLACHER and others Mr WESTWOOD repeated his assurance that he would sympathetically reconsider the Clause. He said that together with other clauses dealing with hospitals it was designed to get the best results possible from the working of the new Health Service. The ideal of a Socialist Commonwealth could not be attained now and some of the things in the Bill were a compromise with reality. As a realist he had to face what he knew were the facts. There would be a shortage of consultants and specialists for some time and he desired to get the full benefit of these specialists in working the Service in Scotland. He could not agree to the Clause being dropped at this stage. He must have time to see how, if the Clause were withdrawn, the service he sought to provide would be affected. Even if the Clause remained in the Bill it would not affect the existing accommodation for public patients. It was not a mandatory Clause and did not impose a duty on the Secretary of State.

Mr J S C REID said that if Mr Westwood gave way on this he would wreck the whole of the hospital part of the Bill.

Mr SCOLLAN said there was nothing so foolish as bringing in ideological points of view in regard to the healing of the sick. When one sent for a doctor one did not ask if he was bringing a Socialist cure or a Tory cure. It was not well known that the most influential section of the medical profession stood out for this Clause not only in this Bill but in the English Act. He was not frightened by the argument that the deletion of the Clause would induce a great development of private nursing homes. To set up a well equipped private nursing home to day required a tremendous amount of capital. An obnoxious feature of the Clause was that it did not tell what percentage of the accommodation in any hospital would be set aside. Nor was there any guidance on what was likely to be the charge. In this Clause the Committee was giving a blank cheque.

Mr N MACPHERSON said the one service where differentiation should be made was in the mental hospital service. If for no other reason this Clause would be justifiable because of its effect in the case of mental hospitals. In treating mental conditions it was essential that the patient should be in surroundings to which he was accustomed. How could differentiation be made except by payment?

On a division the Clause was approved by 29 to 2. The minority were Labour members.

Transfer of Voluntary Hospitals

Col ELLIOT moved to alter Clause 6 so that interests and premises forming part of a voluntary hospital should be vested not in the Secretary of State directly but in boards of management constituted under the Secretary of State. He suggested that the discussion should also cover an amendment by Mr Reid to leave out subsection 2 of Clause 6. Col Elliot remarked that local authorities took pride in the ownership of the great undertakings which they administered but did not take the same interest in properties or undertakings which really belonged to someone else. His friends desired the public bodies looking after these hospital properties to develop the same sense of pride and sense of ownership as voluntary hospitals and local authority hospitals had hitherto developed. If the

Secretary of State appointed a committee to run a property which would vest in them the corporate spirit in running such properties would be more enhanced than if the property vested in the Secretary of State, which in practice would mean St. Andrews House.

Mr BUCHANAN said that if the amendment were accepted the structure of the Bill would be destroyed almost at once. If the State maintained the hospitals it must have responsibility for them and could not hand over to a body which was not responsible to the Government. If the amendment were carried the whole of the Bill would have to be remodelled. The State might decide that a hospital had ceased to serve a useful purpose but if its ownership had been handed over the State must continue to pay the whole cost.

Sir JOHN GRAHAM KERR said that only by increasing the powers of what was called local government could they check the downward progress of democracy. He had lived in Glasgow and knew how proud citizens were of the great municipal hospitals for infectious diseases or mental ailments yet it was proposed to take away these treasures of local government.

Mr SOMERVILLE HASTINGS said he was sure the Committee wished the people of the locality to be interested in their hospital. It was good for the workers in the hospital to feel that their work was so appreciated. He thought the hospitals would be just as much appreciated even if they were owned by the Secretary of State and not by a committee of management.

Mr MCKIE said he understood the intention of the Scottish Office was that the boards of management to be set up under the Regional Boards should so far as possible seek to make for continuity and to maintain local connexions and interests.

Mr REID pointed out that in Scotland neither voluntary schools nor local authority schools were vested in the Secretary of State, and yet Mr Buchanan fulfilled admirably his responsibility for maintaining a proper system of education in Scotland.

By 31 votes to 17 the Committee decided that the voluntary hospitals should be vested in the Secretary of State. On the motion of Mr BUCHANAN this was made more definite by adding the words "for Scotland".

Buildings Not Required

Sir BASIL NEVEN SPENCE moved to insert that if it should be found within two years of the date of transfer that the buildings were not required for providing hospital and specialist services they should, where practicable, be handed back to the previous owners free of charge. He said that just before the war the people of Orkney raised £20 000 to extend their hospital buildings. These buildings, which would now go to the State, were really out of date and it was not likely that they would be used as hospitals. The community was anxious that the buildings should revert to the bodies which now governed them so that they might be used for other purposes.

Mr BUCHANAN said he could not accept the amendment but he could give some assurance on the matter. The management committees of the voluntary hospitals ceased when the Government took over the hospitals. Two years afterwards buildings could not be handed back to committees which in the case of the voluntary hospitals would cease to exist. With present building restrictions two years was far too short a time in which to see what was redundant. In any case the management body of a voluntary hospital was never the owner but only the trustee for the people who had raised the money. If the buildings were found to be redundant the Secretary of State, as an ordinary business transaction would give the local authorities the first chance of taking them over. Buying might not be necessary. It might be possible to have an interchange of sites. With regard to voluntary hospitals the Government view was that wherever possible a place which became redundant ought to be fitted into the hospital scheme. If it could not so be fitted it should be used in some other manner for the general welfare of the community.

Mr HENDERSON STEWART said that although a voluntary hospital might cease to function the trust might remain and might have other purposes for which the building concerned would be useful.

Mr THORNTON-KEMSLEY pointed out that under Clause 9 (1) the definition of hospital was extended to include any clinic, dispensary or out-patient department at which treatment by medical or dental practitioners was provided. Under Clause 9 (4) premises were included which were not at present used as a hospital, so were the sites of proposed buildings, war-damaged buildings and sites which had been cleared altogether. Only after the Secretary of State had surveyed the needs and resources of Scotland as a whole and after the Regional Board had looked at all these properties would the Secretary of State be able to see what hospitals were redundant. Members of the Opposition wished to be assured against what happened in Government departments to-day,

when premises which had been requisitioned for one purpose were, on becoming surplus, hawked about among all Government departments and not handed back to the people from whom they had been acquired.

Mr SCOLLAN cited the case of the Royal Alexandra Infirmary in Paisley, which was built by the subscriptions of the people in the town and surrounding districts. If they discovered that they could dispense with that building would be it be returned to the town of Paisley?

Mr BUCHANAN said Yes. The Government would try to use the hospital building for a suitable general local purpose which would in some way commemorate the use to which the building had been put previously. If the local authority was the only body which could take over and run the Paisley Infirmary then they would get it. The Government had considered the position of hospitals in Scotland and found that very few were run by trustees. Most were run by a committee of subscribers and by a number of workpeople who were elected separately. Therefore there were no continuing bodies of the type which Mr Henderson Stewart had suggested. In his view the administrative machine would have the final say. The important thing was to see that the machine worked with humanity and efficiency.

The amendment was withdrawn. Mr Reid then moved to leave out subsection (2). This proposal was defeated by 29 to 18.

Denominational Hospitals

Cmdr GALBRAITH moved to amend subsection 3 to ensure that nothing was taken over unless it was essential to the Service, and also to forbid transfer unless the hospital could be maintained in its existing form. He pointed out that a number of hospitals could be maintained although they were not taken over. These included such institutions as homoeopathic hospitals and denominational hospitals.

Mr BUCHANAN thought that the substitution of "essential" for "required" would make no difference because the matter would be left to the Secretary of State to interpret.

Mr REID said that Mr Buchanan had declared in effect that he would not take over hospitals unless it was essential. There were a number of small hospitals highly regarded by small sections of the community who wished to maintain them for their own purposes and were willing to pay for them. He understood from what Mr Buchanan had said that these hospitals would be able to carry on their duties under private management.

Mr BUCHANAN retorted that he did not say that at all.

Mr REID thought that Mr Buchanan intended to give an assurance to those who ran hospitals which were not essential for the working of the Service but were in the hands of religious or other bodies, strongly supported by a portion of the population and catering for it. He was sure the Committee desired such an assurance to be given.

Mr BUCHANAN said Mr Reid's second statement came closer to the Government's intention. If the Government found that a place was not required or was not essential it would not take it over.

Mr THORNTON-KEMSLEY said there were many institutions—nursing homes if Mr Buchanan chose so to describe them—which were not run for profit but were endowed for certain specific purposes. He asked Mr Buchanan to consider publishing after the Bill became law a list to give some assurance that he did not intend to take over such and such a nursing home.

Mr BUCHANAN said he would look into that suggestion.

Mr HASTINGS thought that very few hospitals would not be required. He hoped the Secretary of State would use every hospital he could and that where its special character could be continued under the scheme that would be done.

Mr MACPHERSON warned Mr Buchanan that if he took over more hospitals in the smaller burghs of Scotland these small burghs would start subscribing to new ones and would insist on having their own show.

Sir THOMAS MOORE said that on the west coast of Scotland a great number of retired nurses had started small nursing homes which were well run. These women were anxious to know whether they would come under the Clause.

Mr BUCHANAN said that a nursing home carried on for profit even a small profit would not come under the Bill. The amendment was then withdrawn.

Mr Reid moved to leave out the words "before the appointed day" from the provision dealing with the Service by the Secretary of State of notice on a governing body or a local authority that a hospital would not be required. He said the appointed day was only a year away and there might not be time to consider all these things. He suggested that Mr Buchanan should agree to leave over such decisions until June or July, 1948. Mr BUCHANAN said he would look at this point.

EPIDEMIOLOGICAL NOTES

Measles in Belfast

The present epidemic of measles began in Belfast at the end of October, 1946, being true to type in this respect. The previous epidemic in 1944-5 was unusual in that it started in early summer. Weekly notifications of first cases in the household, with the corresponding figures for two years ago, are as follows

Week ending	1946-7 Notifications	1944-5 Notifications
Nov 2	32	143
9	23	200
16	43	187
23	47	258
30	106	259
Dec 7	179	264
14	219	245
21	149	245
28	325	178
Jan 4	758	278
11	755	231
18	889	106
25	910	140
Feb 1	760	115
8	739	111

The type of case is of moderate severity, and most of the deaths have been due to bronchopneumonia

Discussion of Table

In *England and Wales* an increase in incidence was recorded for measles 584, scarlet fever 60, cerebrospinal fever 36, and dysentery 25. The only disease which was less prevalent was whooping-cough, with 41 fewer notifications.

The largest rises in the notifications of measles were those in Lancashire 409, Yorkshire West Riding 130, and Middlesex 128, the largest falls occurred in Northumberland 149 and Durham 112. There were only small variations in the local trends of scarlet fever, notably a decrease in incidence of 25 in London and an increase of 23 in Warwickshire. The only change of any size in the notifications of diphtheria was a decrease in Durham 11.

The largest fall in cases of whooping-cough was that of Lancashire 77, and the largest rises were London 38 and Staffordshire 33.

The outbreak of dysentery in Hertfordshire, St Albans R D, flared up again. The notifications for the past three weeks were 24, 5, and 20.

Over half of the counties had a case of cerebrospinal fever, the largest returns being those for London 13, Lancashire & Yorkshire West Riding 7 and Warwickshire 6.

In *Scotland* a decrease was recorded in the incidence of whooping-cough 82, acute primary pneumonia 46, and scarlet fever 22. Notifications of dysentery rose from 17 to 32, the increase being largely due to the experience of Edinburgh, where the cases increased from 5 to 16.

In *Eire* there was a decrease in the incidence of measles 37 and of diphtheria 18.

Sickness Survey

A brief summary of the results obtained by the Social Survey during March to May, 1946, published in the *Monthly Bulletin* of the Ministry of Health and the Public Health Laboratory Service (Jan., 1947, p. 4), shows that a slight increase in the incidence of minor illness has occurred compared with the preceding years. The proportion of people aged 16 to 64 who recalled having suffered from any illness, ailment, or injury during the three months preceding the interview was 33% in February, the highest rate so far recorded. The rate declined to 78% in May and June. In 1945 the proportion fell from 82% in March to 73% in June. The percentage morbidity for serious, moderate, or mild illness ranged from 7.4 in January to 4.0 in May and for minor or ill defined causes from 32.3 in January to 26.6 in March, rising to 31.0 in May. About one out of 12 men and one out of 10 women recorded some complaint included in the group of 'functional digestive disorders'.

Week Ending February 1

The notifications of infectious diseases in England and Wales during the week included scarlet fever 1,135, whooping cough 1,890, diphtheria 176, measles 13,501, acute pneumonia 1,278, cerebrospinal fever 83, acute poliomyelitis 12, dysentery 61, paratyphoid 1, typhoid 6. Deaths from influenza in the 126 great towns numbered 148.

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Jan 25.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year for (a) England and Wales (London included) (b) London (administrative county) (c) Scotland (d) Eire (e) Northern Ireland.

Figures of Births and Deaths and of Deaths recorded under each infectious disease for (a) The 126 great towns in England (b) London (administrative county) (c) The 13 principal towns in Eire (d) The 10 principal towns in Northern Ireland.

A dash — denotes no cases. A blank space denotes disease not notifiable or no return available.

Disease	1947					1946 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	94	13	30	2	—	76	4	37	1	—
Deaths	—	3	—	—	—	2	2	—	—	—
Diphtheria	247	14	70	22	7	428	21	127	53	2
Deaths	4	—	2	—	—	7	1	3	—	—
Dysentery	97	4	32	1	—	358	33	51	2	—
Deaths	—	—	—	—	—	—	—	—	—	—
Eocephalitis lethargica	3	—	—	—	—	2	1	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Erysipelas	—	—	58	7	—	—	—	52	9	—
Deaths	—	—	—	—	—	—	—	—	—	—
Infective enteritis or diarrhoea under 2 years	83	4	12	26	1	66	8	6	22	—
Deaths	—	—	—	—	—	—	—	—	—	—
Measles*	11 671	418	284	1	91	907	100	116	108	1
Deaths	7	—	—	—	2	—	—	—	—	—
Ophthalmia neonatorum	87	5	11	—	—	45	2	17	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Paratyphoid fever	1	1	—	—	—	3	—	—	—	—
Deaths	1	—	—	—	—	—	—	—	—	—
Pneumonia influenzal (from influenza)†	1,270	79	25	11	11	1,450	97	81	18	2
Deaths	92	17	10	—	1	273	35	43	8	—
Pneumonia primary	—	73	367	57	14	—	109	469	12	2
Deaths	—	—	—	—	—	—	—	—	—	—
Polio-encephalitis acute	1	—	—	—	—	2	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Poliomyelitis acute	5	2	1	9	—	6	—	1	—	—
Deaths	—	1	—	—	—	—	—	—	—	—
Puerperal fever	—	2	9	—	—	—	5	13	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Puerperal pyrexia‡	133	7	21	2	—	133	7	14	1	—
Deaths	—	—	—	—	—	—	—	—	—	—
Relapsing fever	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever	1,286	81	254	19	42	1,420	129	210	31	1
Deaths	—	—	1	—	—	1	—	—	—	—
Smallpox	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid fever	6	—	1	3	—	1	—	—	7	1
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough*	2 151	196	406	108	47	1 329	70	98	12	4
Deaths	8	—	1	—	1	9	2	—	2	—
Death (0-1 year)	335	64	85	—	14	494	71	72	30	14
Infant mortality rate (per 1 000 live births)	—	—	—	—	—	—	—	—	—	—
Deaths (excluding still births)	6,200	1019	820	15	—	7 535	1248	961	255	211
Annual death rate (per 1 000 persons living)	—	—	17.0	—	—	—	—	21.8	16.3	—
Live births	10,110	1575	1233	284	—	7 028	1084	864	393	274
Annual rate per 1 000 persons living	—	—	24.8	—	—	—	—	17.3	25.2	—
Stillbirths	277	29	43	—	—	218	39	28	—	—
Rate per 1 000 total births (including stillborn)	—	—	34	—	—	—	—	31	—	—

* Measles and whooping-cough are not notifiable in Scotland and the returns are therefore an approximation only.

† Includes primary form for England and Wales (London (administrative county) and Northern Ireland).

‡ Includes puerperal fever for England and Wales and Eire. It is still not possible to publish the return of births and deaths for Eire for the weeks ended Oct 26 Nov 2, 9, 16 23, 30 Dec 7, 14, 21, 28 1946 Jan 4 11 18 and 25, 1947.

Medical News

A meeting of the Middlesex County Medical Society will be held at Central Middlesex County Hospital, Park Royal London N.W., on Friday, Feb. 14, at 3 p.m., when there will be clinical demonstrations and a short paper by Dr R. Asher on "The Dangers of Going to Bed."

A meeting of the Medico Legal Society will be held at 26, Portland Place, W., on Thursday, Feb. 27, at 8.15 p.m., when Mr W. Harwood Carlisle will read a paper on "Alleged Manslaughter by Excessive Violence during Coitus."

The Chadwick Trust (204, Abbey House, Westminster, S.W.) announces the following public lectures: Feb. 18, 2.30 p.m., at 26, Portland Place, W., Prof S. P. Bedson, F.R.S., "Laboratory Investigations in the Diagnosis of Virus Infections of Man"; March 18, 5.30 p.m., at Westminster Hospital Medical School, 17, Horseferry Road, S.W., Prof W. M. Frazer, "A Medical Pioneer in Sanitation"; May 22, 3 p.m., at Cheltenham Town Hall, Sir Arthur MacNalty, "Advances in Preventive Medicine during the War of 1939-45." Admission to the lectures is free and no tickets are required.

The annual meeting of the Court of Governors of the London School of Hygiene and Tropical Medicine (Keppel Street, Gower Street, W.C.) will be held on Wednesday, Feb. 19, at 5 p.m.

A series of lectures will be given at the Royal Institute of Public Health and Hygiene (28, Portland Place, London, W.) on Wednesdays, at 3.30 p.m., from Feb. 19 to March 26, both dates inclusive. Admission is free, without ticket. Details will be published in the diary column of the Supplement.

The following radiological meetings will be held in London this month: Thursday, Feb. 20, 8 p.m., British Institute of Radiology, 12, Welbeck Street, W., discussion on "Radiation Necrosis" to be opened by Mr A. H. McIndoe, Dr R. Forbes and Mr G. F. Stebbing; Friday, Feb. 21, 2.30 p.m., Therapy Section of Faculty of Radiologists at the Royal College of Surgeons of England, Lincoln's Inn Fields, W.C., paper by Dr L. H. Gray and Mr B. J. Banfield, "An Optical Apparatus for Dose Exploration in Multiple Field Technique"; Friday, Feb. 21, 8 p.m., Section of Radiology of Royal Society of Medicine, 1, Wimpole Street, W., discussion on "Carcinoma of the Thyroid" to be opened by Mr J. M. Graham and Dr R. McWhirter.

The next quarterly meeting of the Royal Medico Psychological Association will be held at 11, Chandos Street, London, W., on Friday, Feb. 21, when the proceedings will open with a business meeting at 10.15 a.m. At 11.30 a.m., papers on "Psychiatry and the Population Problem" and "A Survey of Subnormal Types" will be read by Dr C. P. Blacker and Mr R. Caradoc Jones respectively. At 2.15 p.m. Dr J. A. Fraser Roberts will read a paper on "High Grade Mental Deficiency in Relation to Differential Fertility." Members who wish to attend the May meeting of the Association at Gloucester and/or the annual meeting at Eastbourne are advised to communicate with the secretary at 11, Chandos Street, W.1, as accommodation is limited.

To celebrate the centenary of the Chemical Society Sir Harold Hartley, F.R.S., will deliver a commemorative address entitled "A Century of Chemistry" before the Royal Society of Arts and the Chemical Society at 8, John Adam Street, Adelphi, London, W.C., on Wednesday, Feb. 19, at 5 p.m.

The second International Congress of the International Academy of Legal and Social Medicine will be held at Brussels and Liège from June 25 to 28 and will be divided into five sections: legal medicine in its application to crime, social medicine, industrial medicine, medico legal and social psychiatry and scientific police methods. The languages will be English and French. Those who wish to present reports or read papers should notify without delay the president of the Congress Prof Dr M. De Laet, Faculté de Médecine 7, Rue de la Gendarmerie, Brussels or one of the general secretaries Prof Dr P. Moureau (47 Rue Villedieu, Liège) or Prof Dr F. Thomas (23 Kluyskensstraat, Ghent).

The Ministry of Health has recently issued the *Mental Nurses Subcommittee Notes No. 8* (H.M. Stationery Office 2d). It includes recommendations for revised salary scales of state registered nurses and state certified midwives taking mental training; matron of a training hospital with fewer than 330 beds; temporary (war emergency) nurses; observation ward nurses; and ex-Service male student mental nurses.

An aeroplane carrying a ton of anti-plague vaccine to China left London airport on Feb. 5. It flew westwards, picking up more vaccine in New York.

Dr Ernest Wardlaw Milne, of New Barnet, Herts., who died on Aug. 4 19-6 aged 70, left £23,749. Dr Rodenck Martin Fraser, of Somerset, who died on Oct. 8, 1946, left £9,476.

Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Dermatitis Herpetiformis

Q—Is there any satisfactory treatment for dermatitis herpetiformis? A male patient aged 60 has suffered from it for six years. Quinine, arsenic purgatives, and intestinal disinfectants orally, arsenic intravenously, bismuth intramuscularly, high colonic lavages, ultra-violet therapy and numerous applications locally have all been tried without success. The patient is steadily getting worse.

A—Dermatitis herpetiformis may be due to a virus or to some other, as yet undiscovered, cause, and in this sense there is no specific treatment. However, in spite of a certain natural periodicity in the waxing and waning of signs and symptoms this affection is without question considerably influenced by variations in constitutional health and tone, especially emotional tone. Attention should therefore be paid to this aspect of the problem, adjustment to life should be as good as possible, work should not be too laborious or fatiguing, nervous anxiety stresses, and strains should be avoided. A prolonged care-free holiday may do much good.

There are a number of measures which will give temporary periods of relief. Sulphapyridine (0.5 g t.d.s.) has a dramatic effect, and provided precautions are taken against renal irritation and a watch is kept for toxic effects it can be continued over long periods. Pyrexial shock therapy generally gives more or less relief for six months or more. Suramin (B.P.) 0.5 to 1 g intravenously, weekly, for a course of six injections is often effective. Iodides must be avoided, bromides may aggravate the trouble, but phenobarbitone may be employed. At the age of 60 it is important to be sure that the affection is not pemphigus. The transition from dermatitis herpetiformis to pemphigus is not uncommon in the elderly.

Shrinkage of the Gums

Q—I have come across many individuals who although they have perfectly healthy teeth, manifest a definite shrinkage of the gums exposing parts of the necks of the teeth. This exposure makes the tooth extremely sensitive to temperature changes. Is there any treatment which would encourage the growth of the gums?

A—There is, unfortunately, no treatment which will make the gum tissue become reattached to the tooth once this attachment has been lost. The cementoblasts lie on the outside of the cementum and when the gingival attachment recedes the cementoblasts die. The exposed cementum therefore becomes non-vital and the living gingival tissues cannot become reattached. Emphasis should be placed on halting the condition at whatever stage it has reached since the original attachment cannot be restored.

Hyperhidrosis

Q—(i) A patient perfectly fit physically though perhaps somewhat overworked complains of excessive sweating in the axillae. (ii) Several patients complain of excessive sweating (a) in hot weather or in any hot surroundings, (b) after violent exercise, and (c) at night while in bed or at a dance. These patients are healthy men of the athletic type. Is there any treatment?

A—(i) Axillary sweating is emotional in origin, and the essential investigation and treatment must be along psychological lines. Symptomatic treatment may include phenobarbitone 1/4 gr (16 mg) b.d. and belladonna. Locally astringent lotions such as aluminum acetate (2-4%) or sodium hexametaphosphate (10%) or if malodorous, sodium bicarbonate (25%) are recommended. Fractional doses of x-ray through 1/2-1 mm aluminium filter are sometimes helpful but must be employed with caution under the direction

dermatologist (ii) Though aggravated by heat and exercise, the excessive sweating in these cases is dependent upon emotional instability as in the axillary cases. Treatment is along the same lines except that greater reliance must be placed upon the general approach and internal treatment. The following dusting powder on hands, feet, and flexures after bathing may be advised:

B

Sod. hexametaphosphate	5%
Acid. salicyl	2%
Zinc oxide	
Talc	
Acid. bor	aa ad 100
Make a powder	

Adiposity in Young Boy

Q—A boy aged 9 weighs 9 st 2 lb (58 kg) and has a waist measurement of 39 in (99 cm) which is rapidly increasing. I would be glad of any suggestions for treatment.

A—There is not sufficient evidence in this case to make a diagnosis more specific than simple adiposity. This may be constitutional and familial or it may be associated with infantile genitalis, in which case a diagnosis of Fröhlich's syndrome would come into question. This disorder, however, is much rarer than is generally supposed. The adiposity might also follow a hypothalamic lesion, and it is not generally realized that this may be present after encephalitis (often unrecognized) occurring during the course of one of the specific fevers—e.g., scarlet fever or measles. The treatment is that of adiposity in general—namely, diet, thyroid, and diuretics. There is no specific hormone therapy for adiposity.

Mandelic Acid Treatment

Q—Is mandelic acid likely to produce any ill effect if taken indefinitely for the control of chronic *Bact. coli* infection (prostatic)? Sulphonamides are as efficient but there is a relapse of acute symptoms from seven to ten days after stopping either drug. Any advice as regards further treatment would be acceptable.

A—So long as this patient has a focus in his prostate he is liable to recurrences of urinary infection. Treatment in the form of prostatic massage and possibly rectal diathermy should therefore be persisted in. If attacks are associated with renal symptoms intravenous pyelography should also be carried out. Mandelic acid will not have any ill effects provided that renal function is good. The chief objection to mandelic acid treatment in cases of impaired renal function is that it is associated with a reduced intake of fluid, and with a risk of uraemia in the more serious cases. It would seem that this risk is very small in the present case.

Partially Adherent Prepuce

Q—A boy aged 4 months has the prepuce firmly adherent to the under surface of the glans. There is no phimosis and the foreskin pushes right back quite easily on the dorsum and laterally. The mother is anxious to have the boy circumcised. Is this necessary?

A—It is not necessary to circumcise this child. In course of time the prepuce will become less adherent if the mother applies occasionally a little cream and gently massages it back. It is unlikely that anything further will have to be done, and in any case it should not be done now.

Penicillin Treatment of Gonorrhoea

Q—In treating gonorrhoea by a single massive dose of penicillin what is the usual amount given and is it advisable to repeat it in two or three days? I have to treat a man, aged 35, suffering from gonorrhoea of four weeks duration whose condition has not responded to a full course of sulphonamides.

A—A single injection of 200,000 Oxford units of penicillin in oil-beeswax, as supplied by several leading chemists, should effect the cure of gonorrhoea in something like 95 cases out

of 100. It is rarely necessary to repeat the dose and then only if the discharge persists for more than a few days and gonococci can still be demonstrated. The usual tests of cure should be carried out for three weeks at least, and a blood test for syphilis done at three months and again at six months to exclude a possible double infection.

Sebaceous Cysts

Q—A man of 25 is suffering from multiple sebaceous cysts of the neck. Some of the cysts were excised but the majority had to be incised and drained. Otherwise the patient is healthy, has no seborrhoeic condition of the skin or scalp and no local irritation by clothing. Apart from surgical treatment a skin specialist suggested penicillin. The patient received 360,000 units parenterally and the local application of penicillin cream, sulphathiazole ointment and coal-tar ointment with no effect. Would a course of staphylococcus vaccine prevent the sepsis or would x-ray treatment be advisable to prevent the recurrence of the cysts?

A—Sebaceous cysts are naevoid in origin, and only surgical removal is effective. All other measures mentioned in the question are valueless. The ideal method of treatment is to make a wide horseshoe incision and reflect the skin removing the cysts intact from the under-surface. Previous incision and drainage in this case will make the procedure difficult.

Intravenous Novocain

Q—What is the action of novocain when given intravenously?

A—Novocain is a proprietary name for procaine. When procaine is given intravenously it has an action on the heart like that of quinidine and an action on the intestine like that of atropine. It is said to have an analgesic effect also. The Russians are reported to use it in wounded soldiers as we would use morphine. There are no records of a suitable dose for intravenous injection, but the B.P. dose for subcutaneous injection is up to 1 g.

"Dilantin" (Phenytoin) in Epilepsy

Q—A drug called dilantin discovered in 1937 in America is said to be almost a specific in epilepsy—one American book saying '70% of epileptics remain free from seizures so long as they take their daily capsule. Is this drug used in this country and with what results?

A—Dilantin is widely used in this country. Its chemical name is sodium diphenylhydantoinate. Its official name is phenytoin, and it is sold by Boots under the name of "eptoio" and by Glaxo Laboratories under the name of "solantoio". It is used with good results, comparable to those obtained with phenobarbitone or phemitone, which are the official names for "luminal" and "prominal". Merritt and Putnam, who introduced phenytoin, say that in 142 patients with frequent convulsive seizures not relieved by other modes of therapy, phenytoin in doses of from 0.2 to 0.6 g daily for 2 to 11 months gave relief from grand mal attacks in 58%, greatly decreased frequency in a further 27%, and relief from petit mal attacks in 35%, with a greatly decreased frequency in a further 49%.

Treatment of Acne

Q—What is the most recent treatment for acne in a lady of 30? Is there any permanent cure? What advice should be given with regard to diet, cleansing and particularly cosmetics?

A—The "most recent treatment" and "permanent cure" are not terms which easily apply to an affection so essentially constitutional and diathetic as acne. Causative influences are endocrine, psychological, metabolic etc. The question does not admit of an answer. It is not stated whether the lady is single or married. In single women the condition is uncommon in married women almost unknown. It would be advisable to consult a dermatologist. In acne diet should generally be of the "antiretentional" type, cleansing is by soap and water and good cosmetics are harmless.

Letters and Notes

Nocturnal Diuresis

Dr S D STURTON (Streatham) writes I was interested in Mr Bernard Read's experiences, in "Civil Assembly Camps" at Haiphong (Jan 25, p 168). His experiences are not in keeping with my own. I was in Haiphong Road Camp, about five miles away from Dr Read, and our camp was jointly run by the Japanese 'Gestapo' and Army for so called 'political prisoners,' but I noticed that the frequency of nocturnal diuresis varied greatly with the diet. My own camp bed was by a door through which about 10 others used to pass in the dark on their way to the urinal, so I had good cause to be observant. There appeared to be much greater frequency on the nights when we had rice as compared with the nights we had beans or other food. There also appeared to be a greater frequency in this camp than when we were moved to Fengtai Camp, near Peking, where we received millet and brush wheat but no rice, although conditions were otherwise much worse in the latter camp. Other factors against getting up to urinate at Fengtai were the dry heat as against the damp of Shanghai and the fact that it was about a quarter of a mile walk to the latrines and back from some parts of the camp.

Artificial Sunlight in Industry

Dr L SCHMIDT (Linby, Notts) writes In the *Journal* of June 8, 1946 (p 890), you were good enough to publish my remarks concerning Dr Colebrook's report on artificial sunlight. These preliminary remarks were based entirely on my own previous experiments. At the time I promised to expose in detail certain failures and shortcomings of Dr Colebrook's paper in a later publication. May I, therefore, encroach again on the hospitality of your columns to inform those interested that the above pledge has been fulfilled. In an article in the November-December issue of the *British Journal for Physical Medicine and Industrial Hygiene* I have detailed and augmented my previous criticism. On this occasion may I again draw attention to the fact that the colliery clinic at Kirkby, Notts, where I have carried out my latest investigations is not identical with the colliery clinic at Kirkby, Yorks, where Dr Colebrook conducted her experiment. It appears that this fact cannot be emphasized sufficiently. Communications received from colleagues and also interested non medicals, including a leading member of the National Coal Board, show that an erroneous impression still prevails in this respect.

Precautions against Measles

Dr PERCY TATCHELL (London SW) writes In the *Journal* of Jan 11 (p 77) a question was put, what should be done to a child of 18 months in a village full of measles, to guard it against infection? The answer given omitted to point out the desirability of regularly freeing the child's nostrils of mucus—which could be conveniently done by a swab dipped in warm boracic lotion. Since writing last June suggesting the importance of keeping the nostrils scrupulously clean (this I do with soapy fingers daily) as a means of preventing colds, I have been trying my best to catch cold and have completely failed. According to modern investigation infection entering by the mouth can possibly be dealt with by the saliva, which has recently been shown to be a powerful antibiotic but the nostrils are a kind of backwater, with invariably some half-dried mucus *in situ* in the neighbourhood of which infection can lodge and mature. Should this simple expedient prove to be effective against colds why should it not also intercept and abort all airborne infections?

Underground Rooms

Under Section 53 of the Factories Act, 1937, the occupier of an underground room who proposes to use it as a factory workroom must send a notice to the District Inspector of Factories, with prescribed particulars if the room was not so used on July 1 1938. A room used only for storage is not a workroom and 'underground room' is defined as "any room which or any part of which is so situated that half or more than half of the whole height thereof, measured from the floor to the ceiling is below the surface of the footway of the adjoining street or of the ground adjoining or nearest to the room." The necessary form (Factory Form 1229) may be obtained from H.M. Stationery Office or through any bookseller price 1d. Addresses of the District Inspectors of Factories can usually be found in local telephone directories or may be obtained from Local Offices of the Ministry of Labour and National Service.

Age and Intelligence

Dr GUY NEELY (Blackheath) writes A year ago a certain young man passed the Final Fellowship. His father then aged 63 an ex-G.P. and at the time a major in the R.A.M.C., proud yet disconcerted, told me that he could not let his son "get away with

it and would start to read for the Primary. Within twelve months he is a F.R.C.S. Eng. The only coaching he had was from his son, whom he describes as "quite good", the only reading he did was in the evening or late afternoon, after the day's work. He describes the Primary as a "difficult exam" and the Final as comparatively easy. Has there ever been a Commander Gould on medicine? If so, can you supply details? To me this is such an incredible feat accomplished with such quiet dignity and detachment that I can think of no precedent in the whole story of medicine.

Notice to Ships' Surgeons

A circular from the Ministry of Transport draws the attention of ships' surgeons to the importance of consulting the Merchant Shipping Medical Scales before prescribing medical treatment in response to a wireless call received from a British ship with no surgeon on board. The scales prescribed for such vessels are not included in the latest edition of the *Ship Captain's Medical Guide* but must be carried on every ship required to carry a surgeon as well as on other ships. Ships' surgeons can, therefore, see what drugs, etc., are likely to be available for the treatment of the patient for whom they are asked to prescribe.

Too Much Ephedrine

J B I writes While in a chemist's shop recently I was surprised to hear a lady ask for 200 ephedrine tablets 1 gr (65 mg). Questioning elicited that her husband, a sufferer from asthma took eight tablets as a dose, and that the quantity ordered might last a week. The lady stated that she had observed no ill effects from this drastic treatment, and added hopefully that the patient was going back to sea next week and was completely free from the complaint while voyaging. It would seem that further restriction might be placed on this potent drug if self-medication of this nature is commonly practised.

Cheirpompholyx

Dr H C De PENNING (Portsmouth) writes Regarding the severe case of cheirpompholyx referred to under "Any Questions" in the *Journal* (Jan 18, p 123), I have found the following treatment effective. Avoidance of soap and water and the use of a 20% emulsion of benzyl benzoate morning and night. Where patients were compelled to use soap and water, such as housewives who do their own washing of dishes I advise using the emulsion immediately after the use of soap and water, first carefully drying their hands. There were no clinical signs of scabies in these cases.

Treatment of Prapism

Dr A E CARLSBERG (Parkstone, Dorset) writes Referring to the inquiry under "Any Questions" (Jan 11, p 78) on the treatment of prapism, I suggest that before adopting any severe treatment a trial should be given to 5 gr (0.32-g) doses of potassium iodide 3 or 4 times daily. This appeared to be effective within 24 hours after having tried various other remedies, in a case I had twenty years ago. I searched the *British Medical Journal* for many years back before finding this suggestion.

Shadows Under the Eyes

Dr BERNARD SWEETMAN (London, NW 11) writes Excluding individuals suffering from gross organic disease what are the causes of 'shadows' under the eyes seen in apparently healthy people? On close examination enlarged veins may sometimes be seen beneath the lower eyelid. What is the physiological basis for this?

Corrections

Dr T R AYNLEY (Bournemouth) writes In my letter (Feb 1 p 194) the word "back-out" should read 'lock-out'. The words 'British hospitals' should read 'British Hospitals Association'.

In the obituary notice of Dr R V de Acton Redwood (Feb 8 p 236) it was wrongly stated that "Dr Redwood married a Yorkshire lady a Miss North." Mrs Redwood to whom our apologies are due, was formerly Miss Masters of Doncaster.

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE EUSTON 2111. TELEGRAMS: *Antilog*, *Westcent* London. ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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TRADE UNION MEMBERSHIP

The following corrections are made to the list of local authorities requiring employees to be members of a trade union or other organization

Delete from *County Borough Councils* York, Salford, from *Non County Borough Councils* Enth, Newcastle-under-Lyme

Add to *County Borough Councils* West Bromwich (limited to new appointments), to *Non County Borough Councils* Heston and Isleworth, to *Urban District Councils* Portslade

Association Notices

Branch and Division Meetings to be Held

GREENWICH AND DEPTFORD DIVISION—At Miller General Hospital, Greenwich, Wednesday, Feb 19, 8.30 p.m., Clinical Evening
RICHMOND DIVISION—At Royal Hospital, Richmond, Friday, Feb 14, 9 p.m. Sir Alexander Fleming Penicillin

SUNDERLAND DIVISION—At Sunderland General Hospital, Friday, Feb 21, 8 p.m., Clinical Demonstration by Drs D. C. Robb, J. R. Beal, and J. Seed. Address by Mr T. Pomfret Kilner. Reconstructive and Reporative Surgery

Meetings of Branches and Divisions

LINCOLN DIVISION

A general meeting of the Division to which all practitioners in the area were invited, was held at Lincoln on Jan 21, with Dr W. V. Semple in the chair. Thirty-one members were present.

Copies were circulated of a letter from the secretary of the County Hospital in reply to representations made to him that practitioners should be able to refer patients direct to special departments at the hospital for x-ray, pathological, and other examinations without their first being seen by a member of the hospital staff. The gist of the letter was that the E.P.S. laboratory was open to any practitioner for pathological examinations, but a small charge was made for them. With regard to the x-ray department, however, the suggested procedure used to be in force at the hospital, but had had to be abandoned owing to the extra work involved. It was not practicable to reintroduce the system.

The chairman then opened a discussion on the amended recommendation which the Council was to submit for approval by the Representative Body, and he gave a synopsis of the Minister of Health's reply to the letter from the Presidents of the Royal Colleges. A brisk discussion ensued in which Drs Maiden, Morey, Sharrard, O'Brien, Ritter, Lillicrap, A. H. Briggs, Maclure, Fennell and Wray took part. Some speakers felt that, by maintaining a firm attitude and refusing to negotiate further concessions might be obtained from the Minister, but the majority supported the resolution laying emphasis on the phrase "the possibility that discussions may lead to further legislation is not excluded". Dr Sharrard proposed that our representative support the recommendation, and this was seconded by Dr Maclure. Dr Fennell proposed that no negotiations be entered into, and this was seconded by Dr Campbell. On a show of hands Dr Sharrard's proposal was carried by 26 votes to 1.

Dr Fraser drew attention to the ineffectiveness of the B.M.A. public relations and wanted some resolution submitted on this subject. After discussion in which Drs Wray, Hadley, Sharrard, Maiden, O'Brien, and A. H. Briggs took part, no resolution was put forward.

SUNDERLAND DIVISION

The third meeting in the scientific programme was held at the Royal Infirmary, Sunderland on Jan 31. A clinical demonstration was given by Dr G. S. Robinson and Mr W. Grant Waugh and in address was given by Prof. A. A. Moncrieff on "Diseases of the Newborn".

Prof. Moncrieff stated that more children died at birth than were lost through accidents on the road under the age of 12 years. He described the treatment of those conditions which must be recognized and dealt with if the birth rate was to be maintained and preventable deaths avoided. He also indicated the need for an extension of antenatal care.

POSTGRADUATE NEWS

Two weeks' general refresher courses for general practitioners will be held at the Soham General Hospital beginning on March 3, and at Cambridge, from March 17. The fee for the first week is £6d, but one week of either course may be attended at a fee of £4 4s. Schemes of financial assistance are available under which the fee and travelling and subsistence allowances will be repaid, subject to certain conditions to (a) demobilized general practitioners within one year of release from H.M. Forces, (b) doctors engaged in practice under the National Health Insurance Acts. Applications for schedules places in the course, and particulars of the financial assistance available should be made to the Dean of Postgraduate Medical Studies, Trinity Hall, Cambridge, and not to the hospital.

DIARY OF SOCIETIES AND LECTURES

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields
WC—*Mon* and *Tues* 3.45 p.m. Prof. W. R. Spurrell The Physiology of the Alimentary Tract, 5 p.m. Dr J. Whillis The Mouth and Pharynx. *Wed* 3.45 p.m., Dr E. L. Patterson The Internal Structure of the Brain Stem. 5 p.m., Prof. W. R. Spurrell The Physiology of the Alimentary Tract. *Thurs* and *Fri* 3.45 p.m. Prof. J. Z. Young Nerve Injury and Nerve Regeneration, 5 p.m. Dr A. H. T. Robb-Smith The Pathology of the Reticular Tissue

ROYAL SOCIETY OF MEDICINE

Section of Pathology—*Tues* 8 p.m. Laboratory Meeting at the Hale Chemical Laboratory, London Hospital, E. Demonstrations

General Meeting of Fellows—*Tues*, 5.30 p.m. Ballot for election to the Fellowship

Section of Comparative Medicine—*Wed*, 5 p.m. Papers by Prof. R. A. Willis Teratomas and Mixed Tumours in Animals and their Bearings on Human Pathology. Mr E. Cotchin Some Glandular Tumours of the Dog. Mrs M. Mandeville and Prof. A. Hadow Melanoma Occurring in the Viviparous Fish *Heterandria formosa* and associated with Sex Reversal

Section of Dermatology *Thurs*, 5 p.m. (Cases at 4 p.m.)

Section of Obstetrics and Gynaecology—*Fri*, 8 p.m. Clinical Pathological Meeting devoted to specimens and cases submitted by junior members of the section

Section of Radiology—*Fri*, 8 p.m. Discussion. Carcinoma of the thyroid. Openers Mr J. M. Graham, Dr R. McWhirter

CHADWICK TRUST—At 26 Portland Place W. *Tues* 2.30 p.m. Prof. S. P. Bedson F.R.S. Laboratory Investigations in the Diagnosis of Virus Infections of Man

MEDICAL SOCIETY OF LONDON 11 Chandos Street, W.—*Mon* 9 p.m. Lettsomian Lecture (I), by Prof. Ernest Finch. Cancer from the Earliest to Modern Times

ROYAL INSTITUTE OF PUBLIC HEALTH AND HYGIENE 26 Portland Place, W.—*Wed* 3.30 p.m. Prof. C. H. Stuart Harris The Study of Epidemic Influenza (Illustrated)

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE—At 26 Portland Place, W., *Thurs* 8 p.m. Second Royal Society of Tropical Medicine and Hygiene Chadwick Lecture by Gen. L. M. J. Van Hoof, M.D. (lie Médecin en Chef, Congo Belge) Trypanosomiasis in the Belgian Congo

SOCIETY OF MEDICAL OFFICERS OF HEALTH—At B.M.A. House Tavistock Square, WC. *Thurs* 5.30 p.m. Dr Percy Stocks Morbidity Statistics. Followed by Mr Louis Moss. *Fri* 5.30 p.m., at B.M.A. House, meeting of Navy, Army, and Air Force Hygiene Officers Group. Presidential address by Brig G. S. Parkinson, R.A.M.C. (ret.)

WEST LONDON MEDICO CHIRURGICAL SOCIETY—At South Kensington Hotel 41, Queen's Gate Terrace, SW, *Fri* 7 for 7.30 p.m. Dinner-discussion. An Introduction to Mass Psychotherapy. Speaker, Dr E. N. Snowden

WEEKLY POSTGRADUATE DIARY

EDINBURGH POSTGRADUATE LECTURES—At Edinburgh Royal Infirmary, *Thurs*, 4.30 p.m. Prof. R. W. B. Ellis Growth and Maturity in Relation to Age

LONDON HOMOEOPATHIC HOSPITAL, Queen Square, WC.—Honyman Gillespie Lectureship on Homoeopathy, *Mon* and *Thurs* 4.15 p.m. Dr C. E. Wheeler. *Fri* 2.30 p.m. Dr A. D. C. Macgowan

LONDON SCHOOL OF DERMATOLOGY, 5, Lisle Street Leicester Square WC.—*Tues* 5 p.m. Dr H. Corsi Therapeutic Uses of Thorium X

ST. STEPHEN'S HOSPITAL (L.C.C.) RHEUMATIC UNIT, Fulham Road SW.—*Wed* 4.30 p.m., Lecture demonstration by Mr A. G. Timbrell Fisher Orthopaedic Methods in Treatment

BIRTHS, MARRIAGES, AND DEATHS

The charge for an insertion under this head is 10s. 6d. for 18 words or less. Extra words 3s. 6d. for each six or less. Payment should be forwarded with the notice authenticated by the name and permanent address of the sender and should reach the Advertisement Manager not later than first post Monday morning.

BIRTHS

CRAIG—January 28 1947 to Mollie wife of D. H. Craig F.R.C.S. 1 Wellington Park Belfast—a son

HAMILTON—On Jan 30 1947 at The Dower House Monks Orchard Beckenham to Margaret wife of Dr J. G. Hamilton a daughter—Nicola Mary

ROCHE—On Jan 27 1947 at Briarwood Nursing Home Worcester Park to Margaret (Susan) (née Tyrrell) wife of Major G. K. T. Roche a brother for Patricia

DEATH

AYLWARD—On Jan 29 1947 at Gypswic Rusthall Tunbridge Wells Walter Charles Aylward M.R.C.S. L.R.C.P. aged 89

Y CANDLE-LIGHT. This, the smallest B.M.J. since 1840, has been printed on hand-operated duplicators in B.M.A. House, by permission of the Ministry of Fuel and Power and the C.O.I. Our "printer" this week is the Secretary of the B.M.A.

News and views in this issue are evaporated to dryness. Abbreviations will, we hope, be unambiguous.

Distribution of doctors in Britain is done largely through Journal advertisements. Hospital and municipal vacancies are noted overleaf. Candidates should apply to the authorities for details. Changes of 2,000 addresses are held up, and addresses of numerous new members cannot be recorded.

ICAL AND MEDICINE. Shivering, we tend to think of coal only as fuel. Coal is medicine as well. RUNGE discovered in 1834 carbolic acid, a coal-tar product. With carbolic LISTER stoked the fires of surgery for posterity. PERKIN's discovery of the aniline dye mauve in 1856 was the starting point of modern medicine. WEIGERT in 1871 stained bacteria with the aniline dyes of coal-tar, and KOCH soon followed suit. EHRlich hit upon the idea that certain cells had chemical affinity for certain dyes. This led to differential staining of tissues and the birth of chemotherapy. The red dye-stuff protosil patented in 1932, began a revolution in medical treatment - with the

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AG. T. C. C. LOCAL H.O. Kofey Park Rehabil. Centre, Hordham.
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 GIST St. Mary's Hosp. W.C. AST SURG. E.N.T. & ALVASTH. GLASGOW ROY.
 SP. RADIOLOG. Mt. Vernon Hosp. Northwood REGISTR. (3.1) & SURG.
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 The S. Shields, (1947) L.S. & L.A. 1947. The S. Shields, (1947) L.S. & L.A. 1947.
 weather (June) to observe heat effects in such particularly

WS. (1) Hunterian Soc. and R.C.S. celebrated John Hunter's birthday Feb. 13 and 14. The Duke of Gloucester, the Soviet Ambassador, and the Earl of Athlone attended R.C.S. dinner. Mr. Attlee said aim of H.S. Act was to provide for all skill and facilities formerly confined to a few. President R.C.S. believed if plan had flaws British sense and Parliamentary wisdom would remove them. (2) Editor J.A.M.A. (Jan. 11) writing centennial history says GROSS 1874 claimed Columbus took syphilis from Old to New World, not vice versa. (3) Advt. B.M.J. (Feb. 1) wrongly stated price London Aberdonian's dinner (18s.) included wines. Aberdonian Secy alarmed at mistake and demands for tickets. (4) Doctor's certificate needed for electricity in banned hours.

BITHYARY - We announce with regret the following deaths T. McC. ADAIR, 85, poet and physician, W.C. AYLIWARD, 89, of Rusthall, Edge Wells, who rode a penny-farthing bicycle in early days of life; M. BATES, O.B.E., Worcester, Surg-Capt. J. BOURDAS, R.N., A.G. CUMMINS, M.C., W. DYSON, O.B.E., consulting dermatologist, Exeter; R. EAGER, O.B.E., Exeter, J.S. FINDLAY, Glasgow; EDITH, Calcutta, J.B.A. GIBSON, London, N.W.1, R.J. GLADSTONE, King's College Reader in Anatomy, E.C. HADLEY, Leics., Prof. R. von JAKSCH, G.O. LAMBERT, Reading, D. MACDONALD, J.P., Oban, L.H. McGRATH, Col. A.N.R. McNEILL, D.S.O., W.P. MELDRUM, Bedford, K.C. MIDDLEMISTON, C.M. PEARSON, Midlothian, J.S. PEEBLES, Bridgend, Glam.; H.D. ROBBS, Grantham; A.W. SHEA, D.S.O., Chesterfield, J. WALLACE, B.E., Weston-super-Mare, C.E. WHEELER, 78, consulting physician, London Homoeopathic Hospital.

Epidemiology - E. & W. Week to Feb. 8 Measles 17258 (cf. 20627 1945), Scarlet 1130, pertussis 1842, diphth. 233, pneumonia 1583, c.s.f. 94. Mlio. 10, dys. 49, paratyph. 3, typh. 7. 'Flu deaths (126 Towns) 211.

QUESTIONS Q. - How does toasting, fuel permitting, alter bread? Calorie value rises 10% lightly and 20% crisply toasted. Surface toasting destroys some of B complex. Any danger in giving quinine, tartar and mepacrine together? A. - No. **TAXES** - Are exam. fees "necessary expenses"? A. - No. Capital duty.

VACANCIES - CANDIDATES SHOULD APPLY TO ADVERTISER
 H. & S.M.O. Leeds A.M.O. Nottingham, Dumbarton R.M.O. (B.1) Portsmouth, S. Shields M.O. (B.1) Beverley E.H. East Riding D.M.O.H. & M.O. Wakefield A.C.M.O.H. West Suffolk C.C. A.M.O.H. & A.S.M.O. Boro Darlington S.R.M.O. (B.1) Duch. York Hosp. Babies Manchester R.O.O. (B.1) & J.R.M.O. (B.2) Queen Charlotte's w.c H.S. (B.2) Edgwater Gen. Hosp., Chelsea Hosp. Women S.W.3, Dewsbury & Dist. Inf., Guest Hosp. Dudley, Hosp. St. Cross Rugby, Belgrave Hosp. Children S.W.9 H.S. Cheltenham GYN H.S. (B.2) S. London Hosp. Women W.4 H.S. (A) ANAESTH. Leicester Roy. Inf. H.P. (A) Bridgwater Hosp., Coventry & Warwick Hosp., Dewsbury & Dist. Gen. Inf., Herts. H.S. (A) Doncaster Roy. Inf., Bolingbroke Hosp. S.W.11, Essex Co. Hosp. Colchester. Harrow Hosp., Horton Gen. Hosp. Banbury, Ingham Roy. Inf. (B.1) Portsmouth (St. James Hosp.).
 Insurance Acts Applications for schedules places in the course, and particulars of the financial assistance available should be made to the Dean of Postgraduate Medical Studies Trinity Hall, Cambridge, and not to the hospital for Patricia
DEATH
 AYLIWARD - On Jan 29 1947 at Gypsywic Rusthall Tunbridge Wells Walter Charles Ayliward M.R.C.S. L.R.C.P. aged 89

ITUARY - We announce with regret the following deaths T W SHORE, B E, Dean of Arts, Medical College 1906-30, who entered the Hospital in 1879 as Samuel Gee's house-physician at a time when any member of the staff wanted urgently at night was fetched by a porter in a hansom cab, CLARKE, Tunbridge Wells, H S C DARBYSHIRE, Woodbury, Devon, DONALD, Draycott, Derbyshire, G.I. DAURY, Cheadle Heath; G G GENCE, Croydon, T GIBSON, Bradford, J E.H HOLROYD, Sheffield, Col.E T. WKSOL, D.S.O., G.B JAMESON, Croydon; J.RODLEY, St. Annes-on-Sea, former Mayor of Rochdale.

PIDEMIOLGY - E. & W Week to Feb.15 scarlet 1051, pertussis 1964, phth. 211, pneumonia 1404, c.s.f. 78, polio. 8, dys. 41, paratyph. 1, yph. 5. Flu deaths (126 Towns) 163.

SLES 16749 (cf. 19167 1945) Case-mortality E. & W. 1940-1 2.5, 2-3 1.9, 1944-5 1.7, 1946 to date (126 Towns) 1.4.

QUESTIONS Q. - Has penicillin been tried for colds? A. - Nothing blished so far. Effect on virus unlikely but secondary invaders may suppressed by 3-hrly snuff of 2000 units per g. sulphathiazole.
- Will we ever predetermine sex? A. - Probably Yes - by separating le- and female-determining spermatozoa.
- Is it harmful to rock a child to sleep? A. - No.

VT VACANCIES - CANDIDATES SHOULD APPLY TOWN CLERK OR HOSPITAL CONCERN

D. INSP. Sudan Med. Serv. M.O.H. Tipton M.O.H. & DIV S.M.O. Middleton.
O. H. & S.M.O. Newcastle-u-Lyne, Macclesfield M.O.H. & M.S. Caterham &
rlingham. A.M.O.H. Beckenham A.M.O.H. & S.M.O. Dewsbury DEP.M.O.H.
crington A.C.M.Os Surrey C C (Several) DEP M.S. & REST.OBST.(Bl)
lsall (Manor Hosp) DEP.M.S. (Dartford) Kent AST M. & C.W. M.O. Derby
O AREA AST TB O K Edw. VII Welsh N.M.Ass. Cardiff AST TB O
Bington TB Disp. (R.N.H.) p-time HON.UROL.REG St.Paul Hosp. Urol.
s.W.C 2 HON AST PHY. Westr Child.Hosp S W 1 RES AST.PHY Westr Child
osp. S W 1 HON AST OPHTH SURG Hull R.Inf HON SURG R.Vict.Inf.
ewcastle O/T HON AST SURG. S.E Hosp.Child.S.E.26 HON ORTH SURG. Swane
en.Eye Hosp P-TIME ASTS.RADIOL DPT. Hosp.Sick Child.W.C.1 DIR RADTHE
EP R.Berks Hosp.Reading AST.RADIOL R.Berks Hosp.Reading E.N.T SURG
.E.Hosp.Child.S.E.26 PAEDIAT R.Waterloo Hosp.Child.Wom.S.E.1 SURG.D
Christie Hosp. Holt Rad.Inst. Manchester PSYCHIAT. Kingston on Hull C.
.S (A) Mddx.C C. (Chase Farm), Ashford Hosp, Ellesmere Fort & Dist.Hosp.
irral, Manchester R.Eye Hosp, Newark Town & Dist.Hosp, R.L'pool Child.
osp.L'pool, R.Vict.W.Hants Hosp. Bournemouth, Womens Hosp. L'pool,
lackburn E.Lancs. R.Infy Cheltenham Gen.Eye Hosp, R.Hosp. Wolverhampt.
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.N.T. Hereford Gen.Hosp SEC CAS.O (A) Chesterfield N.Derbys.R.Hosp.
AS.O. & ORTH.H.S.(A) R S.Hants & S'ton Hosp CAS Os (A) Willesden Gen.
bsp.N W.10. H P.(A) Mddx.C C. (Chase Farm) (2), R.L'pool Child.Hosp.
pool, Vict.Hosp. Worksoy, R.Un.Hosp. Bath JMR A M O.(A) Plymouth (Ger
osp), Coventry (Gulson Rd.), Edinburgh (Gogarburn Cert.Inst.) R.M.O (i
rington Dist.Hosp RES SURG (A) R.L'pool Child.Hosp. Heswall MED REG.
Bl) B'ham U.Hosp, (Gen.Hosp) Newcastle O/T; R.Vict.Inf. Newcastle O/T
ED.REG.(P.time) Metro Hosp.E.8 CHIEF SURG AST. & REG (Bl) West'r Hosp
.W 1 OBST.H.S.(Bl) Roy.N.Hosp.N.7. H S.(Bl) Sir J.Priestman Durhan Co
underland Eye Inf; R.Hosp. Wolverhampton (Fract.Orth Dept.) A.H.Os
and particulars of the financial assistance available should be
made to the Dean of Postgraduate Medical Studies, Trinity Hall,
Cambridge, and not to the hospital

DEATH

AYLWARD—On Jan 29 1947 at Gypsywic Rusthall Tunbridge Wells
Walter Charles Aylward MRCS LRCP aged 89

LONDON SATURDAY MARCH 8 1947

WATER AND SALT DEPLETION*

BY

H L MARRIOTT, CBE, MD, FRCP

Physician with Charge of Out-patients Middlesex Hospital

Causation of Pure Salt Depletion

It has already been explained that the chief effect of salt depletion is a state of secondary or extracellular dehydration consequent upon loss of osmotic pressure in the extracellular fluid therefore to speak of 'pure' salt depletion may seem paradoxical. The expression is meant in a *causal* sense—that is to say the state which occurs in patients who become deficient in sodium and chlorine while being liberally supplied with water. This state is common in medical and surgical practice, but is often unrecognized for what it is. The two essentials for its causation are (1) Abnormal losses of sodium and chlorine. Simple inadequacy of intake does not, as in the case of water, produce serious deficiency. However, low intake or lack of intake may play an important part in the rapid development of depletion when abnormal salt losses are occurring. (2) Adequate water intake. As mentioned earlier, the condition of adequate water intake is frequently fulfilled in these days of dehydration consciousness, when so many patients are rightly put on fluid balance charts. Water is pressed upon them or isotonic glucose solution is parenterally administered. The intake and output figures may be gratifying till the late stages. Yet the patients become weaker and weaker and finally die. Abnormal losses of sodium and chlorine may occur in alimentary secretions, sweat, or urine (Addison's disease). Table IV gives approximate maximum daily losses

and surgical conditions causing vomiting and diarrhoea need not here be enumerated. Acute poisoning may cause extremely violent vomiting and diarrhoea, with precipitous decline of extracellular electrolytes, and provides particularly striking examples of the development of extracellular dehydration within a space of minutes or an hour or two (Marriott, 1935). Reference to Fig 8 shows that vomiting and diarrhoea respectively

cause very different proportional losses of chlorine and sodium. Vomiting causes great relative depletion of chlorine ions and the well-known tendency to alkalosis. Diarrhoea, on the other hand, has the reverse effect, with disproportionate loss of sodium and tendency to acidosis. Therapeutic continuous aspiration of gastric or intestinal contents

(Wangenstein, 1942) can cause great withdrawal of these ions. Lyall and Nicol (1939a and b) found that continuous gastric aspiration resulted in removal of 93 g of chloride expressed as NaCl, in six days. Such an amount represents more than half the body's total. Bartlett *et al* (1938) produced severe salt depletion in normal subjects. Gastric or intestinal suction drainage is a valuable method of treatment, but if used without parallel administration of saline can be highly dangerous.

The effects of pure salt depletion are perhaps best seen in severe sweating, accompanied by free drinking of unsalted liquid, because the relative proportions, though not the concentration, of sodium and chlorine in sweat do not deviate very much from the proportions in extracellular fluid and because there is little loss of other substances. Also, climatic and industrial conditions may permit mass observation of large numbers of normal individuals, suffering only from the effects of salt loss from sweating without obscuring effects due to some underlying pathological condition. Such little understanding as I have of the effects of pure salt depletion comes mainly from observation, during four years in the Tropics, of men sweating severely while drinking water freely (Marriott, 1943, 1945a) supplemented by reference to the experience of others—notably Marsh (1937) whom I visited at Abadan in the Persian Gulf, in 1942. Moss (1923), Dill (1938), Caplan (1942), Taylor *et al* (1943), Ladell Waterlow, and Hudson (1944) and last but not least McCance's classical experimental studies (1936). It was my duty in India to do special tours in the hottest weather (June) to observe heat effects in such particularly

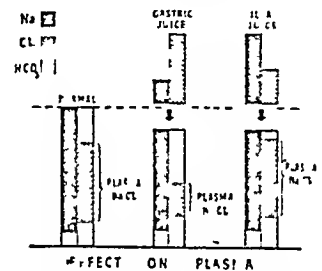


FIG 8—Showing the relative ratio of loss of sodium and chlorine in vomiting and diarrhoea

TABLE IV—Possible Secretion Losses (24 hours)

Secretion	Circumstances of Abnormal Loss	Volume	NaCl Equivalence		
			NaCl	Isotonic Saline	
				Litres	Pints
Sweat	Sweating	ml	g		
		14,000	35	4	7
		1,500	8	1	2
		2,500	18	2	3½
Gastric secretion	Fistula	500	4	½	1
		700	6	¾	1½
Intestinal secretion	Diarrhoea	1,000	22	2½	4½
		7,000	50	6	10½
Urine	Normal secretion	6,000	30	3½	6
		7,000	35	4	7

of sweat and alimentary secretions. It is obvious that prolonged over days or weeks can also cause depletion, particularly if salt intake is lowered. In the case of vomiting and diarrhoea are the commonest causes of abnormal losses of sodium and chlorine. The following table gives approximate maximum daily losses

* If the Clinical Lectures delivered at the Royal College of Physicians on Dec. 2 and 3, 1946. The first part of the lecture of Feb. 1947, page 235.

hot stations as Allahabad, Cawnpore, Lucknow, and Bareilly. The tour of 1942 was particularly instructive, because it happened to be an unusually hot season (maximum shade temperatures in the above stations were between 115° and 123° F (46° and 50.6° C) and sun temperatures very much higher) and because in that year—the first real war year for India—there was not adequate shade provision for men, nor was there general realization of the importance of extra salt intake. During this hot season there were 1,959 admissions to hospital for heat effects and 136 deaths. I personally saw some 400 cases. During my period in the Tropics I also saw salt depletion complicating the picture in many illnesses—for example, scrub typhus (Marriott, 1945b).

Much will be said below about the clinical and pathological features of pure salt depletion as seen, in uncomplicated form, in individuals whose salt loss arises from sweating due to heat. I wish to emphasize that the same clinical and pathological picture is frequently to be seen in the medical and surgical wards of our own hospitals in cases of vomiting, gastric or intestinal suction drainage, biliary or intestinal fistulae, diarrhoea (e.g., ulcerative colitis), and Addison's disease.

The main mechanisms by which the body may be most seriously injured by hot atmospheric conditions are (1) loss of water and salt from sweating, (2) overheating from cessation of sweating. The first is called "heat exhaustion"—an unfortunate term, because it implies mere fatigue whereas it is a serious and may be a fatal state. In 1942 the incidence of this condition in India was 1,405 cases with 27 deaths in British troops and 255 cases with 13 deaths in Indian troops. There were many more Indian troops in the area at the time, and so the incidence in British troops was perhaps thirty to fifty times greater. The probable explanation would seem to be a lower concentration of NaCl in the sweat of Indians. Overheating from cessation of sweating is called "heat hyperpyrexia" or "heat-stroke," and its essential characteristic is a temperature of 107° F (41.7° C) or above. Its underlying cause seems most commonly to be some infection, often minor, which sets off the pyrexia reaction with its associated inhibition of heat-loss mechanism. In India in 1942 its incidence was 170 cases with 34 deaths in British troops and 129 cases with 62 deaths in Indian troops.

Heat hyperpyrexia is not relevant to the present discussion and will not be further considered. Heat exhaustion—heat exhaustion Type 1 in Ladell, Waterlow, and Hudson's classification (1944)—however, when occurring in men drinking water freely, presents a typical picture of pure salt depletion. Sweating without water drinking produces effects mainly of water loss, because sweat is much more dilute than extracellular fluid. Hence in men lost in deserts, and without water, the effects of water depletion overshadow the effects of salt depletion.

Effects of Pure Salt Depletion

Serious depletion of sodium and chlorine gives rise to the following conditions:

(A) An *invariable* loss of total osmotic pressure of the extracellular fluid. In consequence the kidneys excrete water and there is diminution of extracellular fluid volume—extracellular or secondary dehydration.

(B) A *possible* disturbance of acid-base equilibrium if loss of sodium and chlorine ions is not proportionate (see Fig 8).

Both changes produce clinical effects, but of the two I would submit that the former is the more important. In severe vomiting and severe diarrhoea the main serious effects are the same in both conditions and are due to secondary dehydration. The manifestations due to alkalosis

and acidosis respectively are of secondary importance. It has been unfortunate that it has so happened that historical progress of medical discovery caused attention first to become focused on acid-base disturbances. This accident of history has resulted in undue preoccupation with acid-base changes, in cases of the type described, to the relative exclusion of the more serious effects due to loss of extracellular osmotic pressure. In any event, if sodium chloride is administered, along with enough water, the kidneys will automatically restore the acid-base balance by appropriate differential excretion of sodium and chlorine ions. These remarks are not, of course, intended to apply to disturbances of acid-base equilibrium arising from causes other than asymmetrical loss of sodium and chlorine ions in alimentary secretions—that is, not to acid-base alterations from the excessive administration of acid or alkaline salts, overbreathing, or the accumulation of ketone bodies.

A Effects due to Loss of Osmotic Pressure

Lassitude, Apathy, Stupor—Anyone who has lived in the Tropics knows the feeling of extreme lassitude in hot weather and that it is alleviated by ingestion of extra salt. Caplan (1942) found fatigue and asthenia in 243 of 244 cases of heat exhaustion. McCance (1936) states: "We have all suffered from excessive fatigue and a general sense of exhaustion—Whitteridge and Niven both got into an extraordinarily interesting state, in which they were content to sit and do nothing in a chair for hours on end." Lassitude and apathy, progressing to stupor, were main features in the cases of heat exhaustion which I observed. In the hot seasons I was often struck by the apathy of men in hospital for sickness of various kinds, especially those eating poorly, examination of their urine for chloride generally demonstrated its absence. Black (1946) has recently published a paper showing how an increased sense of well-being and a return of vigour were induced in cases of chronic sprue in India by the administration of extra salt. Such men were not only losing salt by the skin, but also in their copious evacuations. Lassitude is an essential and more pronounced feature in pure salt depletion than in simple water deprivation.

Weakness—Muscular feebleness, as distinct from mere disinclination for effort arising from the lassitude, is definite. McCance (1936) describes how he found his jaw getting tired when shaving and noticed his jaws bring water to his mouth while eating. The myasthenia of Addison's disease is well known.

Headache—This is often present. It has the character of a low-pressure headache, it is much less noticeable than the subject gets out of the vertical position and lies down.

Giddiness and Tendency to Orthostatic Fainting—This is frequent. I saw it in many cases of heat exhaustion. Caplan (1942) noted it in 215 of 244 cases. Ladell et al. (1944) say: "The effect of standing was dramatic. The pulse became progressively more difficult to feel and rapid. The blood pressure fell and often could not be taken because the sounds were inaudible. The face became increasingly pale, began to sweat profusely, to complain of dizziness. He was obviously on the verge of syncope."

Normal Urine Volume (till Late Stages)—If the subject is drinking freely, urine volume is normal, or may be increased until the late stages, when nausea and vomiting occur, there is, however, a very slow excretion of water. A particular quantity of water ingested. McCance (1936) states: "We have all noticed that our water metabolism was not normal. After drinking a large amount of water, no diuresis would develop at the expected time, but hours later—possibly during the night—the diuresis

sign In Addison's disease delayed diuresis has been noted (Rowntree and Snell, 1931). It is the basis of the water-elimination test described by Robinson *et al* (1941). The delayed diuresis is usually ascribed to delayed excretion. I shall presently advance another hypothesis, which I have not seen elsewhere put forward—namely, that the delay may be chiefly or in part in *absorption* and that the water may remain overlong in the stomach and alimentary tract. Chloride is absent from the urine except in Addison's disease.

Absence of Thirst—This is most important. It has been laid down as an essential condition in the causation of pure salt depletion that there must be liberal intake, oral or parenteral, of unsalted water. However, even if intake is relatively low but not low enough to make the case one of predominant water depletion, there is no thirst, indeed, water is often repellent. I have seen men suffering from severe secondary dehydration refuse water or spit it out.

Anorexia—Nausea—Vomiting—These symptoms, in the progression indicated, are present in most moderate or severe cases. Associated with the anorexia is loss or perversion of taste. Caplan (1942) observed nausea in 152, and vomiting in 136, of 244 cases. He regarded 194 of these cases as mild and 50 as moderate or severe, vomiting as invariable in the latter group. Ladell *et al* (1944) noted vomiting in 73% of 45 cases. My own experience embraces a large number of cases, but unfortunately is impressionistic and unsupported by factual data, as the conditions of my hours precluded spending time on recording and I did not then consider publishing my findings. Indeed, the significance of some of the observations made did not become apparent until there was subsequent time for reflection. Anorexia, nausea, and vomiting are particularly important,

because they inaugurate a vicious circle which causes rapid deterioration (Fig 9). This train of events is well known in Addison's disease.

Weight Loss—This is marked, especially in the early stages, in spite of free water intake. It is consequent upon the secondary dehydration. The weight tends to be of the approximate order of 1 lb per 3.4 g of sodium deficit (McCance, 1936).

Changes in Appearance—Sufferers show signs of subcutaneous desiccation. The eyes are sunken from loss of orbital tissue fluid. In the late stages the appearance resembles the Hippocratic facies. The skin loses its elasticity so that pinched up folds do not smooth out on release. The patient no longer fills his skin and in extreme cases the skin of the fingers may be wrinkled (washerwoman's hands of cholera).

Cramps—Heat cramps have long been well known, especially by horse riders and firemen realized that they tend to be precipitated by water ingestion and prevented by salt intake. Caplan (1942) noted cramps in 142 (24 cases). Ladell *et al* (1944) in 70% of 45 cases.

Confusion and Delirium—I saw several men who had mental changes during and shortly after heat stroke. Some were just confused and disoriented—a state which can be seen in severe vomiting or diarrhoea. One young soldier was possessed by the delirium, he was for execution on the morrow, a sentence which was later to be made. Saphir (1935) has described an acute depletion of a sustained mild case as a multiple psychoneurosis.

Blood Changes

Plasma Sodium and Chlorine—When salt depletion is severe there is a fall in the plasma concentration of sodium and chlorine. Most published figures relate to plasma chloride, expressed as sodium chloride, which may fall in extreme cases from the normal levels of 560 to 630 mg per 100 ml to 300 mg per 100 ml or even slightly lower. As the sodium ion is the more important from the osmotic standpoint, data regarding falls in sodium levels would be more relevant.

Blood Urea—The blood urea rises (McCance and Widdowson, 1938). Ladell *et al* (1944) found it raised in all cases of salt-depletion heat exhaustion, 12 out of 26 cases had levels above 100 mg. In spite of high blood urea and low urine volumes in their cases, the urea concentration in urine was low. In 9 cases the ratio between concentrations of urea in urine and plasma was measured and found to average 40:1. In severe vomiting and diarrhoea figures of the order of 100 to 200 mg per 100 ml or higher are commonplace. In experimental adrenalectomy (Harrop *et al*, 1933) or in Addison crises the blood urea may be similarly raised.

Plasma Volume—There is shrinkage of the plasma volume leading to haemoconcentration. Leonard Rogers (1908, 1909a and b, 1911, 1915, 1916, 1921) demonstrated many years ago how in severe cholera cases as much as two-thirds of the plasma volume may be lost. A similar loss may occur as a result of vomiting. In salt depletion due to sweating McCance (1938) produced in volunteers extracellular-fluid reductions of 28 to 38%, Ladell *et al* (1944) found plasma-volume reductions up to 50% in heat exhaustion. In extreme salt depletion from vomiting, gastric or intestinal suction, fistulae, diarrhoea, sweating, or Addison's disease, a loss of as much as one-half to two-thirds of the plasma volume is possible. It is probable that definite circulatory manifestations (see below) hardly become evident until the plasma volume has been reduced by 15%. A systolic blood pressure below 90 mm Hg probably indicates at least a 25% reduction. The relative normal ratio of plasma volume to tissue-fluid volume is about 1:4, but when the extracellular fluid is reduced through salt depletion the reduction of the tissue-fluid portion is relatively greater than that of the plasma portion (see Fig 4b) because of increasing colloid osmotic pressure as the plasma protein molecules become concentrated. A reasonable rough assumption is that loss of a litre of plasma volume (normal plasma volume being approximately 3 litres) means a total loss of extracellular fluid of the order of 6 to 7 litres.

Plasma volume may be measured directly, and Evans (1945) in a valuable paper discussing the significance of alterations in blood volume, has rightly stated that blood-volume determinations should be part of the laboratory routine procedure of all hospitals, or, in a non-anaemic subject the plasma-volume reduction may be deduced from data relating to haemoconcentration. Leonard Rogers was a pioneer in this field. Relevant data are the haemoglobin percentage, the haematocrit reading, and the plasma and whole-blood specific gravities. The last-named, as Rogers realized is perhaps the most convenient for quick practical use. It may be determined by the falling-drop technique in graduated mixtures of glycerin and water (Rogers) or in graduated copper sulphate dilutions as proposed by Phillips and van Slyke (1943). The correlation between blood gravity and haemoglobin and haematocrit percentages is shown with clarity in their line chart. If the haemoglobin percentage is determined directly, or indirectly, the plasma volume can be

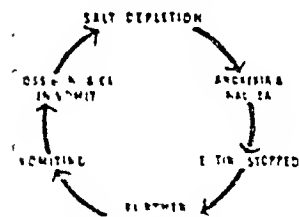


FIG 9—Vicious circle of events in salt depletion

adaptation of a form of calculation proposed by Black (1940b)

$$\text{Plasma loss (in litres)} = 5 - \frac{5 \times \text{Hb}_1}{\text{Hb}_2}$$

where $\text{Hb}_1 = 100\%$, $\text{Hb}_2 =$ value in patient, and 5 litres is the assumed normal blood volume. I would say that, as a very rough rule, in secondary dehydration the plasma loss may be multiplied by 6 to give the total extracellular fluid loss. In extreme salt depletion, with a loss of one-half to two-thirds of the plasma volume, the consequent haemoconcentration may produce such high blood values as the following: specific gravity, 1064 to 1070, haemoglobin, 20 to 23 g per 100 ml, haematocrit, 58 to 64%, red cell count, 7 to 8 millions per c mm. Such findings indicate an extracellular fluid loss in the region of 7 to 10 litres for a 70 kg man, or about 2 imperial gallons.

Blood Viscosity—Haemoconcentration increases the viscosity of the blood (Whittaker and Winton, 1933, Holbrook and Watson, 1939, Evans, 1942). Kekwick and I (1940) studied the flow of blood through capillary tubes in devising a capillary regulator, instead of a screw-clip, for obtaining a more constant flow in drip blood transfusions. We then realized the tremendous part that viscosity must play in determining the flow through small blood vessels and capillaries. Poiseuille's equation is said to hold for such flow (Whittaker and Winton, 1933, Seligman *et al*, 1946)

$$\text{Flow} = \frac{\text{Pressure}}{\text{Viscosity} \times \text{Resistance}} \times \text{Constant}$$

Hence, if the viscosity should be doubled the flow will be halved. Wynne Willson and I (1940) did some work with various concentrations of red cells in citrated or heparinized plasma in an endeavour to ascertain the correlation between progressive haemoconcentration and increase of viscosity. Our experiments were of a rough-and-ready character, designed to produce a quick answer to urgent resuscitation problems, and were not brought to a stage fit for publication. However, they showed that when the red cell count is around $7\frac{1}{2}$ millions per c mm the blood viscosity is about double what it is when the count is 5 millions per c mm.

The Circulation

If the decrease in plasma volume is at all severe the patient passes into a state of oligæmic circulatory failure or "shock". This is well understood in relation to severe vomiting and diarrhoea, and I have seen it often in heat exhaustion. Caplan (1942), reporting on 50 moderate and severe cases, states "The patients exhibited all the signs of shock. The skin was cold and clammy—the blood pressure in the severe cases was indeterminable and in the moderate cases the systolic pressure was always below 95 mm Hg—commonly 60 to 90—and the pulse pressure 2 to 10 mm Hg." The peripheral failure of adrenalectomized animals or of patients with Addison's disease in crises is well known. The main factors in the production of circulatory failure are (a) the reduction in blood volume, and (b) the increased blood viscosity. The effect of blood-volume reduction in producing shock (Robertson and Bock, 1919, Keith, 1919) has been much studied in the recent war (Kekwick, Marriott, Maycock, and Whitby, 1941, Dick, 1944, Evans, 1945). Less attention has been devoted to the effect of increased viscosity, which, of course, also occurs in plasma loss in burns and injuries due to crushing. I suggest that in the circulatory failure of severe salt depletion it plays an important part. Seligman Frank, and Fine have recently published (1946) an experimental study on the haemodynamic effects of raised blood viscosity, and have shown its importance.

The clinical picture of the circulatory failure of salt depletion is the familiar one of increasing oligæmic

vasoconstrictive shock. The patient is pallid and often in a clammy sweat. The extremities are cold (if atmospheric conditions allow cooling). The blood pressure is at first maintained and the diastolic pressure may be raised (Ladell, Waterlow, and Hudson, 1944) but later falls, and the pulse pressure is diminished. The veins are empty. The pulse deteriorates, first in force and then in tension, and usually quickens. Cyanosis of lips and nails appears as the condition develops. When the systolic blood pressure drops to about 70–80 mm Hg anuria occurs. The mental condition is not as alert and clear as in haemorrhagic shock. The patient tends to pass into a confused stuporous condition and finally into coma. An important point to note in patients with oligæmic failure is the danger of sudden death from changes of position (Evans *et al*, 1944), such as sitting the patient up to examine the chest.

Water Absorption

I have mentioned above how the subjects of pure salt depletion are not thirsty, and how they develop anorexia, nausea, and vomiting. In patients with severe heat exhaustion to whom I endeavoured to give saline by mouth I noted that often the saline, if not vomited, would stay in the stomach, which could be seen, through the abdominal wall, to be greatly distended. There seemed to be definite pylorospasm coupled with atony of the stomach. Other observations led me to believe that a tendency to spasm of the sphincters and lack of tone of the gut prevailed throughout the alimentary canal. I consider that the delayed diuresis of salt depletion may be largely a question of delayed absorption. It is my impression that fluids remain much longer than usual in the stomach, and that even when the pylorus is passed absorption is slow. I have recently had under my care a case which was typical of many others I saw before the war without appreciating their significance.

A woman aged 58 with pyloric stenosis due to old duodenal ulceration, and with the usual history of vomiting large amounts had been vomiting intermittently for 10 years and daily for about a month. On admission she was stuporous and appeared to be dehydrated, and there was loss of skin elasticity. Her blood pressure was 90/50 mm Hg, the plasma chloride, as NaCl, was 286 mg, and the blood urea 190 mg per 100 ml. During the first three days of treatment she received intravenously 23 pints of isotonic saline solution (= 13 litres containing 110 g of NaCl) and 8 pints (4.5 litres) of isotonic glucose solution. She also was given 3 pints (1.7 litres) of water by mouth. Owing to incontinence, urine measurement was not possible during the first two days. Her output of urine on the third day was 33 oz (937.6 ml) containing 3 g of NaCl. By the fourth day she appeared almost recovered and the plasma NaCl had risen to 524 mg per 100 ml. Intravenous fluid administration was stopped and on this and the next four days she received by mouth 19 pints (11 litres) of fluid plus some solid food. There was no abdominal distension; therefore this volume had successfully passed her previously impassable pylorus. Pyloric stenosis was subsequently confirmed by barium meal and at operation.

Sanchez-Vegas and Collins (1946) have reported upon 50 patients with pyloric obstruction due to duodenal ulcer. Gastric retention disappeared in all except 3 under treatment, averaging five days, in which the chief measure seems to have been administration of large amounts of sodium chloride in hypertonic solution. The main purpose of the communication of these authors was not to make the point, which I am tentatively

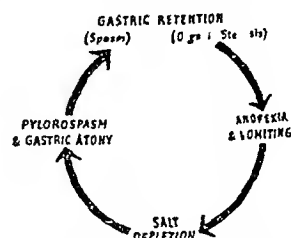


FIG 10—The vicious circle suggested in cases of salt depletion with pyloric obstruction

suggesting, that pylorospasm may be a consequence of salt depletion, but to urge that urine chloride estimations are a better guide to progress than plasma estimations

My observations on cases of heat exhaustion suggest that patients with pyloric obstruction may enter a vicious circle (Fig 10). There is scope for radiological investigation of gastro-intestinal function, especially the emptying time of the stomach, in salt-depleted volunteers. It seems that salt depletion may also explain many cases of "paralytic ileus" in which there is no peritonitis. The effect of saline on peristalsis has been demonstrated by Eitel and Loeser (1934) and by Perazzo (1937).

B Effects due to Disturbance of Acid-Base Equilibrium

When there is considerable asymmetrical loss of sodium or chlorine ions—such as the predominant loss of sodium in diarrhoea or the predominant loss of chlorine in vomiting (Fig 8)—there is a disturbance of acid-base equilibrium, with a relative increase of bicarbonate with respect to chlorine in vomiting and a relative recession of bicarbonate in diarrhoea. The carbon-dioxide-combining power (alkali reserve plasma bicarbonate) in ml of CO_2 per 100 ml of plasma may be over 100 after vomiting or under 20 after diarrhoea. As Gamble (1937) has said the bicarbonate ion plays a 'mendicant' part—it takes what base it can get.

Much attention has been directed in the past to these tendencies to alkalosis and acidosis, and many of the symptoms which have just been described, and attributed to loss of electrolyte osmotic pressure, were stated to be due to the distortion of acid-base balance. However, this is surely untrue, because all the manifestations, here called osmotic, may be seen in cases of severe sweating where there is no gross acid-base change, also all the manifestations are common to cases of either severe vomiting or severe diarrhoea. Indeed, apart from the different direction of ejection of alimentary secretions, there is little difference in the clinical picture presented by sufferers from emesis or catharsis. It is true that alkalosis or acidosis may have some intensifying effect on the anorexia, nausea, and vomiting which are certainly prominent enough in simple symmetrical sodium and chlorine depletion (sweating). Alkalosis may increase cramps through its tendency to cause tetany, but cramps are quite a marked feature of choleraic diarrhoea in which there is acidosis, and are a characteristic feature of the salt depletion due to sweating. The only effect which seems mainly or wholly attributable to alkalosis or acidosis, when caused by vomiting or diarrhoea, is perhaps some difference, of little practical significance, in the character of the breathing.

The mechanism of death in pure salt depletion seems quite clearly to be circulatory failure due to a combination of reduction of blood volume and increase of blood viscosity.

Quantitative Correlation of Clinical and Pathological Manifestations with Amount of Salt Deficit

The ability to estimate the degree of deficit from the overall picture presented by the patient is a matter of great practical importance. It is so because, so far as I am aware, there is no other reliable index. The concentration of plasma chloride, expressed as NaCl, is often used as an index, but a little reflection will show, as Abbott (1946) has pointed out, that the concentration of chlorine or sodium cannot mirror the total loss of these ions because adjustment mechanisms, especially renal, work to preserve, so far as is possible normality of concentration in the effort to sustain the prime essential—isotonicity. When plasma

sodium and chlorine tend to fall the kidneys excrete water and as already explained, there is sacrifice of plasma volume in order to preserve electrolyte concentration. How, then, can any measure of this concentration determine total deficit? Significant falls in plasma chlorine or sodium values only occur when total deficits are very gross. This point is well brought out by Sanchez-Vegas and Collins (1946) in their study of 50 cases of pyloric obstruction. All these patients had either very little chloride in their urines or none at all and all required large amounts of sodium chloride to restore renal excretion of chloride to normal. Yet only 10 out of the 50 had plasma chloride concentrations expressed as NaCl lower than 510 mg per 100 ml, although 29 had blood urea concentrations exceeding normal limits.

From the basis of personal experience I would suggest that cases of salt depletion may be divided into three grades.

(1) *Slight to Moderate Depletion*—Low concentration or absence of chloride in the urine (except in Addison's disease) with lassitude and maybe giddiness and orthostatic fainting indicates a deficit of up to 0.5 g per kilo of body weight. In a 70 kg man this represents a deficit of up to 4 litres or 7 pints of isotonic saline.

(2) *Moderate to Severe Depletion*—Absence of chloride in the urine (except in Addison's disease) with lassitude, giddiness and fainting with anorexia and maybe nausea and vomiting, and with a fall of blood pressure but with a systolic pressure above 90 mm Hg, points to an approximate deficit of 0.5 to 0.75 g per kilo which in a 70 kg man would represent a deficit of 4 to 6 litres (7 to 11 pints) of isotonic saline.

(3) *Severe to Very Severe Depletion*—Absence of chloride in the urine (except in Addison's disease) with apathy, stupor, vomiting and a systolic blood pressure of less than 90 mm Hg suggests an approximate deficit of 0.75 to 1.25 g per kilo—that is a deficit of 6 to 10 litres (11 to 18 pints) of isotonic saline in a 70 kg man.

The above divisions represent a very rough classification and are put forward merely as a crude guide to appraisal of salt deficit. There will be individual cases forming exceptions but at the same time, it is suggested that even rough clinical criteria may be better than seemingly accurate and scientific measurements of plasma concentrations of sodium and chlorine—not, of course that these should be omitted.

A Useful Test

It will be noticed that absence of chloride in the urine is accorded a place of first importance. For several years I have used the very simple quantitative test described by Fantus (1936). This can be done in a minute and is simpler than testing for albumin or sugar as no heating is needed. The requirements for performing the test are a small test-tube, a small pipette ('fountain-pen filler'), 20% potassium chromate solution, 2.9% silver nitrate solution, some distilled water for rinsing the pipette. It is essential that the same pipette shall be used throughout so that the size of the drops shall be the same.

Technique—Ten drops of urine are measured into the test-tube. The pipette is rinsed and one drop of potassium chromate solution—the indicator—is added. The pipette is rinsed again and then the silver nitrate solution is added a drop at a time and the test tube shaken after the addition of each drop. The end point is a sharp colour change from yellow to brown. The number of drops needed to produce the end point gives the concentration of chloride in the urine expressed in grammes of NaCl per litre—for example 5 drops = 5 g of NaCl per litre. It is important to make a preliminary test with distilled water to make sure that there is no contamination of the chromate with chloride.

This very simple test is most useful not only in diagnosis but also in the control of treatment.

diagnosis chloride should be regarded as "absent" if the end-point colour change occurs with the first drop. This may happen in normal persons if the urine is very dilute because a large amount of fluid has been taken, but if it occurs in the absence of diuresis it is indicative of salt depletion, though the depletion may not have reached a degree sufficient to cause symptoms. In concentrated urine (with a specific gravity of more than 1020) less than 3 g per litre suggests depletion. If the urine contains 5 g per litre or more the patient, except in Addison's disease or during the administration of intravenous saline, is unlikely to be suffering from salt depletion. The test was found useful in India and South-East Asia Commands during the war in the detection of salt-depletion heat exhaustion and of salt depletion complicating many medical and surgical illnesses. In M I room work it was valuable in the hot weather as a quick method of separating cases of salt-depletion heat exhaustion from those of neurotic collapse and ill-health from other causes. White (1943) so applied it at Air Headquarters, Delhi, during June and July, 1943, to a series of 140 patients, of whom 29 were proved to be suffering from heat exhaustion. Its potential scope is not as great in temperate as in hot climates but is still enormous, for it is applicable in the diagnostic assessment and therapeutic regulation of all cases of threatened or actual dehydration or of overt oedema. Whenever fluid tends to be lost from or retained in the body, the measurement of urinary excretion of sodium chloride is as important, in many instances more important, than the measurement of urine volume. It is my belief that the means for performing this simple test should be available in all ward test-rooms and in every doctor's bag. A similar simple quantitative test for sodium would be even more valuable if it could be evolved.

(To be concluded with a full list of references in our next issue)

MEDICAL ASPECTS OF PENICILLIN TREATMENT

BY

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This paper is based on a survey of the cases treated in the medical wards of St Alfege's Hospital with systemic penicillin alone, or with systemic and local penicillin combined, from January, 1945, to September, 1946. In all, 129 patients were so treated. The cases are unselected, except that they were considered worthy of penicillin therapy on clinical or bacteriological grounds, and are consecutive cases. They were not the subject of special investigation as part of an experimental trial of penicillin treatment, but we have been continually alive to the fact that each case undergoing penicillin treatment is, even at the present time, an experiment in a new form of therapy, the application of which is by no means finally settled.

Our first regular supplies of penicillin became available in April, 1945, when we were allocated 5,000,000 units a month. This quota was gradually increased until at the time of writing our monthly consumption is between 150,000,000 and 200,000,000 units. The majority of cases were therefore treated in 1946. The 129 cases include the most serious and potentially fatal illnesses treated. An analysis according to the final diagnosis is shown in Table I.

The pneumonias form the largest group with 53 cases. Carbuncles, meningitis, and empyema are the next largest with 13, 11, and 10 cases respectively. The appearance of

carbuncles, cervical adenitis, and diabetic gangrene among a series of cases treated in medical wards alone is part of the revolution in medical practice which penicillin has

TABLE I—Medical Cases Treated with Systemic and Local Penicillin

Disease	No of Cases	Disease	No of Cases
Respiratory diseases		Streptococcal tonsillitis	4
Pneumonia	53	Diabetic gangrene	3
Acute bronchitis	3	Perinephric abscess	2
Empyema	10	Cellulitis	1
Lung abscess	2	<i>Staphylococcus aureus</i>	1
Carbuncles	13	Septicaemia	1
Meningitis	11	Vincent's angina	1
Secondarily infected skin lesions	8	Acute pyelonephritis	1
Acute nephritis	6	<i>E. coli</i> septicaemia	1
Subacute bacterial endocarditis	5	Lobar pneumonia	1
Cervical adenitis	5	Pemphigus chronic nephritis	1

brought about. Particularly, and most dramatically, in the case of carbuncles is this change of practice welcome, most of all to the patient.

Below is given an analysis of the results of treatment of the more important groups of diseases, with a brief description of the methods used, and such points of importance bearing on treatment that have been brought to light.

Pneumonia

From January to December, 1945, 12 cases of pneumonia were treated, with 5 deaths, and from January to September, 1946, 41 cases, with 3 deaths. This represents an overall mortality of 15%. Of the 53 patients 26 were over 40 years of age and 10 were under 6 months, and the majority were cases of great severity. During the first period penicillin was scarce and dosages were in consequence low. The figures for the second period, giving a mortality of 7.3%, must be regarded as very gratifying. Four of the eight fatal cases were moribund on admission and death occurred within 24 hours, three had signs of congestive cardiac failure on admission, and one was a premature infant. Seven patients who recovered, two who improved, and five who died were also treated concurrently with sulphonamides. Fifteen cases received penicillin after the infection had failed to respond to sulphonamide therapy.

TABLE II—Cases of Pneumonia

Variety	Recovery	Improvement	No Change	Death	Total
Lobar unclassified	11	3	—	3	17
Bronchopneumonia unclassified	11	—	2	5	18
Pneumococcal	4	—	—	—	4
Staphylococcal	4	1	—	—	5
Streptococcal	4	—	—	—	4
Mixed flora	4	—	—	—	4
Atypical	—	—	1	—	1
Total	38	4	3	8	53

The bacteriological classification of the cases is not complete, partly because many of the patients treated were too ill or too young to produce sputum, and partly because we were loath to ask too much of our ever-willing but overworked laboratory staff. We now regard a bacteriological diagnosis, with a penicillin-sensitivity test of the organism, as an essential in the penicillin treatment of pneumonia. Such information offers valuable guidance to the physician particularly on the necessity for increasing the dose or for prolonging the course, in a case not initially responding to penicillin. Without this information he works in the dark. It may be significant that of the cases bacteriologically classified none were fatal.

Indications for Penicillin Treatment in Pneumonia—Administration of sulphonamides is still our method of choice. Our indications for penicillin are (1) Cases with a bad prognosis owing to clinical severity with signs of extreme toxæmia, old age, and infancy, particularly prematurity. In these cases penicillin and the sulphonamides

may be combined (2) Cases failing to respond to sulphonamides within 36 hours, or cases known to be sulphonamide-sensitive (3) Cases with congestive heart failure or renal disease where the excretion of sulphonamides is likely to be deficient (4) Cases with complications such as diabetic ketosis or anaemia

Treatment

Up to April, 1946, the usual adult dose of penicillin was 30,000 units initially by intramuscular injection, followed by 15,000 units three-hourly (120,000 units in 24 hours) For the past six months the initial dose has been 60,000 units, followed by 30,000 units four-hourly (180,000 units in 24 hours) In cases with a very bad prognosis the dose has been increased to 60,000 units four-hourly (360,000 units in 24 hours) The dose in infants has been of the order of 2,000 to 4,000 units per pound (454 g) of body weight in the 24 hours, depending on the severity of the infection Doses for children have been intermediate between this and the adult dose All doses are made up to a volume of 1 ml with distilled water Larger volumes are likely to increase the discomfort of the injection

Increased supplies of penicillin have therefore permitted the administration of larger doses at longer intervals, to the benefit both of patients and of nursing staff The duration of treatment has been from 5 to 10 days, the majority of cases receiving a six-day course Cases have responded to treatment in from one to four days—in most instances within 48 hours Increased dosage at greater intervals is now a growing tendency in our practice We are experimenting with doses of 250,000 units at intervals of 8 to 12 hours The number of cases so treated is small, but the impression gained up to the present is that 250,000 units eight-hourly gives a more satisfactory response than a similar dose 12-hourly 500,000 units 12-hourly is also under trial This winter we should treat enough cases of pneumonia to form a definite opinion on this system of dosage

I have included the above generalizations under the pneumonias as they form by far the largest group These remarks apply equally to the treatment of my other groups

Empyema

Ten cases of empyema have been treated, with eight recoveries and two deaths (Table III) Of the two deaths, one was that of a woman of 80 who died within 24 hours of admission, the other case was complicated by the presence of chronic pulmonary tuberculosis and grew *Haemophilus influenzae* in the pleural fluid

TABLE III—Cases of Empyema

Variety	Recovery	Death	Total
Pneumococcal	3*	1†	4
Staphylococcal	1*	—	1
Streptococcal	3	—	3
No organism	1	—	1
Influenzal (chronic pulmonary tuberculosis)	—	1	1
Total	8	2	10

* One pneumococcal and one staphylococcal case were treated by surgery
† Female patient aged 80, moribund, death within 24 hours

Treatment has been by the administration of systemic penicillin in doses of 30,000 to 60,000 units four-hourly, with repeated aspiration of the fluid and intrapleural injection of 60,000 to 120,000 units of penicillin in 20 to 50 ml of distilled water on alternate days The pleural fluid, given a penicillin-sensitive organism, is usually sterile after the second intrapleural injection, five to seven injections being the usual number Aspiration must be complete and be continued for a prolonged period if a satisfactory result is to be obtained In the majority of our cases we were

fortunate in beginning penicillin treatment early in the disease In two cases surgery has been necessary, rib-resection being carried out The indications for surgery are a thick exudate which cannot be aspirated, empyemas coming under treatment late in the disease, loculation of the fluid, and failure to sterilize the empyema with penicillin

The series is too small for a dogmatic opinion to be given, but my impression is that if aspiration and penicillin replacement are started early, with a penicillin-sensitive organism, good results can be obtained by aspiration and penicillin injection only provided aspiration is frequent, continued, and complete If surgery is indicated the patient is handed over to the surgeon in good condition, without toxæmia and with a sterile effusion

Meningitis

Eleven cases have been treated, with seven recoveries and four deaths (Table IV) Of the four fatal cases, one was an influenzal meningitis, one proved at necropsy to be a case of meningococcal meningo encephalitis (in this case, although the cerebrospinal fluid became sterile two days after treatment with intrathecal and systemic penicillin, no clinical improvement resulted), the third was low-grade meningitis, with otitic hydrocephalus which did not respond to penicillin treatment the patient dying after operation at a cranial surgery unit The fourth, a meningitis of unknown aetiology proved fatal within 24 hours of admission

TABLE IV—Cases of Meningitis

Variety	Recovery	Death	Total
Meningitis meningococcal	2*	—	2
Meningo-encephalitis (meningococcal)	—	1*	1
Meningitis pneumococcal	2*	—	2
Influenzal	2*	1*	3
acute purulent	1*	1*†	2
low grade with otitic hydrocephalus	—	1*	1
Total	7	4	11

* Also treated with sulphonamides

† Systemic penicillin only

‡ Death within 24 hours of admission

In view of the excellent results obtained with sulphonamides, intrathecal penicillin is probably unnecessary in cases of meningococcal meningitis The fever hospitals can advise us with more authority on this point Our cases were treated with sulphadiazine and systemic penicillin only, and made rapid recovery

Pneumococcal meningitis was treated by the intrathecal injection of 10,000 to 30,000 units of penicillin on alternate days for three injections In each case the fluid was sterile after the first injection and recovery dramatic Intrathecal therapy was supplemented by 60,000 units of penicillin four-hourly by intramuscular injections for 10 days and full doses of sulphadiazine

The three cases of meningitis due to *H. influenzae* are most interesting and instructive Dr B Gottlieb, in whose wards they were treated, is shortly submitting for publication a detailed account of their investigation and treatment The *H. influenzae* was thought to be penicillin-resistant We now realize that this organism is only relatively resistant to penicillin Penicillin-sensitivity tests in one case showed that the organism (*H. influenzae*, Pittman type b) although insensitive to a penicillin solution of 10 units per ml, using the punch-plate technique, was inhibited by the same technique using a solution of 100 units per ml The same organism was not sensitive to sulphadiazine or sulphathiazole in concentrations of 10 mg per ml

The first case, that of a child of 10 months was treated with 27 intrathecal injections of 30,000 units of penicillin with 15,000 units three hourly systemically to a total of 4,440,000 units and full doses of sulphadiazine After the

intrathecal injection the cerebrospinal fluid became sterile but in spite of continued treatment the organism reappeared and the child died after nearly three months' treatment.

The second patient, a child of 21 months, received 10 intrathecal injections of 50,000 units in 15 days, 120,000 units three-hourly systemically for 48 days (46,000,000 units), and full doses of sulphadiazine. The cerebrospinal fluid became sterile after six intrathecal injections, and the child made a full recovery.

The third and most recent case, that of a child of 10 months, received three intrathecal injections of 50,000 units and three of 30,000 units in 10 days, with 60,000 units four-hourly systemically for 16 days (5,760,000 units). The fluid was sterile after the third day and the child made a rapid and full recovery. The dosage has been progressively increased from the first to the third case, with an improvement in the result.

These three cases are of the greatest importance in demonstrating that resistance may be purely relative, and the administration of overwhelming doses of penicillin will save life where smaller doses will fail. Close co-operation with the bacteriologist is essential in the treatment of such cases.

To minimize the risk of meningeal reactions, only pure penicillin of a concentration of 1,660 units per mg is used for intrathecal injection, and to lessen the even greater risk of introducing infection by a penicillin-resistant organism each dose is made up separately in a sealed ampoule. One reaction in the form of convulsions was noted in the 10-months-old infant, three convulsions occurring immediately after the sixth and last intrathecal injection. The child appeared very shocked during the reaction, but made a rapid recovery.

A problem which the physician often faces in treating meningitis is to decide on the line of action to be taken if a turbid cerebrospinal fluid is withdrawn and no immediate expert bacteriological opinion is available. The introduction of penicillin into the cerebrospinal fluid is not without risk, and it appears to be unnecessary in meningococcal meningitis. The risks are very slight, however, if the precautions I have previously mentioned are taken. My practice is to wait for a bacteriological diagnosis, if one can be obtained within a few hours, before giving intrathecal penicillin. If this is not available 10,000 units of penicillin are given intrathecally pending a bacteriological diagnosis on fluid previously removed. In very ill patients penicillin is given intrathecally immediately turbid fluid is withdrawn.

Carbuncles

Thirteen cases of carbuncle have been treated. Nine uncomplicated cases responded rapidly to 30,000 units given four-hourly. A disappearance of malaise and toxic symptoms occurred after 24 hours, and there were signs of local improvement on the second or third day. Treatment was continued for from five days in the smaller carbuncles to seven to nine days with large carbuncles. More recently, excellent results have been obtained by the administration of 100,000 units twice daily to a number of patients not admitted to hospital. Four cases had complications—two with staphylococcal septicaemia and bronchopneumonia and two with diabetes mellitus. The former were gravely ill, but made remarkable and rapid recovery with moderate doses of 15,000 units three-hourly for 14 days. These patients were treated early in 1945, the larger doses available later would have resulted in a more rapid response. One of the diabetics, treated with 40,000 units four-hourly for 7 days, relapsed with a slight flaring-up of the local infection. She quickly responded to a second course. The second case required 30,000 units four-hourly for 12 days. It would seem wise to continue the penicillin course in a diabetic for a longer period than in an uncomplicated case.

Before summarizing the more important general points I should mention that we were not able to convince ourselves that systemic penicillin influenced the course of the six cases of acute haemorrhagic nephritis so treated.

Summary and Conclusions

The following are the more important points that have arisen in our experience during the treatment of cases with systemic or systemic and local penicillin.

- 1 A bacteriological diagnosis should be obtained whenever possible and penicillin sensitivity tests on the organism carried out. This should not delay the institution of treatment in urgent cases, which may be started while bacteriological investigations are in progress.

- 2 Intermittent intramuscular therapy is our method of choice, injections being given four hourly. The usual dose in adults is 30,000 units four hourly, with 60,000 units four-hourly in severe infections. The present tendency is further to prolong the intervals with increase in dosage. More work on these lines is necessary.

- 3 The volume of a single dose should not exceed 1 ml. Up to 250,000 units of the penicillin at present supplied (1,400 to 1,500 units per mg) can be dissolved in this amount of distilled water.

- 4 Intrathecal therapy should be undertaken with the strictest aseptic technique, only pure penicillin of 1,660 units per mg should be used. Each dose should be made up separately in a sealed glass ampoule.

- 5 The scope of penicillin treatment should include that group of organisms previously classified as penicillin resistant. Tests for penicillin sensitivity should be carried out in concentrations up to several hundreds of units of penicillin per ml before resistance is considered a contraindication to treatment. This conclusion I consider to be of the greatest importance.

Penicillin therapy calls for the highest standard of diagnostic technique from the physician, and for an experimental and scientific approach to each case under treatment. A constant survey of the results obtained with given dosages for the various diseases is necessary until the position regarding optimum dosage and method of administration is stabilized. This may not be for some years.

The demands on the pathologist are increasing and will continue to increase with penicillin and allied therapy. His laboratory must be adequately staffed to meet these demands. The pharmacist is an indispensable member of the "penicillin team" and must be able to deal adequately with all forms of penicillin preparations, including those in non-hospital practice calling for a licence under the Therapeutic Substances Act. His pharmacy must be equipped at least up to the standard demanded by the Act.

More Recent Experience

Since November, 1946, when this paper was written, twenty adults suffering from pneumonia have been treated by the systemic administration of 250,000 units of penicillin at twelve-hourly or eight-hourly intervals. These cases were not selected, as were those of the paper, on grounds of clinical severity but were consecutive patients suffering from pneumonia admitted to two medical wards. Of the twenty cases, sixteen were classified as lobar pneumonia and four as bronchopneumonia. A radiological diagnosis was obtained in each case. Three cases were treated by 250,000 units twelve-hourly. One (pneumococcus) responded satisfactorily, two (*Streptococcus viridans*, penicillin-sensitive) gave responses delayed to four and seven days, as shown by the temperature, pulse, and clinical condition.

On the experience of the two latter cases the dosage was increased to 250,000 units eight-hourly for an average of six days. Of the seventeen cases so treated, thirteen were

classified as lobar pneumonia and four as bronchopneumonia. The predominating organisms were pneumococci and a mixed catarrhal flora. The patients' ages ranged from 16 to 87 years (two cases), with an average of 50 years. There were fifteen recoveries and two deaths. One of the two fatal cases, a man of 45, was admitted in a semi-conscious condition with severe toxæmia and congestive cardiac failure. He died within eighteen hours of admission after receiving two injections of 250,000 units of penicillin. The second fatal case, a man of 87, died on the seventh day of treatment from congestive cardiac failure, with auricular fibrillation and arteriosclerotic myocardial degeneration, after an initial apparent response to therapy. The fifteen patients who recovered all showed an excellent response to penicillin treatment. The temperature and pulse fell by crisis, and there was a great improvement in the clinical condition with loss of toxæmia in an average of thirty-six hours from the beginning of treatment. The average duration of stay in hospital of these patients was fourteen days.

My thanks are due to Dr B. Gottlieb, senior resident physician at St. Alfege's Hospital, for the invaluable help he has given me in preparing this paper, and to many other members of the medical staff who have assisted in the treatment of these patients. I am grateful to Dr E. N. Allott, of the Lewisham Group Laboratory, for his generous co-operation and advice which have meant so much to us in developing penicillin treatment. Finally I would thank Mr. White, the chief pharmacist, whose skill and ingenuity in dispensing this new and labile substance in all its forms have been a stimulating example of the high pharmaceutical technique we now expect from our pharmacists.

THE PLACE OF UNILATERAL RENAL DISEASE IN HYPERTENSION

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Until recently hypertension has been the province of the physician and, apart from blood-letting, its treatment has been mainly rest and a restriction of activity. Now, however, there is a surgical approach to this very great problem, and attacks have been made along both direct and indirect lines. *Direct* In cases in which unilateral renal disease has been found it may be assumed that this plays some part in the genesis of the hypertension, and the offending organ may be excised in an endeavour to remove this cause. *Indirect* By interruption of the sympathetic nervous system a lowering of the blood pressure has been obtained. All operations of this type have their effect irrespective of the aetiology of the hypertension, and do not attempt to remove its cause.

This paper is concerned with the direct line of attack. It has been our routine to perform excretion pyelography in every case of severe or considerable hypertension which has come under investigation. If at this examination both kidneys do not show a normal contour of pelvis and calices, then further investigation by cystoscopy and retrograde pyelogram has been undertaken. The following cases of hypertension occurring in association with renal disease have been encountered, and it is desired to put them on record.

Case 1

A flight-lieutenant aged 38 noticed puffiness of the eyelids and swelling of the ankles in June 1943. This persisted and became gradually worse. In September, 1944, he had an attack of acute tonsillitis and at a medical board was found to have a raised blood pressure and albuminuria. For some years he had had frequency of micturition. He was admitted to an R.A.F. hospital on Jan. 12, 1945, and was seen to be a well-nourished man with no demonstrable oedema. The blood pressure was 215/140. The heart sounds were normal. Nothing abnormal was found in chest and abdomen. The blood urea was 33 mg per 100 ml. Van Slyke: first hour 85%, second hour 92%. There was no albumin or deposit in the urine. A radiograph showed a calculus in the pelvis of the left kidney. He was given 21 days' leave and returned to hospital on Feb. 13. A radiograph showed the calculus to be in the same position. Blood urea, 38 mg per 100 ml. Blood pressure 190/130.

On Feb. 18 the left kidney was exposed through a curved loin incision. It appeared normal in size and consistency, but was rather adherent to the perinephric fat. The pelvis was cleared and opened posteriorly, and the stone was removed. A bougie was passed down the ureter easily and the opening in the pelvis was sutured. The wound was closed and a rubber drain inserted. He passed some blood stained urine the following day, and there was a slight leakage from the drainage-tube for the first three days after operation. Convalescence was satisfactory. On March 14 the blood pressure was 180/120.

Case 2

A wireless operator aged 25 with 4½ years service began to have headaches about June 1944. These became more frequent, and about the beginning of May 1945 he noticed that the left side of his field of vision was blurred. His appetite was good, weight steady and bowels regular. There were no urinary symptoms. Past history revealed nothing relevant.

On May 30 he was admitted to an R.A.F. general hospital overseas. His right vision was 6/6, left vision 6/6. The fundus of the right eye showed a cotton wool like horseshoe shaped area enclosing the macula nasally and the disk was oedematous. There were one or two small haemorrhages and a patch of exudate in relation to the superior nasal vessel. The left fundus showed similar changes. The urine contained albumin +. The blood pressure was 210/160. Urea concentration was 78% of average normal. Two years previously he had been rejected for flying duties because his blood pressure was raised (amount not stated). On June 18 he was transferred to an R.A.F. hospital in England with a diagnosis of malignant hypertension.

On admission his general condition was good. The tongue was clean, pulse 100, blood pressure 260/180. The apex beat was in the fifth space, outside the mid-clavicular line with a thrusting impulse but no bruits and the artery walls were thickened. The lungs were normal. The liver, spleen and kidneys were not palpable. Examination of the central nervous system revealed nothing abnormal, the jerks were brisk. The disks were substantially as above, with commencing papilloedema of the right eye. There was defect in the left upper outer quadrant of the visual fields.

Investigations—Urine specific gravity 1020, albumin +. Urea clearance: first hour 2.26 g, Van Slyke 133%. Second hour 2.3 g, Van Slyke 129%. Blood urea 33 mg per 100 ml. Midstream specimen urine showed a moderate number of red blood cells, calcium oxalate crystals, epithelial cells and several granular casts, culture was sterile. Blood count: R.B.C., 4,800,000, haemoglobin, 94%. Excretion urography showed a slight degree of hydronephrosis of the left side, with no excretion on the right side up to 60 minutes. (See Fig. 1) Cystoscopy showed the bladder mucosa to be normal. Both ureteric orifices were normal. A catheter was passed up the right side without obstruction to 20 cm and 35 ml of sodium iodide 12% was injected. Radiographs revealed a small kidney with a marked hydronephrosis, and a diagnosis of hypoplastic kidney was made. (See Fig. 2) Despite continued rest in bed the blood pressure remained raised, the lowest recorded was on June 29, when it was 235/145.

On July 10 the right kidney was exposed through a curved loin incision. It was represented by a shell of tissue only.

and there was a fair-sized funnel shaped hydronephrosis. The kidney was removed (See Figs 3 and 4). The next day the blood pressure was 118/76. Apart from a little blood-stained urine, the patient had passed nothing since the operation. He

of urine. On the 13th the blood urea was 100 mg per 100 ml and from then onwards it gradually fell until on July 24 it was 34 mg per 100 ml, and the output and intake were normal. The blood pressure was 140/80.

On Sept 4 the headaches were much better. The sole complaint was of slight vertigo on getting up suddenly and some discomfort over the nephrectomy scar. Urine n.d., no deposit culture sterile. The blood pressure was 140/100. Ophthalmic report: There is some sheathing of the vessels where the exudates have been and a scotoma of the left eye but no signs of active retinopathy.



FIG 1—Case 2—Excretion urography, 15 minutes, showing slight degree of hydronephrosis on the left side. No excretion on the right. Calcified glands at level of transverse process of third lumbar vertebra, right.

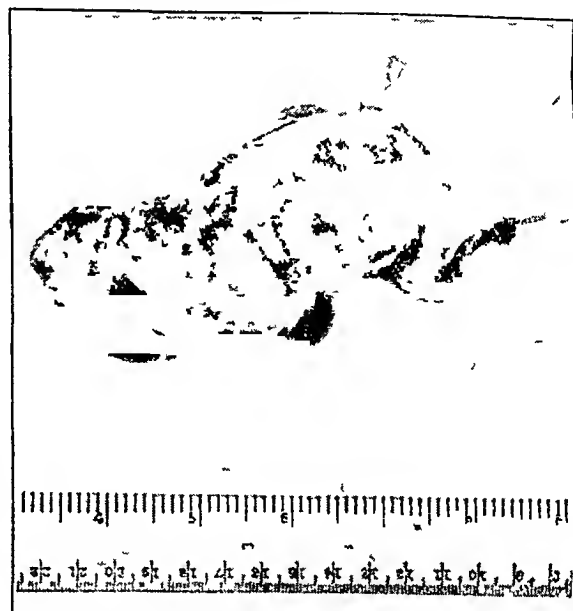


FIG 3—Case 2. Photograph of removed kidney. There was no mechanical obstruction of the ureter.



FIG 2—Case 2. Retrograde pyelogram on right side. Tip of catheter to level of second sacral segment. Bizarre pelvis with small renal shadow.



FIG 4—Case 2. Specimen cut open. Practically no renal parenchyma left.

Case 3

LACW aged 27, with 4 years' service reported sick on July 13 1945 complaining of blurring of vision and headaches, she was admitted to hospital. For some two years she had had bilious attacks consisting of violent headaches and vomiting. The attacks lasted about 12 hours and then cleared up for a period of from two weeks to two months. The present attack had begun 7 days before and in 4 days the vision had become blurred. There was nothing in her past medical history of significance.

On examination her general condition was fair. The left vision was 6/8 the right vision 6/24. Nothing abnormal was seen in the lungs and abdomen. Neither kidney was palpable. The pulse was 100 and blood pressure 260/210. Heart

was given 2 pints (1.14 litres) of sodium sulphate, followed by glucose-saline. On July 12 he began to pass some urine. The blood urea was raised to 120 on the 11th, on the 12th it was 160 and the blood pressure 140/92. He passed 71 oz (2 litres)

sounds triple rhythm at apex, aortic second 4-4. Urine albumin faint trace, centrifuged deposit—epithelial cells only, culture sterile. Urea clearance first hour 76%, second hour, 74%. The blood urea was 39 mg per 100 ml.

Ophthalmic report. Bilateral swelling of the nerve head with scattered patches of exudate. No hemorrhages seen. The vessels appear somewhat attenuated. The fundus appearance are those of malignant hypertension.

An intravenous pyelogram revealed no function on the left side. The outline of the right kidney pelvis and calices was normal. On cystoscopy the right ureteric orifice was normal, no orifice was seen on the left side.

At operation on Aug. 8, 1945 the left loin was explored. A curved loin incision was made and the renal space opened and examined. There was no evidence of a kidney. The suprarenal gland was identified. The extraperitoneal space on the left side was explored down to the pelvis, no evidence of kidney. The wound was closed with drainage. The blood pressure on Oct. 16 was 260/200. On Oct. 31 the patient proceeded on sick leave pending discharge from the Service and died at home in the street three weeks later.

Discussion

When a new treatment or a new conception of an old condition is introduced it has at least a temporary vogue and unilateral renal disease as a cause of hypertension has been no exception. A number of papers have appeared, some with an extensive series of cases, describing hypertension relieved after nephrectomy for unilateral renal disease. On analysing these cases the majority are seen to fall into the group of mild hypertension and vice versa. It has been claimed for the treatment if the blood pressure has been reduced by as little as 20 mm Hg. It is well established that a period of complete rest in bed with appropriate dietary care, especially if accompanied by a major operation, will be followed for a time by some fall in blood pressure. Most of the published cases fall into this class. Often there has not been a clear-cut urological indication for the nephrectomy, and its performance has had only a slight temporary effect on the hypertension.

In our first case the patient had a relatively mild hypertension. On excretion urography and on direct examination excretion at cystoscopy both kidneys appeared to be functioning normally. It was therefore not considered justifiable to remove the kidney. The blood pressure fell slightly after operation, and from the time the patient was first seen it had been reduced from 215/140 to 150/120. It is not considered that this was in any way attributable to the removal of the stone from the kidney, for the fall is not more than would have been expected from the combined effect of rest in bed and a major operation.

In Case 2 there was a dramatic fall in the blood pressure after nephrectomy. In addition symptoms subsided completely and there was a remarkable clearing of advanced retinopathy. In view of this there would seem to be no doubt that the hypoplastic kidney was intimately concerned with the production of the malignant hypertension. A case of hypertension was described by Schwarz (1924) in which a hypoplastic kidney was found post mortem. Higbee (1944) reported two cases of congenital renal hypoplasia with hypertension, and both of these were relieved after nephrectomy.

In renal hyperplasia there is an immature or rudimentary kidney. It must be differentiated from renal agenesis, as in Case 3, where no kidney tissue is present, and from renal aplasia in which rudimentary kidney tissue exists without any collecting system. There is a thin rim of parenchyma which secretes urine of varying amount and quality. The calices may be normal or bizarre, and the pelvis may be hydronephrotic or quite small and bulbous in shape. The ureter is usually normal. As a general rule

the kidney is too poor in function to excrete the sufficient concentration to give a picture after an intravenous pyelogram, so that a retrograde pyelogram is necessary to show the configuration of the pelvis and calices.

The hypoplastic kidney, like all other congenital abnormalities, is liable to become infected, and this may be repeated attacks of infection or a chronic infection which both macroscopically and microscopically alter the kidney. Histologically the glomeruli are usually small and scanty, some may be hyalinized. The epithelial lining of the tubules is degenerated and it may be difficult to distinguish the appearance from the atrophic changes due to about pyelonephritis in a non-malignant form. Lowie (1934) states that almost every hypoplastic kidney contains pyramids and that nephrectomy is necessary to relieve it. In our case there was no renal symptom, nor was there anything in the post-mortem findings to suggest that there had been.

The most widely accepted explanation of the cause of hypoplasia is that the foetal kidney developed out of its development to give an immature kidney. There is in effect an end-organ malformation. The renal hypoplasia is of a nature of congenital origin, and the time of development is probably the development of the kidney.

In Case 3 the patient had a long history of hypertension and no evidence of a left kidney was found. It was therefore not justifiable to think that there might be one of renal aplasia, and if so, that the left kidney was the cause of the hypertension. After failure of treatment with the patient and his parents, the only alternative to the operation was to undertake a conservative one.

The case illustrates the need for a careful investigation in hypertension. In Case 1 the operation was successful, could only have been done by a direct approach, and have had a direct effect on the hypertension. The stone had been removed. The renal lesion was the cause of the hypertension, and the effect of the removal of the stone could be expected to be followed by only a temporary lowering of the blood pressure.

In Case 2 there was a dramatic fall in the blood pressure after the removal of the affected kidney. Such a fall in the remaining kidney was temporarily followed by a fall in blood pressure and failed to excrete for a period of 6 hours. Although the case was followed up for only a few months after which time the patient returned to Argentina, there is no doubt as to the immediate effect of the surgical treatment. In the third case the exploratory operation was purely speculative and entirely unproductive.

It would appear that unilateral renal disease is not a common cause of malignant hypertension, but it does undoubtedly occur. Investigation of the renal tract must therefore always be considered. If a unilateral disease of the kidney is found it should be treated according to accepted urological standards and operation should be performed with a view to treating the renal lesion rather than the hypertension. Treatment should not be refused because of high blood pressure or advanced cardiovascular disease. In some cases the dramatic beneficial effect of a nephrectomy will undoubtedly make justifiable surgical intervention in a poor-risk subject, and may prolong life or even effect a cure in an otherwise fatal disease.

Summary

Three cases of unilateral renal disease, including hypoplasia and agenesis associated with hypertension are described. Removal of the calculus did not materially affect the blood pressure.

Removal of the hypoplastic kidney produced a dramatic fall in blood pressure, and this remained low over the period of some months during which the patient was observed post-operatively

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ARSENICAL ENCEPHALOPATHY

AN UNUSUAL CASE OCCURRING IN THE TREATMENT
OF CONGENITAL SYPHILIS

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The onset of acute cerebral symptoms occurring during, and attributable to organic arsenical therapy is a well recognized but rare clinical condition

Arsenical encephalopathy was first described by Almkvist (1911) Fischer (1912), and Kannengiesser (1912). Its incidence is given by various authorities as follows. Only 8 cases are recorded from 800,000 intravenous injections of organic arsenicals given to the British Army in the 1914-18 war (*Brit Encyc med Pract* 1939). Glaser, Imerman, and Imerman (1935) estimate the mortality secondary to neurological involvement in standard arsenical therapy as 1 in 5,398. The incidence of arsenical encephalopathy is increased in the intensive treatment of syphilis, Stokes, Beerman, and Wammock (1943) estimate the mortality in the five-day treatment of syphilis as between 1 in 200/300. Rattner (1943) describes 481 cases of syphilis treated with 0.24 g mapharside by intravenous drip given daily for 5 days in which 3 cases developed cerebral symptoms without fatal result. Craige and Sadusk (1944) report 74 cases of early syphilis in which no cerebral complications occurred following the same course of therapy. However, Goldstein, Stolman and Goldfarb (1943) give the incidence of arsenical encephalopathy as 1.3% in intensive mapharside therapy.

We should like to present a case of arsenical encephalopathy occurring in a young adult with congenital syphilis, in whom we adopted the treatment suggested, and used with much success, by Ransome, Paterson, and Gupta (1945).

Case Report

The patient, a soldier with no overseas service was admitted to this hospital on March 12, 1946, for surgical treatment of a right inguinal hernia. His age was 20, his general condition and physique were satisfactory. On examination he was found to have a left interstitial keratitis and iridocyclitis, and he gave a history of "inflammation of the eyes" for the past nine years. The Wassermann and Kahn reactions were both positive on two occasions in March, 1946. The hernia was treated successfully by radical surgery, and the following antisymphilitic therapy was adopted.

Local treatment consisted of subconjunctival injections of penicillin (500 units per ml) penicillin drops 2% atropine drops, and hot bathings. Systemic treatment was started on March 14 with 3-hourly intramuscular injections of penicillin—a total of 17 mega units being given. Arsenical therapy was begun on the 30th, 0.3 g neoarsphenamine being given twice weekly for 5 weeks, ending on May 10. A second similar course was started on July 5, the fifth injection of 0.3 g neoarsphenamine being given on the 19th. There had previously been no toxic reaction of any kind, and the eye lesions were slowly improving.

On July 20 he complained of malaise and frontal headache, which lasted until the next day, when he developed epileptiform convulsions. The aura (elicited on later questioning) consisted of "spots before the eyes". He fell on to his back, uttered a cry, and became unconscious. He then developed generalized spasticity with opisthotonos, and became deeply cyanosed. This stage lasted about a minute. It was followed by generalized clonic movements lasting 4 minutes and accompanied by severe tongue biting and incontinence of urine and faeces. Consciousness was regained after 30 minutes, but he had no recollection of the attack except for the aura. Six similar convulsions occurred during the night, and

between these he remained semicomatose and vomited profusely. He was first seen by us while he was having these fits, and thereafter was under our care.

On examination (July 21) the patient was comatose. All tendon reflexes were absent, and the abdominal reflexes could not be elicited. There was a bilateral extensor Babinski response but no ankle or knee clonus. There was no neck rigidity or Kernig's sign. He had a conjugate deviation of the eyes to the right, the right pupil reacted to light, but the left pupil was dilated under the therapeutic influence of atropine. The blood pressure was 135/90. No physical signs were found in the other systems. The urine contained no albumin, sugar or acetone bodies. There was no evidence of purpura, other skin lesions or jaundice. On lumbar puncture the CSF was under 90 mm pressure, there was no spinal block and the fluid was clear and colourless. 2 lymphocytes per cmm, 170 nig protein per 100 ml, 708 mg chloride per 100 ml, Lange curve, 0123555544, culture sterile, Wassermann reaction negative. The blood sugar was 117.6 mg and the blood urea 47.1 mg per 100 ml. The haemoglobin was 110%, RBC 6,000,000, WBC 11,600 (polymorphonuclears 71%, lymphocytes 23%, monocytes 6%). No malarial parasites were found in the blood on thick and thin films.

A provisional diagnosis of arsenical encephalopathy was made, and treatment was adopted on the lines suggested by Ransome *et al* (1945). They stress the prevention of cerebral oedema by postural nursing by keeping the patient's spine erect, repeated lumbar puncture, calcium thiosulphate, calcium gluconate, vitamin C, and adequate fluid intake. Our patient was sat up in a vertical position, given 1 ml of adrenaline (1 in 1,000) and 1 pint (568 ml) of 20% glucose by slow intravenous drip in an attempt to prevent cerebral oedema. Calcium thiosulphate 0.6 g, 10 ml of 10% calcium gluconate, and 500 mg of vitamin C were each given intravenously at 6 hourly intervals for the first day and then daily. Fluids were given *ad lib* by an intranasal Ryle's tube.

The next day (July 22) the coma gradually deepened and he became cyanosed. There were no signs of congestive heart failure, and venesection was not indicated. Continuous nasal oxygen was given. On the 23rd he was sweating profusely and in deep coma. There were slight neck rigidity and a doubtful Kernig's sign on the right. He had marked twitching of the right arm and leg and the extensor responses were still present. The temperature had risen to 104°F (40°C). One pint (568 ml) of isotonic glucose saline was given by slow intravenous drip to combat slight dehydration. Lumbar puncture was repeated. The CSF was clear and colourless, and the pressure was 90 mm. There were 7 cells per cmm (equal numbers of polymorphs and lymphocytes) and the protein was 110 mg per 100 ml, Lange curve, 0123455433, chlorides, 727.5 mg per 100 ml, culture sterile.

On the 24th the coma was much deeper, the cyanosis more marked (despite oxygen therapy), and he was breathing stertorously. The pupils were fixed to light, and there were slight neck rigidity and a bilateral slight Kernig's sign. All deep tendon reflexes were absent, and there was still a bilateral Babinski response. The temperature had risen to 105°F (40.6°C), where it remained until his death early on the 25th.

Necropsy was performed by Prof P L Sutherland who reported that the cerebral convolutions were slightly flattened and the superficial cerebral vessels congested. The ventricles of the brain contained a little blood stained fluid and the choroid plexuses were deeply congested. Numerous petechial haemorrhages were found on the visceral pleura of both lungs, and there were signs of a terminal bronchopneumonia. The liver and kidneys were normal in appearance and also histologically. Histological examination showed slight thickening of the pia mater. The vessels of the basal ganglia were unduly prominent and some appeared to be thrombosed. There was slight focal demyelination but no other evidence of cerebral lesions. Obermiller (1913) and Stuhmer (1919) state that there may be no pathological changes in arsenical encephalopathy other than cerebral congestion and oedema. The characteristic lesion, however, in this condition is multiple plugged capillaries with petechial haemorrhages and surrounding necrosis and demyelination (Russell, 1937, Strauss and Globus, 1930, Alpers, 1928).

Differential Diagnosis

We consider this case to be one of arsenical encephalopathy for the following reasons. There was no personal or family history of epilepsy, there was no previous evidence of cerebral syphilis, and it is very unlikely that he would develop the first signs of this after starting treatment with penicillin and arsenic and in the presence of a negative CSF Wassermann reaction. The blood pressure and blood urea were normal and there was no albuminuria, thus eliminating hypertensive encephalopathy and uraemia. The blood sugar was normal and there was no glycosuria or acetonuria, ruling out diabetic coma or spontaneous hypoglycaemia. The patient did not have any other

Reviews

CHEMISTRY OF MICRO-ORGANISMS

An Introduction to Bacteriological Chemistry By C. G. Anderson Ph.D. Second edition (Pp 500 20s) Edinburgh E and S Livingstone 1946

The Society for General Microbiology, the youngest association of bacteriologists in this country, has since its inauguration in the beginning of 1945 attained a membership of over 550, comprising workers in the fields of medical, veterinary, agricultural, and industrial bacteriology. At a recent symposium it was made abundantly clear that these workers, attacking their various problems from their own standpoints, were inspired by a common desire for fundamental knowledge of the mechanisms by which bacteria and the lower fungi live and produce their effects. Much of this knowledge has been obtained by the study of bacterial enzymes and fermentation products, of factors essential to the growth of bacteria, and of components obtained from organisms by chemical fractionation. The advances of the last ten years have been striking, and it is therefore an appropriate time for the appearance of a second edition of this useful volume.

The 500 pages of the book represent an increase of some 220 pages on the first edition, an increase largely accounted for by new chapters dealing with antibiotics and chemotherapy and by considerable expansion of those sections describing the advances in enzyme chemistry and bacterial nutrition which have made possible a rational approach to the practical problems of disinfection and treatment. Part I is devoted to a general account of the physicochemical properties of bacteria and fungi. Part II, the main section of the book, on bacterial metabolism, includes in addition to the work already mentioned descriptions of the mechanisms and products of fermentation and accounts of the proteins, polysaccharides, lipoids, and pigments of micro-organisms. Part III contains a short account of certain aspects of immunochemistry. In place of a detailed bibliography the author gives at the end of each chapter references to selected monographs and reviews. This book, carefully planned and clearly printed, succeeds well in its object of presenting a concise survey of a widening field. It is likely to find a place close to the hand of most bacteriologists.

JUVENILE SKIN DISEASE

Skin Diseases in Children By George M. MacKee, M.D., and Anthony C. Cipollaro, M.D. Second edition, revised and enlarged. With contributed chapters (Pp 448, illustrated 37s 6d) London Hamish Hamilton Medical Books

Although revised and enlarged this handbook on skin diseases in children preserves its original characteristics. Most of the usually described dermatoses are included, and there is nothing much in the text to distinguish it from a textbook of skin diseases not limited to the first decade or so of life. The chief omissions are senile pruritus and the cutaneous epitheliomata, which, while prone to attack the ageing dermis, are hardly known to affect children. The authors have, however, found room for a brief notice of the sarcomata, which are not quite so rare at this epoch. But on the whole there is very little real distinction to be drawn between the dermatoses of childhood and those of more advanced years, and it is rather an artificial classification to try to separate them off from the main body of cutaneous disease. However, if we accept the authors' objectives we must admit that they have produced once more a good account of their subject.

As is proper in a book devoted to juvenile skin disease a great deal of space is taken up by the discussion of atopic dermatitis and eczema in childhood. To a certain extent the authors appear to be obsessed by patch tests, but it seems difficult to understand their importance when it is stated that a positive skin test does not necessarily prove that a particular atoiden is the causal agent while, as is well known, a negative reaction does not exclude it. Another disease, acne vulgaris, the bugbear of adolescence, is also fully dealt with. Much importance is attached to restriction of diet, and after reading the formidable list of foods which are to be avoided by acne patients, one

may feel the consolation that acne ought to be becoming rare in this country, for the list comprises practically all the articles of diet which, owing to the war and its consequences, are regretably scarce to day.

We must once more comment on the excellence of the illustrations—almost all photographic reproductions. There is no doubt of the advance in photographic technique in the last twenty years, and it is fully reflected in the improved illustrations of many medical works, perhaps dermatological subjects have profited more than other branches of the art. In this particular work there is only one coloured plate—the frontispiece—and it cannot be said that it compares favourably with the monochromes. The quality of light and shade and modelling obtained in the ordinary straight photograph is still superior to that in reproductions in colour.

NEUROLOGICAL SURGERY

The Principles of Neurological Surgery By Loyal Davis, M.S. M.D. Third edition, thoroughly revised (Pp 540, illustrated 37s 6d) London Henry Kimpton 1946

It is already well known that this book presents to the student or to the tyro in neurosurgery all that he needs to know of a rather specialized subject, and moreover that it makes enjoyable reading. When looking through the third edition, therefore, we turn to subjects upon which views have changed or new knowledge has been added in recent years, and we find the same well-balanced, level-headed summing up of the opinions and practices at the present day, and the same nice judgment about the amount that the student needs to know in order to enable him to understand the processes of disease and to recognize the cases which demand expert attention, without making any attempt to turn him into an expert or to force upon him the over-enthusiasm of the specialist. These remarks apply particularly to the sections on intracranial abscess, aural vertigo, spinal cord injury, herniation of the intervertebral disks, peripheral nerve injuries, and essential hypertension.

The surgery of the nervous system terrifies many a student, because he is given to understand that the field is so vast and the problems are so intricate that it is a hopeless task—he is defeated before he attempts to attack it. This book, which includes within its 540 pages the essentials of the anatomy, physiology, and surgery not only of the central nervous system but of the peripheral and autonomic nervous systems also should give him hope and encouragement in making the attempt, and will certainly give him a grasp of the subject, if not an active interest in it, as the reward for his study of its contents. The work remains a splendid testimony to the author's wide experience, sound judgment, and literary skill.

HANDBOOK ON SOCIAL WELFARE

Health and Social Welfare (Pp 528 25s) London and New York Todd Publishing Co., Ltd. British distributors George G. Harrap and Co., Ltd.

The publishers say they are more confident than ever that this, the third issue of their handbook, "adequately fills a very real need in the equipment of all engaged in any of the many branches of social service." There is no doubt that the number of potential users of such a book is rapidly growing, and they are not likely to be disappointed when they turn to it for help. Section 5, Unofficial Statements, of this hand- somely produced volume begins with the Association of Occupational Therapists and ends with the "YWCA." Full lists under the several Ministries are given of officially appointed committees and reports. There is a very useful section on careers in health and social welfare, a directory of organizations interested, a section on statistical tables, and finally a 'Who's Who' in health and social welfare. Much out of the way information is given which otherwise would have to be sought at the expense of considerable time and trouble.

Lord Horder, who is the advisory editor, asks in a foreword for the help of readers in making the book more useful in future, and it is with this intention that the following suggestions are made, based on many dips into its pages. In the list of periodicals devoted to the subject there is no mention of the *National Insurance Gazette* which for many years has been the only journal devoted to the problems of the administrators of national health insurance. The Cremation Society

is not mentioned. Though there are many references to societies and institutions for the deaf and dumb there is no help given to those who are asked by deaf people how to get honest and disinterested advice on hearing aids. It would be useful to have if only in a line some indication of the scope of some of the lesser known bodies that are listed—for example the British Health Freedom Society, the Health Practitioners' Association, and the London Health Centre.

There is a valuable summary of health and social welfare legislation and policy written in a severely objective manner and with artistic use of meiosis. In the reference to the new National Health Service it is said that "much of its content and direction will in future be determined by regulations" and in the section on careers the undoubtedly safe statement is made that "the public service will absorb an increasing number of doctors when the Government's national health policy is implemented."

We give this handbook a cordial welcome for it seems to fill a gap in the long line of reference books. Time alone will show whether the faith of its publishers is shared by those whose service it is offered or how far the promise of State control will diminish the number of voluntary bodies whose objects fill so much of the book.

ELECTRICAL CONVULSION TREATMENT

L'Electro Choc et la Psycho-Physiologie. By Jean D. L. (Pp. 169. 250 francs). Paris: Masson and Co.

The author attempts to formulate a neuro-physiological theory of the action of electrical convulsion treatment on human physiological processes in health and disease. He begins by discussing the clinical features of manic melancholia and hebephrenia and their physiological in effect but not formal attention on the hypothalamus as the main centre of disturbance of function. All the effects of electrically induced convulsions on consciousness, on reticulate function, and on the vagal-sympathetic balance are then discussed. Small numbers of patients have been studied experimentally in an intensive way, and the results of the findings are to show that after convulsions there are changes in blood picture, gastric acidity in the concentration in the blood of water, protein, total lipids, calcium and phosphorus, and also in the alkali reserve, leucocytosis, and changes in the electroencephalogram. The changes vary with the time of observation after the convulsion, and are interpreted as showing first a vagal stimulation, succeeded and overborne by powerful sympathetic excitation which is itself followed by a mild but more prolonged vagal effect. The physiological changes are then related theoretically to the therapeutic effects obtained in the convulsion treatment of the affective and schizophrenic psychoses.

The book is heavy reading, since it is written in a discursive style and the author at no point presents his findings and arguments in summarized and self-contained form without their being overladen with discussion. The discussion is, however, often of great interest. There is a wealth of clinical as well as experimental observation, and extensive references to the very large literature relevant to the subject. Much that is said is controversial, and no doubt some of the views expressed will demand revision in the light of later findings. Nevertheless the book is important as the first attempt at a synthesis of the present state of our knowledge of the pathology and therapeutics of the functional psychoses.

The handbook for students and practitioners entitled *Pulmonary Tuberculosis* by Drs R. Y. KERR and B. G. RIGGS was favourably noticed in our issue of June 2, 1945. In preparing a second edition (Edinburgh: P. and S. Livingstone, 1946) the authors have refrained from enlarging the scope of their work, and it can be recommended once again as a concise and up-to-date account of the subject. The increasing use of pneumopercutaneous as a method of treatment has called for more extensive reference to that procedure, and the section on BCG has been expanded in view of the latest reports from Scandinavia and the influential demand for its trial in Britain. The passage into law of the Disabled Persons (Employment) Act, 1944, has been a landmark in the history of rehabilitation, and the provisions of the Act are explained.

BOOKS RECEIVED

(Reviews in this section are by the Editor of the Journal, unless otherwise stated.)

The Common Cold and How to Fight It. By N. D. FAHNEY, M.D. (Pp. 116. 5s. 6d.). London: Medical Books, 1946.

An excellent book for the lay reader by an American ENT specialist, of interest to general practitioners.

Contraception. By M. C. S. S. (D.S. 54th ed.). Revised. (Pp. 112. 5s. 6d.). London: Lippincott, 1946.

The author discusses the various methods of contraception, and the ethical and social aspects of the problem.

The Development of Infantile Anorexia. By P. S. A. D. (Pp. 112. 5s. 6d.). London: The Medical Book Co., 1946.

A book of interest to the general practitioner, and a valuable contribution to the literature of infantile anorexia.

Clinical Practice in Infectious Diseases. By F. H. F. (Pp. 112. 5s. 6d.). London: Lippincott, 1946.

This book is a practical guide to the treatment of infectious diseases, and is of great value to the general practitioner.

Diseases of the Nervous System. By F. H. F. (Pp. 112. 5s. 6d.). London: Lippincott, 1946.

A book of interest to the general practitioner, and a valuable contribution to the literature of nervous diseases.

At Home with Ischemic Heart Disease. By W. H. (Pp. 112. 5s. 6d.). London: Lippincott, 1946.

An excellent book for the lay reader, and of interest to general practitioners.

A Practical Handbook of Pathology for Students and Nurses. By M. A. (Pp. 112. 5s. 6d.). London: Lippincott, 1946.

A book of interest to students and nurses, and a valuable contribution to the literature of pathology.

The Animal Chemistry of the Digestive System. By F. H. F. (Pp. 112. 5s. 6d.). London: Lippincott, 1946.

A book of interest to the general practitioner, and a valuable contribution to the literature of animal chemistry.

First Baby. By W. H. (Pp. 112. 5s. 6d.). London: Lippincott, 1946.

A book of interest to the general practitioner, and a valuable contribution to the literature of obstetrics.

Burns, Scalds, and Frostbite. By G. S. (Pp. 112. 5s. 6d.). London: Lippincott, 1946.

An excellent book for the lay reader, and of interest to general practitioners.

Philosophy and Medicine in Ancient Greece. By W. H. (Pp. 112. 5s. 6d.). London: Lippincott, 1946.

A book of interest to the general practitioner, and a valuable contribution to the literature of philosophy and medicine.

Characterization of Organic Compounds. By F. H. F. (Pp. 112. 5s. 6d.). London: Lippincott, 1946.

A book of interest to the general practitioner, and a valuable contribution to the literature of organic chemistry.

Anesthetic Methods. By G. K. (Pp. 112. 5s. 6d.). London: Lippincott, 1946.

An introductory text book on anesthetic methods, and of interest to general practitioners.

Infectious Diseases. By A. B. (Pp. 112. 5s. 6d.). London: Lippincott, 1946.

An account of the various infectious diseases, and of interest to general practitioners.

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RETURN TO NORMAL

Because of the fuel crisis we were prevented from issuing the last two numbers of the *BMJ* in the normal manner. The result has been a severe dislocation of work. The publication of many articles and of other matter has had to be postponed. An attempt will be made during the next few issues of the *Journal* to make good the loss of space incurred, but even then many correspondents will have to be disappointed. We are confident, however, that readers will appreciate the difficult position in which the *Journal* has been placed and realize that the return to normal will have to be a gradual process.

When it was found to be impossible to make alternative arrangements for printing the *Journal* in parts of the country not at first brought under the fuel ban the possibility was looked into of bringing out the *Journal* in duplicated form. The Secretary of the BMA put at the disposal of the Editor the services of his staff and duplicating machines. By restricting the size of the last two issues of the *BMJ* to two sides of a foolscap sheet it was possible to "print" the normal run of approximately 62,000 copies. A draughtsman in the Finance Department cut the title and the *Journal* device on the stencils. Our two pennican issues were, in fact, entirely a home product and were brought out by the co-operative effort of all departments in BMA House. As the electricity was cut off from the addressograph machines a treadle mechanism was brought into use and the 62,000 envelopes addressed by human foot-power. So the two pennican *BMJs* came out without the consumption of a watt of electricity. In spite of this, as readers by now probably know, exception was taken in certain quarters to the issue of the *BMJ* in any shape or form, even though no fuel and power were used. This extraordinary state of affairs was a symptom of a social malaise which those responsible for producing the *Journal* felt it their duty to resist. *Science To-day*, the *Isis*, and the *Liberal News* were apparently the only other journals which appreciated the fact that there was no legal bar on the production of a journal. The fact that the rest of the periodical Press succumbed weakly to what was nothing more nor less than temporary censorship seems to suggest that this country has lost some of that initiative and enterprise supposed to be characteristic of the British people. The queue habit seems to have got a firm grip upon us, and the readiness with which editors and proprietors of various journals lined up in the queue shows a strange lack of resourcefulness in a profession in which this quality is usually in high demand. We would like to thank those readers who have appreciated the fact that the

Journal was not bluffed into inaction. We publish in this week's Correspondence pages a few of the many letters we have received.

PREFRONTAL LEUCOTOMY

The Board of Control report¹ on prefrontal leucotomy marks a stage forward in the establishment of this method of treatment in its proper place in psychiatry. The report gives a comprehensive survey of the results of treatment at many centres, as judged by many observers and passionately discussed. Many difficulties, in shortage of staff and otherwise, had to be contended with and rob the factual data of some of their value, for it is clear that while some centres sent in detailed accounts of individual patients others reported only in the baldest terms. An inquiry form was issued to every county and borough mental hospital and registered hospital, and to most of the licensed houses. Completed returns were received from all the hospitals which had undertaken the treatment up to the end of 1944. It is of interest that these included one-third of the total of 97 mental hospitals and 6 of the 13 registered hospitals, this shows how widespread the use of the method has already become.

The report analyses the results in 1,000 patients, 348 males and 652 females. Of these the largest single group were the schizophrenics—599 cases. It was not possible to subdivide these by diagnosis into paranoid, catatonic, and hebephrenic types, which would have been a matter of great interest. After the operation approximately 5% of them died, and 25% could be discharged from hospital, the others had to remain in hospital, 36% of them in an improved state. Of the whole group over 60% could be regarded as improved, and 16% were counted as recovered. There was a small relapse rate, amounting to no more than 4% of the total material. Considering the gravity of the disability in these patients, mostly chronic cases in which no other method of treatment offered any hope at all, the results are encouraging. They were still better in the 250 manic-depressive patients, in whose number an unknown proportion of involuntal melancholics are included. Of them 8% died, but nearly 80% were improved. Over half could be discharged from hospital and 45% were regarded as recovered. A miscellany of other conditions had also been treated, including epilepsy, mental defect, and post-encephalitic states. In them the results were less striking, except in the obsessional neuroses, of the 29 obsessional patients 2 died, 1 failed to improve, and 23 were discharged from hospital, 17 of them being counted recovered. These findings support the results observed by many individual workers in the past. Of all chronic and incapacitating psychiatric conditions the severe obsessional neuroses respond best to leucotomy, the affective psychoses next best, and the schizophrenias though favourably on the whole, least well.

There are some interesting correlations with age and sex. On the whole the men did rather better than the women in both schizophrenic and manic-depressive groups, and the

¹ *Prefrontal Leucotomy in 1 000 Cases*. Board of Control (England and Wales) H.M.S.O. London 1946.

older age-groups had better discharge rates than the younger. In both the two large diagnostic groups the discharge rates for men are strikingly higher than for women over the age of 35. The duration of the illness is also shown to be of prognostic importance. The proportion of patients discharged recovered or improved after leucotomy in the first two years of the illness is very much higher than when the operation is performed later on. In the schizophrenics the rate drops from 56% and 47% in the first two years to 20% in the next three, in the manic-depressive group the rate falls off much more gradually from 74% and 59% to 47%. However, both in the schizophrenics and manic-depressives there is a discharged improved rate of about 10% even in patients who have been ill for ten or twenty years. These figures show that there is much that is still to be learned about the indications for treatment in chronic psychotic conditions.

The report goes on to give an analysis of the results considered in terms of social behaviour and symptoms. Under the first heading a considerable proportion of patients were classified as citizens—i.e., earning their living, managing their homes, or otherwise taking a normal place in the community. For the grave disabilities which have been treated by leucotomy this represents a high standard of recovery. Nevertheless 24% of all patients together reached this standard—16% of the schizophrenics, 43% of the manic-depressives, and 55% of the obsessional. High standards of improvement were obtained in respect of violence, difficult behaviour, and working habits, and in only 1% of the whole thousand could the symptoms be called worse after than before the operation. Some symptoms are much more responsive to treatment than others, suicidal tendencies, depression, and agitation were abolished in over 70%, hallucinations, delusions, and excitement in only 20-37%. The occurrence of new symptoms after operation was infrequent, post-operative epilepsy was seen in only 3%. An attempt is made to answer the question whether there are changes in personality after the operation, but the data are insufficient.

The conclusions drawn are that the operation is a simple one for the patient, and the death rate not high when the seriousness of established mental disorder is taken into account. There is remarkable improvement in behaviour in a large percentage of severe cases with poor prognosis. Further study is required to decide whether the results are achieved at the cost of the loss of some finer mental qualities. The operation should be carried out only after careful consideration of each individual case by experienced psychiatrists.

The benefits which result from leucotomy in successful cases underline our present ignorance of principles of selection. Patients have not been generally as closely studied both before and after operation as could be desired, and it is hoped that opportunities in this way will be better used in future. At least two intensive surveys are now proceeding which should add much to our knowledge in this field. But it would be unfair not to admit that the substantial proportion of chronic and otherwise incurable patients whom it has proved possible to discharge from hospital after leucotomy means a great advance in treatment.

GROUNDNUTS IN EAST AFRICA

The present deficiency of fats in the national dietary exceeds 1,000,000 tons a year. The problem is to find fresh sources of supply to make this good. The Government have therefore launched a bold scheme for producing groundnuts in East and Central Africa¹ on 3,250,000 acres of barren land in Tanganyika, Northern Rhodesia, and Kenya. This will bring benefit to the inhabitants of this vast area as well as to Britain. The African economy is based primarily on subsistence agriculture conducted by the primitive method of the hand-hoe. The production by these primitive methods is probably already on the decline, and the welfare of Africans will depend upon their emergence from subsistence agriculture to modern methods made possible only by capitalized development. British and African needs can be met by this long-sighted scheme of the present Government. But unless the urgent problems of health and disease are satisfactorily solved the scheme will not work. Hospitals, village health centres and community health centres are being planned for the benefit of the African native. It is to be hoped that among the many experts consulted the Government has not overlooked the anthropologist, because any system based on Western medicine will come up against the invisible and powerful obstacles provided by the African natives' primitive methods of thinking, as expressed in tribal medicine. Apart from such diseases as leprosy, syphilis, and malaria there is the forbidding aspect of trypanosomiasis, for the area to be developed is the haunt of the tsetse fly. The clearing of an enormous area of uninhabited bush is in itself a stupendous task, but it becomes still more complicated when that bush is uninhabited because it is the haunt of tsetse flies infected with trypanosomiasis. If workers are to be brought in to cultivate groundnuts then it is essential first to eradicate the tsetse fly. That such can in fact be done has been amply demonstrated at Pogg Tamale in the Gold Coast and on an even larger scale in the Anchau corridor in Northern Nigeria. In what has come to be known as the Anchau experiment sufficient time was available for preliminary examinations and surveys, the object being not only to clear tsetses from the area but to shift whole populations and at the same time rehabilitate them. Operations were begun in 1935 and only now are drawing to their close. In Tanganyika time presses. Yet here, also, expert knowledge is absolutely essential if correct measures are to be taken. Rapidity of action is one necessity in eradicating tsetse flies. Tsetses cannot live far from water. In the dry season they breed only in the bush which fringes rivers and streams, but during the rains they spread out from the river banks, often for considerable distances. When the dry season returns they retreat to the fringing forest, except for a few flies which continue to live in isolated thickets in the so-called hard-pan depressions, where there is enough moisture to provide the required microclimate. The work of clearing bush must necessarily be accomplished in the dry season, and the cut wood must be burnt quickly, for if stacks of brushwood

¹ A Plan for the Mechanized Production of Groundnuts in East and Central Africa, H.M.S.O., Cmd 7030 Feb. 1947 1s net

remain till the rains descend ideal breeding-places are provided. Then, too, expert botanical knowledge must be at hand to determine which species of trees must be cut and which may be allowed to remain. In East Africa the tsetse *Glossina morsitans*, for instance, breeds in close association with *Isoberrhina-Brachystugia* woodland (Nash²), but *G. swynnertonii* and *G. palpalis* have different habitats, and selective bush clearing may fail to eliminate *G. swynnertonii* (Bax³). If too much vegetation is removed from the banks of rivers and streams tropical downpours may all too readily cause extensive scouring and soil erosion.

Once tsetses have been eliminated in the selected areas in Tanganyika new villages will have to be built to house the groundnut farmers, new wells will have to be sunk, and new farms created in which mixed farming can be carried on, for adequate diet is essential if the African is to develop his full capacity for work. Fortunately, even though conditions in East and West Africa are not identical, in the Anchau experiment a large-scale model is available to indicate what must be aimed at. As the scheme is put into operation there should be many opportunities for intensive and valuable research. It should be possible, for instance, to determine whether pentamidine is really of value as a prophylactic against sleeping-sickness and to ascertain the best tsetse repellent for use by those engaged in clearing infested bush. Pyrethrins^{4,5} and indalone⁶ are known to have some action in deterring that most persistent of insects, the tsetse fly, from biting, but further investigations are required to ascertain how far the action of these repellents is destroyed by sweating and exposure to sunlight.

The whole Tanganyika project entails the application of preventive tropical medicine on a scale never before attempted in Africa. If proper precautions are taken the outcome of the project should be to provide essential fats and oils for starving Europe and to ensure for many thousands of Africans a better and a healthier way of life.

THE HEART AND BERIBERI

A recent article entitled "Cœur et Béri-Béri," by Dr Jean Casanova,⁷ is probably the most complete mass observation of this condition that has been made. The disease appeared in epidemic form among black Senegalese troops stationed on the Tunisian and Tripolitanian frontier in 1940. Their diet was poor, their work heavy, and more than 300 cases came under observation. It was found in general that cardiac cases with frank oedema, and those partially cured or relapsed oedematous patients with asthenia, nervous symptoms, and mild cardiac disorders only, responded rapidly and uniformly to vitamin B therapy. On the other hand, cases that from the time they were first seen were considered to be of the "dry" type showed marked cardiac lesions which did not respond to therapy and were usually

fatal. It was uncertain whether this group represented relapses from previous oedematous cases or whether they were affected by some other vitamin deficiency in addition to that of B₁, unfortunately it was impossible to carry out extensive biochemical examinations.

Sporadic cases with cardiac symptoms similar to those Casanova describes have been recorded by a number of observers but it has not always been possible definitely to determine that the condition was beriberi, and the recognition of this large group arising in the middle of an epidemic would appear to be a clinical observation of the first importance. It seems hardly correct to label them as the "dry" form, for peripheral neuritis, for example, was absent. A better term would appear to be "subacute cardiac" beriberi. There is considerable evidence that they are really cases of severe cardiac damage in patients suffering from the disease in a chronic subacute form in which the brunt of the attack is borne by the heart muscle. Casanova's investigations were carried out on patients of this last group. Clinically, nervous symptoms were rare, and oedema when it occurred was confined to the tibial region. There was no marked change in the general appearance, and the patients usually complained of lack of appetite and a sense of constriction in the chest. Examination revealed violent and striking pulsation in the epigastric region, praecordium, and neck, a Corrigan type of pulse, tachycardia aggravated by the slightest effort, and a very poor exercise tolerance. The blood pressure was raised in proportion to the rate of the heart beat. Radiologically there was the gross right-sided cardiac enlargement which takes place in this condition, and very striking pulsation in the pulmonary conus and the aorta.

More important, however, were the results of the electrocardiographic examinations. There was no absolute uniformity about these tracings, but, generally speaking, the P waves were accentuated and sometimes distorted, the P-Q interval was increased, and there was a widening of the QRS complex and various inconstant alterations in the T wave. The general indications were of a sinus tachycardia and marked impairment and delay in the passage of the cardiac impulse through the ventricles. The ventricular contractions were often asynchronous. Although the systolic phase is always lengthened in consequence of these changes, the pulse remains rapid by reason of a shortened diastole. The response to digitalis of hearts of this type is peculiar in that administration of the drug increases the pulse rate—a finding which was regarded by Casanova as diagnostic. It was also noted that in two cases which had jaundice the pulse rate was temporarily lowered and the patient improved, but when the jaundice disappeared rapid deterioration set in and death followed. The biochemical investigations were scanty, but in the few cases examined the serum albumin was remarkably high while the globulin was approximately normal. No detailed post-mortem notes are included in this paper.

A recent paper by Allibone and Baar⁸ describes a fatal relapsing case of beriberi occurring in a child in this country. The main clinical features were again noted in the heart and at necropsy the heart muscle showed "such changes as would be expected if a typically acute beriberi heart as described by Wenckebach⁹ were to survive for a longer period." Just as in Casanova's cases, there was resistance to vitamin therapy, sinus tachycardia, large distorted P waves (but in this case the P-Q interval fell within normal limits) and the T wave was absent. The serum albumin was actually lowered, however, and it is clear that

² *Farm and Forest* 1944 5 8
³ *Report on the Work of the Tanganyika Tsetse Research Department since February 1944* 12 pp

⁴ Hotby J R and French M H *Trans roy Soc trop Med Hyg* 1943 37 41

⁵ Holden J R and Findlay G M *ibid* 1944 38 199

⁶ Findlay G M, Hardwicke J and Phelps A J *ibid* 1946 40 341

⁷ *L'Algérie Méd* 1946, 3 203

⁸ *Arch Dis Childh* 1946 21 76

⁹ *Das Beriberi Herz* 1934 Springer Berlin

more information is needed on this point. The post-mortem findings are described in detail, with some excellent photographs, and it is interesting to note that in this case there was an aneurysm of the pulmonary conus, which contained a thrombus. Very full references to the literature are given at the end of this article.

These two papers should be read in full. They show with the greatest clarity how conditions associated with deficiency of the vitamin B complex may produce myocardial changes that are irreversible despite strenuous therapy, and they will prompt speculation as to how often obscure cases of cardiac enlargement and failure may arise from similar causes.

PATHOLOGY OF SUDDEN DEATH

The dramatic exit, while arousing our greatest sympathy for those so suddenly bereaved, is of considerable scientific and medico-legal interest, and it is rarely fully explained by morbid anatomy. Moreover, it may be preventable. To the physician sudden death usually implies an abrupt affair, to the coroner it includes any death within 24 hours of a person's being taken ill unexpectedly. Published studies of the mechanisms involved, and of the underlying diseases responsible, are scanty and usually suffer from lack of adequate clinical data. A recent study of the morbid anatomy of 500 cases of "sudden heart death" by Munk¹ is no exception to this rule. Selection was unavoidable and tended to exclude women and very old people. Figures for sex and age incidence are therefore unreliable, but valuable facts are given concerning sudden death in relatively young and middle-aged men. The term 'sudden death' is not defined, but appears to be used in the wider sense of the coroner.

In the total series of 411 men and 89 women ischaemic heart disease was considered responsible for the death of 79.2%, syphilitic aortitis with stenosis of the coronary ostia for 11%, and valvular lesions for 3.6%. Pulmonary embolism, for which Barnes² held to blame for 2 to 5% of all deaths in hospital, was not mentioned, but may have been considered "non-cardiac". Dissecting aneurysm and spontaneous rupture of the aorta may have been excluded for the same reason. No case of diphtheritic carditis was seen.

On the whole the facts reported confirm what is already well established, though perhaps not widely known. Thus of 141 cases of coronary thrombosis 37 had neither myocardial infarction nor fibrosis, and 60 had fibrosis only. Of 74 cases with myocardial infarction, coronary thrombosis occurred in only 44. Clawson³ recorded 281 cases of myocardial infarction of which 64 had no coronary thrombosis. Thus a clinical and electrocardiographic diagnosis of coronary thrombosis cannot be more than a good guess and should be discarded in favour of myocardial infarction. That there was sudden death in 79 cases (19.9%) of ischaemic heart disease without coronary thrombosis, myocardial infarction, or fibrosis, and in 142 cases (35.8%) with fibrosis only, is of greater interest, for this comprises more than half the group and is contrary to hospital experience. The recorded heart-weights of these cases (245-880 g, average 450 g) indicate that many were hypertensive as well. Clinical studies, according to Riseman and Brown,⁴ usually reveal hypertension in about 50% of cases of ischaemic heart disease. That pure hypertensive heart disease very rarely terminates abruptly (6 out of 500 cases) is of medico-legal importance. The high

incidence of aortic stenosis among patients with V.D.H. dying suddenly (10 out of 18) is in harmony with general opinion.

Perhaps the most important fact which emerges from these observations is that sudden death in the natural course of heart disease is due to myocardial ischaemia in over 92% of cases, usually from coronary atherosclerosis (79.2%), sometimes from syphilitic stenosis of the coronary ostia (11%), and occasionally from aortic stenosis (2%). This fact is not new but is emphasized. Death took place on exertion in a third, quietly at home in a third, and while performing gentle social activities in a third.

The mechanism is assumed to be ventricular fibrillation or asystole. As quinidine has been shown by Wegria and Nickerson⁵ to protect the dog's ventricles from ventricular fibrillation, the prophylactic use of this drug in the types of heart disease mentioned should be considered.

NICOTINE AND FERTILITY

There are now in the literature several papers which show that nicotine when administered daily to animals over a period has some effect on fertility, as indicated by the occurrence of abortion, of premature births, of stillbirths, and of a decrease in the number of young born. There are also a good many reports on human subjects, though these are mostly less convincing than that of Phillips⁶ who established a relation between smoking and immotility of spermatozoa in a young man. When he stopped smoking motile sperms appeared, when he resumed smoking motility disappeared when he stopped again motile sperms appeared again.

Thienes, Lombard, and their colleagues⁷ have now described some experiments in which they have measured the fertility of rats injected daily with nicotine in comparison with that of control rats injected daily with saline. There were three experiments in which, taking the three together, 92 pairs of control rats were compared with 83 pairs injected with nicotine. Of the control pairs only 17% were not fertile over a period of nearly 12 months, while of the pairs injected with nicotine as many as 33% were not fertile. Not only was the percentage of non-fertile rats about twice as great in those injected with nicotine as among the controls, but the number of progeny was much less. Each control pair had on the average 28 young in the experimental period, while each pair receiving nicotine had only 19 young. The doses of nicotine were 2.0 to 2.5 mg per kg given twice a day, and were nearly as large as could be given without causing convulsions. Lombard⁸ has pointed out that the relative daily dose injected into rats in these experiments would correspond to the maximum amount of nicotine which could be absorbed from 40 cigarettes. Lombard's estimate of the amount of nicotine absorbed seems excessive, it would be difficult for the most determined inhaler to take in 7 mg from one cigarette, and there is good reason to believe that a cigarette normally yields about one-tenth of this.⁹ But Lombard assumes that the rat and man are equally sensitive, and again there is good reason to believe that man is much more sensitive to nicotine than the rat.¹⁰ In the effect of nicotine on the hypothalamus, man is from 100 to 200 times more sensitive than the rat. Here then is an important addition to the evidence that smoking is far from being a harmless habit.

¹ *Acta path. microbiol. scand.* 1946, 23, 107

² *J. Amer. med. Ass.* 1937, 109, 1347

³ *Amer. Heart J.* 1939, 17, 387

⁴ *Ibid.* 1937, 14, 331

⁵ *Amer. Heart J.* 1943, 25, 58

⁶ *Hawaii med. J.* 1943, 2, 249

⁷ *J. Pharmacol.* 1946, 87, 1

⁸ *Chron. Nicotinism* 1939, Thesis Univ. S. Calif. Los Angeles

⁹ *British Medical Journal* 1945, 1, 403

HOSPITAL PLANNING AT OXFORD

A Planning Committee of the Oxford and District Joint Hospitals Board has worked out a programme of area hospital planning. Sir Farquhar Buzzard presided over the committee until his death early last year, and since then Prof G E Gask has been chairman of a committee of fourteen, half of whom are medical men. The planned area covers the city of Oxford and almost the whole county, with parts of Berkshire and Buckinghamshire a total population of about 300,000. It is considered that the number of beds for acute sick cases should be 5 per 1,000 population with half this number for chronic sick (the committee prefers to call them long-stay cases), and smaller numbers for cases of infectious disease, tuberculosis, convalescence, and maternity, the total—leaving out mental hospitals—providing for 1% of the population.

In considering the acute sick, allowance has to be made for the special position of Oxford as a teaching centre. The Radcliffe Infirmary, the Wingfield-Morris Orthopaedic Hospital and the Oxford Eye Hospital receive patients from a wide area and Oxford has to provide certain highly specialized services for the region as a whole. It is estimated that 453 new beds are needed in Oxford for the acute sick. At present about half the beds in the ten cottage hospitals in the district are used for the treatment of acute sick, but the committee is opposed to their continued allocation for that purpose and makes suggestions for using them to greater advantage.

The "Long-stay" Cases

All but a small minority of chronic sick or long-stay cases are accommodated in public assistance institutions, and the committee is unanimous in its opinion that these institutions are unsuitable for the nursing of such cases and that the accommodation they afford should be omitted from any summary of available resources. This means that some 700 beds in Oxford and Banbury and the surrounding areas are needed for such cases, all of them to be provided eventually in new buildings, some in new wards or blocks attached to general hospitals, and all of them in close association with such hospitals. Public assistance institutions are judged unsuitable also for maternity cases, for which at present they provide 43 beds, and the establishment of over 300 maternity beds is recommended distributed between the key or primary centre at the Radcliffe Infirmary, the secondary centre at Horton General Hospital, Banbury, and a number of local centres at Abingdon, Didcot, and elsewhere. Sufficient beds for infectious cases already exist and no observations are made on accommodation for the tuberculous because a joint committee of the local authorities concerned is dealing with the problem.

The *Hospital Survey* published last year, called for the reconstruction of most of the Radcliffe Infirmary, and stated that the total number of beds needed for the Oxford hospital could not be provided on the Radcliffe site (*British Medical Journal* 1946, 1, 770). Since the *Survey* was published the city council has added to the hospital services of Oxford by acquiring from the Ministry of Health the Churchill Hospital with accommodation for 312 patients, but it consists of temporary buildings with only a limited life.

The Future of the Radcliffe

The short-term policy recommended in this programme is to continue the alterations at the Churchill Hospital to enable it and the Radcliffe Infirmary to work at full capacity until the new hospital or hospitals can be built. The long-term policy is to build a new hospital at Headington, which would belong to the Radcliffe Infirmary. The future use of the Radcliffe site cannot be determined until the hospital policy of the Ministry of Health and the requirements of the medical school at Oxford are known. It is considered that a maternity unit of 50 to 100 beds should be built on the Manor House site, Headington, where also should be provided a block of about 100 beds for the chronic sick who require further investigation and treatment. There should be on the same site or on the Wingfield-Morris Orthopaedic Hospital site an additional 100 beds for orthopaedic cases. Another requirement is the building of a new eye hospital, the existing one being inadequate and unsuitable. The Churchill Hospital should be retained as an integral part of the

medical services of the area, perhaps for the chronic sick. The Horton general hospital at Banbury should be developed and a maternity unit and, eventually, a block for the chronic sick should be built there.

It is recommended that the cottage hospitals in the area be used for the observation of difficult cases, the nursing of patients under the care of their own general practitioners and the treatment of minor casualties, and they might be developed as centres of all the medical activities in their districts including maternity and child welfare and school clinics. Each of them should have a large room for clinical conferences at which senior members of the parent hospital staff would attend at stated intervals and so relieve general practitioners from professional isolation.

On the general question of staffing, one whole time medical officer (or his equivalent in part-time officers) is recommended for every 20 beds, or 50 for a 1,000 bed hospital.

H M PRISONS IN THE WAR YEARS

REPORT FOR 1942-4

One of the most encouraging features of the latest report of the Prison Commissioners¹ is the account it gives of the revival and growth during the war of the psychiatric activities of the prison medical service. The Medical Commissioner, Dr J C W Methven, reports a further considerable increase in the number of accused persons remanded to prison for mental observation. He again appeals to magistrates and their clerks to send the fullest particulars of prisoners, for the better the background knowledge of the case the lighter the work of the prison medical officer. From a medical point of view the most important event recorded in this report was the reopening of Wormwood Scrubs in 1942 and the resumption early in 1943 of its psychological and surgical work. Dr J C Mackwood was appointed part-time psychotherapist and Dr H K Snell was transferred from Liverpool to assist Dr H T P Young, the senior medical officer, in selecting cases for treatment. Suitable cases have been freely transferred from other establishments.

Investigation and Treatment

Before the war emphasis was laid on the investigation of suitable cases since the reopening it has been laid on treatment. Dr Young states that since 1934 much information has been collected on the type of case likely to be cured by psychotherapy in prison, and on the alternative possibility of bringing about a practical modification of the abnormal psychological processes. Prisoners deemed suitable and complying with the necessary conditions are referred to a psychotherapist for investigation if they have a general desire to undergo it. The numbers are still very small. In 1943, out of 70 male prisoners referred for investigation, only 18 were given full courses of treatment, the others being considered unsuitable either before or after investigation. The results varied from partial to complete relief. This number clearly does not represent the true proportion of prisoners who should be treated individually and, where possible, arrangements are made for some short sentence offenders to attend at a clinic after release. Here again the numbers are not large. Many prisoners prefer to forget their criminal history or will not give up the necessary time, also in certain areas facilities for treatment are limited. Nevertheless with the expected development of the mental health services the number of ex-prisoners receiving treatment should be much increased. Sending prisoners from the prison to public clinics during sentence has not been found satisfactory and is impracticable in cases requiring deep analysis, which may involve attendance every day for about two years.

In some cases anxiety is caused by the fact that the treatment specifically ordered by the court is not pursued because the prisoner is unsuitable. Other prisoners are apt to seize on the court's authoritative direction that they should have treatment as an intimation that they are regarded as not fully responsible for their crimes. For successful psychotherapy in prison one of the essentials is a desire for relief expressed before the crime was

¹ Report of the Commissioners of Prisons and Directors of Convict Prisons for the years 1942-4. H M Stationery Office Cmd 7010 1946 Pp 154 2s 6d

detected. In its absence the prisoner may be merely passively seeking the support of treatment and gratifying his anxiety for self-justification. The psychotherapist is then in the dilemma that if he gives treatment the prisoner will probably use the fact in a similar difficulty later to explain his criminal conduct, if on the other hand it is withheld, the prisoner's resentment may cancel any reformatory or stabilizing influence which the sentence might have had. The selection of cases therefore calls for great care. Moreover, the attempted treatment of unsuitable cases is bound to discredit psychotherapy as a preventive of crime. Again, if the prisoner discovers that the length of the sentence has been adjusted to the time estimated to carry out the treatment he will cease to co-operate. The speed of recovery of a case cannot be gauged before treatment has been started. Dr Young considers that as the scope and limitations of psychotherapy become more generally appreciated, the number of persons suitable for treatment during sentence will substantially increase.

Physical Methods in Psychiatric Treatment

Arrangements were made to transfer to hospital patients suitable for various forms of physical treatment. Two prisoners received insulin shock therapy and one malarial treatment. Through contact with outside authorities, cases of psychosis are thoroughly investigated with a view to physical treatment. Considerable use has been made of electro-encephalography with the help of the Sutton E.M.S. hospital. The tracings are useful in the diagnosis of obscure cases of epilepsy, and may prove valuable in ascertaining psychopathic personality, particularly of the aggressive type.

Dr G. Durrant has been appointed to Holloway as psychiatrist for women. She has examined and reported on many cases and treated suitable patients. A report on her work is promised. Arrangements have been made in prisons for both sexes to extend psychological treatment, and authority has been granted for the appointment of a psychiatric social worker at Holloway and a non-medical psychologist at Wormwood Scrubs. It is hoped that these officers will assist in the psychiatric assessment of prisoners committed to Borstal or to prison, and so enable the Commissioners to provide training according to their needs at Borstal institutions and at special centres, both existing and projected. All prisoners who appear to present some mental abnormality are examined and assessed and favourable cases with sufficiently long sentences are treated. The psychological treatment of prisoners in prison has disadvantages, and Dr Methven looks forward to the great help which will be given by the special institution recommended by Dr Norwood East and Dr de B. Hubert in their report of 1939, when it is provided.

Among recidivist prisoners transferred from Parkhurst to Dartmoor in 1932 were a number of psychopaths. It was decided to see if these men could be made to "float" instead of being nursed along in and out of the hospital. The medical officer explained to them that if they did not behave they would not be immune from disciplinary procedure. His warning worked quite well and the prisoners seemed much happier. Psychopathic behaviour disappeared, and the hospital population was lower than ever before. Firmness and understanding of the difficulties of these men helped them to carry on normally.

Prison Diet

The Ministry of Food helped the Commissioners in the autumn of 1944 to study prison diets. Dr Magnus Pyke studied the diet provided at several representative prisons and Borstals. He reported that, broadly speaking, the diet was not unsatisfactory, the only consistent weakness being some lack of vitamin C. Vitamin A was occasionally deficient and a shortage of fat rendered all the diets bulky. Borstal boys had less vitamin A in proportion to their requirements than the adult prisoners. He suggested that the right to unlimited bread should be restored (this was before bread rationing), and that at least 10 oz (283 g) of carrots be issued to prisoners and 14 oz (395 g) to Borstal inmates every week. He also advised that Borstal inmates should have eggs and more milk. The committee of medical officers which considered his report recommended a substantial increase in the bread issue and the provision of 10 oz (283 g) of carrots a week, also the increase

of the milk ration in local prisons and Borstal institutions to the maximum available in wartime. Dried eggs would, they said, be issued to hospital patients. To deal with the fat deficiency, the committee recommended the issue of 4 oz (112 g) of sausage-meat weekly. Dr Pyke's method of cooking green vegetables to save vitamin C was circulated to all establishments. After seeing the recommendations of the committee, Dr Pyke said they satisfied his criticisms.

Reports of Societies

PRINCIPLES GOVERNING NERVOUS ACTIVITY

HUGHLINGS JACKSON LECTURE BY PROF. ADRIAN

In the Section of Neurology of the Royal Society of Medicine on Jan. 2 Prof. E. D. ADRIAN, O.M., F.R.S., delivered the tenth Hughlings Jackson Lecture. The first lecture was delivered by Hughlings Jackson himself exactly fifty years ago.

Prof. Adrian began with a reference to Herbert Spencer, a philosopher who was too dry forgotten, but who had moulded the thought of his mid-Victorian generation, and whose influence was shown in the development of neurology through his great admirer Hughlings Jackson. The theories and predictions of Hughlings Jackson were based on Spencer, and the illumination which these gave to neurology was as brilliant to-day as ever. Hughlings Jackson was one of the great clinicians of all time, a scientific observer of the first rank, and his theses were still fresh and individual and none the worse for our advancing knowledge. His ideas were cast in terms so general that they applied whatever the detailed structure of the nervous system might prove to be. Many of his writings were published before the neurone theory had been properly formulated. Most of the data of clinical neurology were available then as now, but he had not got our great mass of detailed information about cell structure and cell physiology. We had no Spencer now to give us an accommodating framework, and no Hughlings Jackson to fill in the picture, but we ought to survey our own knowledge from time to time in the light of Hughlings Jackson's theories.

Evolution of the Nervous System

Hughlings Jackson described the evolution of the nervous system as proceeding from the lowest well organized centres to the highest least organized, from the most simple to the most complex, from the most automatic to the most voluntary. The stretch reflex could be instanced as an example of a low level of nervous complexity and the highest degree of organization. A higher level of complexity was shown in the flexion reflex in response to pain in which the synaptic delay was twice as long as that in the stretch reflex. The motor discharge was no longer rigidly confined to one pathway. The painful stimulus had to be avoided if the body was to escape damage, and if the danger signals persisted and increased the avoiding movements had to be more powerful, involving more and more muscles. In the flexion reflex the power of evoking intense and widespread activity was much more important than the precise localization, and this seemed to arise from the less definitely organized arrangement by which the afferent discharge had access to a whole network of internuncial neurones. The multi-neurone arrangement gave the flexion reflex its characteristic inertia and momentum, so that the motor activity increased progressively and continued as an after-discharge. In this reflex an afferent stimulus lasting one second might give a discharge ten times as long, and at higher levels the evidence of long lasting central effects became more and more striking, culminating in the cerebrum, where the results of an afferent message might be stored indefinitely to influence behaviour for many years to come. Thus there were two manifestations of central activity to explain in the lower levels the momentum, the slow rise and the long after-discharge, and in the higher levels the tendency to continue oscillations of cell activity, rhythmic pulsations modified by but not obviously dependent on the afferent signals. The evidence for the pulsations depended on electrical changes rather than on motor effects, but it was clearly a constant feature in cerebral organization.

One hypothesis put forward recently in neuro-physiology related both the momentum and the rhythm to a single cause, namely the widespread connexions formed by the dendrites with internuncial neurones. In this view protracted discharges from the spinal cord were supposed to be due to a continued bombardment of the motor neurones by impulses reaching them by multiple pathways. The idea was attractive at first sight because it could be made to explain so many features of neurological activity, but there was no convincing proof of the reverberating circles in the higher nervous levels, and there was convincing evidence of quite another kind of activity, namely, electrical effects which occurred with an afferent "volley".

The Electrical Hypothesis

The spread of excitation through a mass of nerve cells was guided to some extent by the pathways formed by the dendrites, but it was possible that outside the well organized pathways more diffuse connexions at high levels might depend to some extent on the electrical fields generated by the active areas. This was a different conception from that of the school which thought chiefly in terms of *dendrite connexion and reverberating pathways*. The idea of the association of neurones by electrical rather than by direct neural influence was not new, but some fresh evidence for it had recently appeared. It had been shown that the two halves of a frog's heart, completely separated by a cut and then brought into contact, might influence one another enough to make them beat synchronously. There were many points to be learned about this mode of interaction which was diffuse, covering wide fields and varying with intensity and distance. Continued rhythmic activity was characteristic of the higher centres. In the cerebral cortex a continued oscillation of electrical potential was found, it was uniform over considerable areas and whatever its cause it meant that neurones could not be thought of as being in the same state from one moment to another. If they were not all synchronous an afferent signal would find some neurones refractory and some excitable. The tendency to rhythmical activity in the neurones of the higher centres and the possibility of influence by electrical rather than by dendritic connexions were two factors which had to be considered in forming an idea of the organization of the cerebral cortex.

Uniform low-frequency levels seemed to be established in the cortex when the disturbing influence of afferent signals was excluded. When afferent signals arrived their rhythm was taken up and the cortex entered on the irregular heterogeneous activity which was presumably necessary for ordinary discriminating behaviour, but if the excitation was intense or the cells were highly active a rapid uniform rhythm might spread. In the cerebrum an exciting agent (or an injury) might set up a uniform rhythmic activity with a period of about 60 a second, in the cerebellum a rather different plan seemed to be followed, with a rhythm of higher frequency (150 to 250 a second). This was maintained by the constant inflow of afferent signals. If an additional message was sent in the waves increased in size and regularity most of all at the point of arrival of the message, though to some extent in all limb areas on that side.

High-frequency synchronization could be achieved by electrical spread from one neurone to another. It could occur at the cut end of a nerve trunk and it was favoured by abnormal conditions likely to modify the membrane of the cell. It occurred only over the higher frequency ranges, with minor degrees of excitation the neurones responded at widely different frequencies. As they approached their maximum rate of discharge one group of neurones would act as pacemaker, and then a large number of elements beating in unison would produce an alternating field great enough to cause units not so strongly organized to resonate. This effect could certainly obtain in the normal behaviour of large cell masses and might dominate their behaviour in abnormal states.

Cell Activity at the Higher Levels

In speculating on activity in diffuse electrical fields there was some danger of forgetting to think in terms of *fixed anatomical connexions*. In the cerebrum heterogeneous localized discriminatory activity was essential and depended to a great extent on structural differences, but it seemed to depend also

on factors unrelated to structure, particularly on the great instability of the cells at the higher levels. Little idea could be formed of the patterns in the higher centres, in which the neural equivalent of what went on in the mind, its powers of memory and problem solving, must be sought. What kind of patterns of cell activity might be expected at the higher levels? The activity seemed to depend less on neural connexions than on the general balance of excitation. On both the sensory and the motor side the central patterns seemed to have no precise localization, no necessary connexion with particular neurones. There were such facilities as the recognition of the face of a known person in a photograph notwithstanding the complete change of scale, or the way in which a skilled act could be done by the left hand when the trained right hand was injured. The spreading electrical fields producing synchronous activity might account for some of these things, though there remained a great deal still to be explained.

Some clue to the nature of the pattern might be obtained by bearing in mind that purposive acts must be moulded by the afferent nervous patterns. These continued as a spur to action until the aim, whatever it might be (turning the gaze or closing the hand), was achieved. When that achievement was signalled along the afferent pathways the disturbance subsided. The broad afferent pattern—the temporary and spatial distribution of sensory activity which signalized the accomplishment of the aim—seemed to be uniquely related to the disturbance. This was, in a way, the inverse of the existing pattern—the key which fitted the particular lock. That seemed to be a hypothesis on which it was worth while to work in endeavouring to elicit the exact neural mechanism in the higher centres. Such a scheme must obviously account for the most complex as well as the most simple activities—the planning of one's career as well as the putting of one foot before the other. The drawback in all such speculation was that if one thought too far along one line one was likely to become so enamoured of the prospect as to be unwilling to risk experiments which might show it to be an illusion, nevertheless it was a possible line of investigation, and that was its justification.

MEDICAL SOCIETY OF THE LCC SERVICE

The annual general meeting was held at County Hall on Jan 6 1947. Sir Allen Daley, the retiring president, was made honorary president, and Dr R C Harkness was elected president. Mr J R M Whigham, of St Andrew's Hospital, was appointed chairman for the ensuing year.

Mr G F STEBBING, the retiring chairman, gave an address on the "Organization of Cancer Treatment". The broad principles which must be common to all organizations for the treatment of cancer were outlined. The general practitioner must be persuaded to keep cancer constantly in front of his mind, and he must be encouraged to send even slight ailments for investigation by specialist teams. These teams must work under the best conditions and there must not be too many of them. Some surgeons would have to give up the idea of treating cancer of any kind, and all surgeons would have to agree to concentrate their attention so far as cancer was concerned on certain sites allotted to them by the cancer organization. The follow-up of cancer patients must be jointly arranged by all the specialists concerned and by the general practitioner, who should be kept fully informed at every stage of the treatment. All cases should be followed up to their conclusion, especially those in which treatment failed or had not been attempted. The knowledge obtained from necropsies should always be fully correlated with any treatment that had been given.

"How long do you sleep?" Questions relating to this problem were recently put by the Gallup Poll to a sample section of the population and the results reported in the *News Chronicle* on Jan 30. It was found that 50-60% of men and women went to bed between 10 p.m. and midnight and rose between 6 and 7.30 a.m. About 20-25% went to bed before that time and between 20 and 30% rose after 7.45 a.m. Most men and women sleep 7 to 8 hours a night. It was found that unoccupied unemployed and retired people had the highest average length of sleep—about 9 hours—with as many as 31% sleeping 10 hours.

Correspondence

The Pemmican B M J

SIR—Notwithstanding that I have no mandate from my 50 000 odd fellow members I feel sure that I express their feelings as I certainly do my own, when I write to congratulate you and your surprising new printer on the production of No 4494 of the *British Medical Journal*

Just as in the disastrous days of war so now in the even more drastic ones of the peace that passeth understanding a motiveless malignity' endeavours to make you cease from uttering your weekly words of wisdom

Doubtless Galileo had the *B M J* in mind when he murmured 'Eppur si muove' In other words, 'Publish yourselves to the sky'

To you, Sir, and all concerned, our congratulations and thanks—I am, etc.,

Bristol

RICHARD J A BERRY

SIR—Very warm congratulations on the production of the current issue of the *B M J* I hope that our great Association will defy all Ministers and their regulations and continue to publish these attenuated editions until the ordinary issues can be resumed

It reminds me of the things published in the General Strike (1926) of which I have a collection

Good luck—I am, etc.,

Taplow Bucks

G GREY TURNER

SIR—I wish to take this opportunity to congratulate you on producing the *Journal* in its present spectral form, which is so vastly better than no *Journal* at all Few if any periodicals would have the novel conception or the drive to release an issue in similar tabloid edition, and one could wish that the authorities in power at the moment had as much conation It savours of British tradition more than anything Parliamentary to date One is reminded of the exhortation to Naval personnel during the war 'The difficult we can do at once, the impossible takes a little longer'—I am, etc

Warrington

P A M ROBERTSON

SIR—Congratulations on the candle-light edition of the *B M J* and thanks to the Secretary 'printer' Excellent tabloid and sustains the unbroken record of the *Journal* Am sure the whole profession is grateful and appreciative Thanks—I am, etc.,

London W 1

A BROMAN

SIR—My congratulations on your enterprise As a symbol quite apart from its contents I think this week's edition of the *B M J* has tremendous significance Would that the Government would show evidence of similar enterprise—I am, etc.,

Oxford

JOHN STALLWORTHY

SIR—One million congratulations on this week's potted *B M J* and especially on its touches of dry humour—I am, etc.,

Taplow Bucks

E GREY TURNER

SIR—Please allow me to congratulate you on *B M J* of Feb 22 it is a magnificent effort and seems to have more in it than some of the earlier journals—I am, etc.,

Dumfries

A P BERTWISTLE

SIR—It was with great satisfaction and real pleasure that I received the *British Medical Journal* of Feb 22 The way in which the salient features were condensed without losing the characteristic form of the *Journal* betokens positive inspiration on the part of the creator I feel that in all the circumstances the issue was a triumph—I am, etc.,

Sennybridge Brecon S Wales

N E MELLING

* We have received many other letters and messages of appreciation of our two Pemmican issues—Ed *B M J*

Dietetic Factors in Liver Disease

SIR—Every medical student knows or ought to know, that patients with acute necrosis of the liver may succumb before the development of jaundice, and Dr P H Wilcox (Feb 15 p 266) should have realized that what I was describing (Jan 11, p 45) was not the unusual case of acute necrosis but the type of case which would carry conviction in therapeutic trials I should, therefore, have ignored his letter if it had not been for his aggressive defence of the use of the term 'toxic jaundice' in a sense which has confused a generation of medical students Toxic means produced by a poison or chemical as in toxic encephalitis, toxic myocarditis and toxic nephritis To call a lesion produced by a virus or micro organism toxic is an inaccurate use of the English language and of medical terminology If jaundice is to be classified on the lines which Dr Wilcox suggests, then the correct terms are haemolytic hepato-cellular and obstructive This familiar classification is of limited value and is liable to degenerate into a pseudo-scientific application of the van den Bergh reaction Analysis reveals that it is essentially topographic in significance and refers to the place where the jaundice originates rather than the aetiological factor which produces it The difficulty in using such a classification is illustrated by the fact that haemolytic jaundice is often toxic in origin—i.e., produced by a biological toxin or a chemical poison—and it always has a hepato-cellular component which may be in part obstruction For this reason it would be better to use the terms pre-hepatic hepatic and post-hepatic jaundice on analogy with uraemia—I am, etc.,

Oxford

L J WITTS

Treatment of Pernicious Anaemia

SIR—Through the courtesy of Messrs Lederle Laboratories Inc we have been supplied with sufficient folic acid to treat some 40 patients during the past eighteen months These patients were suffering from a variety of diseases and eleven cases of pernicious anaemia were included Three of these patients suffered from subacute combined degeneration of the cord In two of the cases no objective or subjective improvement resulted from therapy with synthetic L casei factor while in the third case the neurological changes progressed rapidly during treatment even when the dose of folic acid was raised to 20 mg daily by mouth Marked improvement resulted from intensive parenteral treatment with anahæmin We reported these observations to Messrs Lederle because of the serious implications which obviously accrued therefrom Accordingly we were not (*Lancet*, 1947 1, 174) surprised to read the clear evidence presented by Spies and Stone that synthetic folic acid and synthetic thymine will neither prevent the development of subacute combined degeneration of the cord in Addisonian pernicious anaemia nor relieve it once it has developed

These findings indicate that folic acid should not be used as the sole therapeutic agent in pernicious anaemia except possibly as a temporary measure Until the specific factor for the maintenance of the integrity of the central nervous system has been discovered parenteral liver therapy must continue to be the accepted method of treatment both for pernicious anaemia and its neurological complications It may be shown in the future however that a combination of folic acid and liver therapy is more satisfactory than either method individually

In parenthesis we would mention that we have confirmed Spies' claim with regard to the haemopoietic effects of synthetic thymine in Addisonian pernicious anaemia The material was supplied by courtesy of Messrs Genatosan Ltd—We are, etc.,

STANLEY DAVIDSON
R H GIRDWOOD

Edinburgh

National Health Service

SIR,—The beginnings of the National Health Service are being forgotten by the lay public and the medical profession alike Let me recapitulate A Beveridge plan was produced by a Liberal taken up by the Conservatives, and actuated by the Socialists Social security was the advance, and no party could allow this luscious plum to fall outside its vote-catching ambit Here was something that far transcended nomenclature for fourpence The employee must now pay 4s 7

week, and the employer pays a contribution as well, and the end result must be about ten times as good—or is it? But to make social insurance work it had to be implemented by a National Health Service. It was not that the present health service of this country was so bad that it needed reformation, but that a social insurance scheme could not work financially without control of certification. It was Mr Ernest Brown when Minister of Health, who let the cat out of the bag when he stated that social insurance required control of the doctors in order to control certification. Having made that statement he was shortly out of office. Facts like that must not be put so bluntly.

If the country—not the politicians—had said the medical service of this country was bad and reformation necessary, I would be the first to help plan something better, but it is a fact that medical practice in this country (and I speak particularly of the general practitioner service) is much better and fairer than in any other country. Speaking of the countries before the last war, compare it with general practice in the provinces of France, Germany, U.S.A., Austria, Denmark to name only a few of the more advanced countries in a medical sense. Paris, Berlin, Vienna, etc., were first class, but outside these capitals and outside the specialist classes the general practitioner was in no way comparable to our own. I think this is universally admitted.

Do not for a moment think that I am suggesting a smug complacency in this respect, there is never a good but it could be better. Medical practice here could be vastly improved, not by turning it upside down and nationalizing it, but by a system of grants and without the expenditure of £66 000 000. How we have always longed for a pathological service easily available and *at our doorstep* a consultant *at the bedside* to name but two advances, and all this could be done with a few strokes of the Minister's pen and a relatively small grant. But no the Government's argument is this, though not stated. We never said your present service is bad. We are not concerned with the welfare of the patient. But within a social security scheme patients, doctors and their certifications must be controlled to enable the organization to work in a Civil-Service like manner. At the same time we as a Government must make it look as if it was a forward step in medicine so we advertise it as free medical treatment for all—all hospitals and consultants available to the richest and the poorest. That is the Government's propaganda.

The best hospitals and best consultants were always available to the poor and sick. Change is not always for the better. The general practitioners and the specialists cannot be changed overnight by a degrading change to Civil Service. If I thought that the Government had at heart a real desire to help medicine I would be the first to join a new service, but I am afraid their intentions are purely political and merely to implement social security. Let us keep the origins and intentions of this scheme ever before us, and we shall see its falsity. By not negotiating we can never be accused of being part and parcel of it. Let us keep our hands clean and reserve our decision to the final plebiscite.

—I am, etc.,

High Wycombe Bucks

W J O'CONNOR

SIR,—Among the interesting correspondence in your columns on the subject of the National Health Act I am surprised to find that among the many objections raised there has not been more opposition on the grounds of the inexpediency of attempting to work such an Act at a time when the public is suffering from poor and monotonous diet, housing shortages, and the very serious shortage of nurses and beds in hospitals. It would seem to be a matter of simple common sense for the Government to deal first with these shortages. Action on these lines would do more to improve general health than the creation of an expensive service involving still more official forms and countless office boys.

Apart from the unwise timing of this new Act, which, from questioning many patients, I am convinced is by no means popular, and the fact that the financial state of the country hardly permits one to believe that it can be implemented in 1948 there is a very serious drawback from the general practitioner's point of view, and this drawback is seldom mentioned. This is that the surgery hours will be swamped by elderly chronic cases leaving too little time for attendance on workers and young people. This is already apt to happen when the doctor is a district M.O. Much illness and distress among the elderly is due, not to lack of medical care, but to lack of suitable

accommodation and simple domestic help. But it is obviously easier for Mr Bevan to create more forms than more houses for the people. Doctors' surgeries are already overcrowded with chronic cases for whom little can be done medically, to the detriment of workers who do not want to spend weary hours in waiting rooms.

I would like to add one more point. Some doctors, by no means all of one political persuasion, find the prospect of the new Act attractive because they envisage working for limited hours, perhaps in a kind of rota, and in well equipped clinics. There would be much to be said for this, but there is no guarantee whatsoever that the doctor will have even a twelve hour day. The quasi humanitarian attitude of 'You couldn't do that' towards doctors may be very meanly used to press them to accept all the drawbacks of Civil Service without its concomitant advantages in the form of set hours. As for the building of new clinics, it is possible that they may appear in time—probably a long time—but meanwhile most general practitioners will still have to use their own homes for professional purposes and their wives will still be slaves to the telephone—a situation unknown in other branches of the Civil Service and if the present Government has its way the bulk of the profession will be members of a kind—a very over-driven, onerous kind—of Civil Service. The trap is widely open for all who have eyes to see—I am, etc.,

London W 4

JOHN C C LANGFORD

SIR,—I am disturbed to find considerable evidence of differences of opinion within the profession as to what constitutes the principal objection to the National Health Service Act and Mr Bevan's relevant proposals. An attempt to sum up the position may not be amiss. The possible bones of contention would seem to be principally (1) The tribunal, (2) abolition of purchase and sale, (3) so called 'direction', (4) payment by salary. In my submission the essential objection on which a stand must be made is the salary. I believe that all the other objectionable features are offshoots of that idea.

All attempts from within the profession to obtain a Government organized comprehensive health service for the nation failed. It has only been when the necessity for controlled certification has arisen (*vide* Lord Beveridge, the present Lord Chancellor, *et al*) that governments have sponsored plans for a service. That is to say, historically the origin of the proposed Service is based on the Treasury's urgent desire to control the doctors. The obvious way to control them is to employ them, and the way to employ them is to pay them a salary—whole or so called basic. If we fail to keep this fact before us and to recognize the salary as not only the main theme but as the very *raison d'être* of the whole scheme we are in grave danger of losing all.

The tribunal is a red herring brought into the limelight in the dubious presidential ministerial correspondence. It is possible that the Ministry intends 'concessions' here as bait, knowing full well that such concessions would be of little or even no value. It will be the most natural thing for a contract between an employer and an employee to carry a clause making it terminable by so many months' notice on either side (the alternative is a contract to be binding for ever, and this seems fantastic). If such a clause is ever invoked no reasons would have to be given, and no tribunal or law court could be interested. The only true safeguard is to refuse to have a single overriding employer—i.e., to refuse any form of salary. Then the right of appeal to a court will have real value.

Abolition of purchase and sale is not in my view, political or associated with any policy of nationalization. Some see it as a pistol held at our heads, but though it has this effect I do not think that it is based on such an intention. An offer of compensation must have a time limit set to it—the Government cannot offer to buy medical practices *ad lib* for ever. Whether the time limit is the 'appointed day' or *x* months after that day is of small moment, while the former is the obvious logical choice. The Minister pretends that the abolition of purchase and sale has some high moral virtue. The simple fact is that purchase and sale cannot persist in a salaried service. Accept a salary and we have no possibility of retaining the right to buy and sell but reject a salary and the Minister is left with no valid reason for depriving us of the right.

Dr K M M Sheldon (Feb 1, p 195) attributes to 'capitation fee' the faults which result from 'inadequate capitation fee'. Let us make sure in all our discussions on the new service that 'capitation fee' is synonymous with 'adequate capitation fee'—adequate to prevent the wrongs which Dr Sheldon so rightly condemns.

So called "direction" is similarly an outgrowth of the salary idea. The Minister pretends that the aim is a better distribution of doctors, but this is obvious eyewash. The simple fact again is that it is an essential part of a salaried service. A salaried school teacher, salaried dustman, or salaried M.O.H. cannot earn his living as such except where a vacancy in a service occurs. The same would be true of salaried general practitioners. The Minister's real reasons for this objectionable feature, too, therefore evaporate when the salary idea is removed.

Let us then keep the salary idea in the forefront of the picture. Let us if he is persistent, fight the Minister on this issue, which if won can win all, but which if lost *must* lose all—I am, etc.,

West Bromwich Staffs

D. SAKLATVALA

SIR—Among many possible disadvantages to general practitioners working under the new Health Service scheme there is one attraction which will surely count for much. It is likely that simple pathological investigations and routine radiographs with expert interpretations will be available to patients without the necessity of first consulting a specialist.

In many places in this country the fantastic situation exists whereby a general practitioner who wishes to have his patient's blood count estimated or his chest x-rayed must first obtain the approval of a consultant. Under such a system the patient is often unnecessarily inconvenienced by having to wait in an already overcrowded out-patient department, the specialist is given unnecessary work, and the general practitioner is denied the right of direct control of his patient's case, as in the event of his suspicions being justified and an abnormality being found in the blood or the chest film, he is often not considered capable of dealing with it. In such circumstances is it surprising that a diminishing number of newly qualified men are looking to general practice to give them satisfaction for their abilities?—I am, etc.,

Southampton

J. L. LEWIS

The So-called Health Service

SIR—Surely we can agree that private practice must be defended from wilful destruction. There will be a great many patients and doctors who prefer it to State medicine. The two forms of service could run side by side, but Mr. Bevan intends that there shall be no alternative to his plan. It obscures the facts to say that under his Act doctors need not join the Service and are free to practise outside it if they so choose. All hospitals are to be seized, and no doctor outside the Service is to have access to them for treating his or her patients, and the Act empowers the Minister to deal likewise with nursing homes if he deems it desirable—which means of course that they *will* be seized if it is found that they enable private practice to be carried on. In short it is to be made impossible for a doctor to earn a living except as a Government employee. He is not forbidden to, oh no, he will just be prevented.

Certain writers in this *Journal* and elsewhere seem to think that it is our moral duty to become salaried State officials because that represents the will of the people. To me that appears wide of the mark. The masses have no more idea of the consequences than a child who wants to bathe in a whirlpool. The medical profession holds a key position as one of the guardians of personal freedom—our own included, though some have foolishly suggested that we ought not to pay any consideration to this latter—and I submit that even those who wish to work in a State medical service should decline to join until the provisions for State monopoly and dictatorship embodied in the present Act are abolished—I am, etc.,

Birmingham

D. PRIESTLEY SMITH

Penicillin Lozenges

SIR—Some investigations are being made at the Dental Department of this hospital concerning the effects of penicillin lozenges and other preparations used locally in the mouth. Correspondence in the *BMJ* in recent months indicates interest in the subject and it would be much appreciated if those who have had cases of discoloured and sore tongue following the use of penicillin orally would kindly communicate with the writer of this letter giving details—I am, etc.,

Dental Department

Guy's Hospital, London Bridge S.E.1

W. G. CROSS

Penicillin Treatment of Carbuncles

SIR—The dosage of penicillin in the treatment of carbuncles described in "Any Questions?" (Feb 1, p. 207) is cumbersome and administered only with considerable inconvenience to the patient. In a busy casualty department I have found that even very serious carbuncles are cured by twice daily injections of 200,000 units given intramuscularly for five days.

A typical case is that of a man aged 33 with a large carbuncle of the upper lip with early sinuses inside the nose and at the muco-odontal junction. He had had the condition for five days before coming to hospital. Insistent requests to incise the carbuncle were firmly refused, and the patient was assured of considerable relief in one or two days and virtual cure within five days. He was then started on a course of 200,000 units twice daily for five days. After 24 hours the patient felt much better, and sloughs were removed on the third and fourth days. In view of the dangerous site of the carbuncle infra-red was given as an additional precaution, and continued for three days after the full course of penicillin. By the eighth day no further treatment was necessary. All the while the patient was ambulant, and he attended Casualty for his injections.

For surface carbuncles local hot applications are used, and only dry dressings are necessary at the end of five days. Infra-red is not used as a routine. There have been no metastatic complications whatever with this treatment. I have found that penicillin in oil does not give the same dramatic results even when high dosage—250,000 b.d. for four days—has been used. The advantages of the high-dosage penicillin therapy described lie in its dramatic success without surgical interference and in its simplicity; the patient is ambulant throughout treatment, which can therefore be carried out in the consulting-room or in a casualty department. There is the minimum of dislocation of the patient's life and more hospital beds are freed for other purposes—a not inconsiderable factor at the present time—I am, etc.,

Mitcham Surrey

S. GOLDWATER

Reiter's Disease

SIR—The triad of symptoms grouped together as "Reiter's syndrome"—viz, purulent conjunctivitis, polyarthritis and urethral discharge—as described in the *BMJ* Aug 10 1946 (p. 197) is sufficiently unusual to make diagnosis of the condition easy. Such a case treated in this hospital recently illustrates the condition, and in view of its apparent rarity seems worth recording.

CASE REPORT

A battery sergeant major aged 25 developed a scanty mucoid urethral discharge on a troopship returning to India from U.K. on Aug. 22 1946. There was a history of exposure on the 9th he was assumed on dubious grounds to be suffering from gonorrhoea and given a course of penicillin (total 150,000 units) without benefit. The discharge continuing he was admitted to C.M.H. Secunderabad, on Sept. 3. Repeated smears failed to show any gonococci, though there were extracellular Gram positive organisms. On Sept. 8 he developed a subacute arthritis of the mid-tarsal joints of the right foot with reddening of overlying skin and the right eye showed intense conjunctivitis with chemosis and mucopurulent discharge. The urethral discharge at this time was so severe that there were numerous mental erosions. The eye was treated locally with mercuriochrome and saline irrigations and he was given a sulphathiazole course for 5 days (30 g). This improved the urethral discharge but not the other symptoms and on Sept. 10 he was complaining of stiffness of the left temporomandibular joint and pain in the left tarsal joints as well.

By Sept. 17 the conjunctivitis had settled and the urethral discharge was much less, but he was running a remittent pyrexia of 99–100° F (37.2–37.8° C) and sedimentation rate was 100 mm first hour. Both the mid-tarsal joints now showed signs of inflammation and the left knee was somewhat swollen. A second course of penicillin (30,000 units 3 hourly for 30 injections total 0.9 mega-units) had no effect on either the pyrexia or the arthritis and on Sept. 27 the left mandibular, both mid-tarsal and left knee-joints were still unchanged. In October he developed a huge effusion in the left knee, and 50 ml of greenish fluid were withdrawn on the 15th, this was sterile on culture. During late October there was a recurrence of urethral discharge, which was again improved by a short course of sulphathiazole. The pyrexia settled by mid-November. On Oct. 30 B.S.R. was 50 mm/hour on Nov. 25 22 mm/hour, and by Dec. 7 it had fallen to 7 mm/hour only. The arthritis of knees and tarsal regions slowly subsided the later stages

helped by quadriceps exercises and radiant heat. Subsequent convalescence though slow, was uneventful. Negative investigations included stool examinations, culture of urine and 24 hour specimen for the acid fast bacillus, x rays of the affected joints and also of the chest. Leucocyte counts in the acute stage varied between six and nine thousand cells per cmm (P 70% L 25%, M 3% E 2%). Blood culture was sterile.

The patient illustrates the salient features of the disease including the liability to sudden serous joint effusions and the subacute but self-limited course. The duration of nearly four months coincides pretty well with the cases written up by Jackson and by Wrigley (*ibid*, p 199). He also appears to have been helped by sulphathiazole as were their cases.

It is one of the many annoying features about medicine in India that many special investigations are not available, including the gonococcal complement fixation test but there was no clinical doubt that this was not a case of gonococcal arthritis but of the rarer Reiter's syndrome—I am, etc,

K W G HEATHFIELD,
Capt R A M C

Secunderabad India

SIR—The article by Flight-Lieut W P U Jackson (Aug 10, 1946, p 197) and comments on same by Drs R N Herson and Frank Marsh (Aug 24 p 275) and by Dr Joseph Denfield (Oct 12 p 555) have moved us to write this letter. In 1943 in our article on virus infection of genitalia (*Rev chil Hig*, 5, 253) we referred to the existence of a positive Frei test, eye fundus oedema and of deep iliac lymph node inflammation in typical and *frustes* forms of so-called Reiter's disease and attributed the syndrome complex to the action of lymphogranuloma venereum virus. In some cases the disease was accompanied by an abacterial urethritis, but in most the discharge contained gonococci. L V-gonorrhea association is not infrequent, as pointed out by us in 1943 (*Brit J vener Dis* 19 37).

A similar condition to that observed in males was described by us in women in 1944 (*Obstet Gynec Lat amer* 2 9). The existence of a positive Frei test, typical L V eye fundus findings, and other evidence of L V infection were also found by us in so called Behcet's syndrome and also published in aforementioned articles. If colleagues have interest in reading articles published in Spanish, reprints will be gladly forwarded on request—I am, etc,

Santiago Chile

W E COURTS

Cerebral Malaria in Great Britain

SIR—Both in Britain and in tropical climates malarial infection is frequently associated with intercurrent infections. Parasites may be found in blood films and the prognosis altered accordingly. Acute bronchitis, pneumonia, and typhus fever (10% of my 493 cases), and cerebrospinal fever were perhaps the most noteworthy associated infections in my experience in the Far East (1942-6). I had three cases of meningococcal meningitis associated with malaria (positive blood films). Treatment was directed to the meningitis first, and the malarial infection was concurrently treated with quinine and mepacrine.

It therefore caused me some surprise to read that Dr Walter Broadbent (Jan 4 p 32) was so ready to diagnose cerebral malaria in the case of a man with fever and meningism who had recently returned from West Africa, even assuming that he found malarial parasites in blood films. In my experience meningism was not always found in cerebral malaria, and in such a case as he describes I could not have rested content without first examining the cerebrospinal fluid to exclude meningitis. Although in this particular case his diagnosis was correct and was to be commended I submit that the assumption that every case of fever associated with meningism and positive blood film is one of malaria only may lead to disaster, because meningitis, which may sometimes be present in addition, may escape recognition and treatment. Likewise pneumonia may often escape recognition where malaria cases are diagnosed by blood films. Indeed it was my custom in my division of the military hospital in which I was stationed to be on the look-out for chest signs among the many malarial cases under treatment. It was not an infrequent occurrence to recognize pneumonic signs in cases previously missed by medical officers.

I think these points should be mentioned in view of the fact that malarial relapses may at any time arise among certain persons returned from overseas, and may come under the care of practitioners inexperienced in (and sometimes ignorant of) the disease and its associations. Relapses of malaria are common in the cold weather, but fresh cases are only likely to arise in spells of hot weather. While the disease should be suspected in any person with fever recently returned from an endemic area and cases in doubt should be treated, it is of equal importance to see that superadded infections such as pneumonia and meningitis should not remain untreated in the early stage, even in those cases in which parasites are found on examination of the blood films—I am, etc,

Windsor Berks

PHILIP H WILLCOX

Early Diagnosis of Tuberculosis in Adolescents

SIR—In view of the great increase of tuberculosis among the 15-25-years group of the population and the impracticability of mass radiography as a general routine, would it not be a good thing if all 'school leavers' were tested by the tuberculin patch or inunction method? 'Negative reactors' could then be followed up by repeat tests at frequent intervals of, say, about three months.

This type of test would be simple to apply and would be less terrifying to the child (or parent) than the needle. It would also save the time of parents and children who might have to attend some clinic—perhaps at a distance from both home and school—for mass radiography. It would be a simple test quickly applied and easily checked and should help to keep under supervision all "negative reactors" when they enter industry or other spheres.

If the result of the test were entered on the school medical record card it would (or should) reach the doctor on whose panel list the young person is entered. If there is a medical officer—as there is in Aberdeen—to supervise the health of the students it could be forwarded to the university medical officer or the training centre medical officer and so complete the follow-up during those years of great susceptibility—I am, etc,

Aberdeen

WINNIEFRED M GRAY

Chemoprophylaxis of Rheumatic Disease

SIR,—It has been rightly or wrongly, attributed to the rarity of nasopharyngitis that acute and chronic rheumatic polyarthritis and rheumatic heart disease common to both tropical and temperate zones^{1,2} are unknown among nomadic Lapps.³ For fifteen years it has been noted that a nasopharyngitis (phase 1) or indeed a mild gastroenteritis precedes the efflorescence of rheumatic fever or idiopathic rheumatoid arthritis (phase 3) by a "latent phase 2 of 5-40 days".^{4,5} The chemoprophylaxis of phase 1 is based on the assumption that haemolytic streptococci (group A) are the essential organisms in their bacterial flora. In my experience this is not necessarily so.

The action of penicillin or sulphonamides is not anti-rheumatic.⁶ The latter aggravate a smouldering rheumatic infection and must be used cautiously. Even in the latent phase 2 frequent electrocardiograms disclose myocardial mischief. Further Swift,⁷ who has emphasized that in children a chronic rheumatic carditis may show persistent activity for months and even years notes that subclinical rheumatic relapses occur with a frequency hitherto unsuspected as disclosed by the careful records of body temperature, sleeping pulse (over 80 abnormal for children adult normal 60-65)¹⁴ and ancillary laboratory tests. Because abnormalities may be transient electrocardiograms are needed daily or bi-weekly. While other abnormal causes must be excluded with positive tests both the ESR and leucocyte count (examined prior to noon because of diurnal tides³ abnormal—9 000 or over)¹⁵ may be normal in the presence of active infection, in such cases the formal gel reaction is abnormal.⁷ Usually there is a close correspondence between ESR, leucocyte count, and body temperature (10 minutes orally).

An invaluable common sign hitherto undescribed of rheumatic infection is a sudden onset of mild to moderate tenderness and tenseness of finger pads, the overlying skin being dark red in colour transient in 48 hours but aggravated by trauma (watch

winding or writing) and indistinguishable from Osler's digital nodes. A similar complaint is seen in rheumatoid arthritis and in epidemic polyarthritis.⁸ Chronic rheumatic carditis may present a transient bacteraemia, splenomegaly, purpura (petechia, subungual splinter, and subconjunctival) and be confused with septic endocarditis, in 10% of which the blood culture is persistently negative.¹⁵ Both may coexist.^{10, 15} The absolute diagnostic criteria of the latter are organic heart disease plus a persistently positive blood culture (non-specific) or infective emboli. Penicillin therapy would be diagnostic if curative.

Chronic persistent rheumatic carditis in an adult has hitherto not been reported but I have witnessed such a case resulting from the too early mobilization of an acute myocarditis prior to the disappearance of the abnormalities of the ECG. For the chronic as for the acute carditis complete bed rest is essential.¹⁰ Comparison of the recent cardiac research in idiopathic rheumatoid arthritis with the usual sad course and prognosis of chronic rheumatic carditis demonstrates its validity. Of the 60-70% of the bedridden or inactive patients presenting inflammatory heart disease post mortem less than 25% was detected clinically during their illness.^{11, 12} The management of rheumatic fever is still a test of the skill of a physician—I am, etc.

Dublin

A D McDWYER

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Nocturnal Drip Feeding

SIR—In pulmonary tuberculosis the patient who needs food most on account of loss of weight, fever, and malnutrition is usually he who can eat least owing to loss of appetite. Rest and other measures to decrease 'toxaemia' usually check the patient's downward course by restoring appetite sufficiently to maintain a credit on the nitrogenous and calorific balance sheets but this is not always the case. Bullying or very strong persuasion to stuff results in dyspepsia and disgust for food.

Although calories are being spent night and day it is usual and convenient to take in a 24-hour supply of food during the daytime and this is of course possible except when the appetite is poor. It would seem rational therefore to use the night as well as the day for feeding, and this would be most easily done by a nocturnal drip feed (NDF) of hydrolysed protein and glucose. NDF offers the following advantages: (1) Almost empty stomach all night and so unlikely to encourage nausea and feeling of fullness, (2) would not mean waking for meals in night, (3) would give "round the clock" nutrition, so that patient would absorb almost two days' food in one day, (4) would conquer the difficulty that anorexia puts in the way of high calorie and high protein diet, (5) would not interfere with appetite for next days food.

Patients will co-operate if it is explained that they are getting the equivalent of two beef-steaks while they sleep. Hydrolysed protein is easy to obtain. A metal reservoir, a Ryle's tube, and glass drip connexion are the simple requirements. No experimental proof of effect is here offered. Those who care to try the suggested method will find that the 'proof of the pudding is in the eating'—I am, etc.

London N 21

F A NASH

Physics in Medicine

SIR—I have read the article on the implication of physics in medicine by my learned teacher Prof F L Hopwood and his distinguished colleagues (Feb 15, p 261) with considerable interest. As a first-year student I often had heart burnings as to how much of the physics I was being taught had any direct bearing on my future status as a medical practitioner. I came to the conclusion that apart from its being a useful exercise

in mathematical deduction and scientific observation it could be usefully pruned of many of its components. I feel that the mechanics section and a good deal of that devoted to heat could be considerably reduced in amount. To compensate for these reductions the time saved could be given up to a study of the elements of atomic physics and of the groundwork of physics as it is reflected in subsequent radiodiagnosis and radiotherapeutics. In this connexion instruction for the student in the handling of the x-ray apparatus could be of some service. A practitioner with a knowledge of the operation of, e.g., a portable unit could be a useful member of any medical fraternity.

It would be useful too if special sessions were arranged in the clinical years for study of film interpretation. How few of us, I feel sure, are competent to read normal, let alone abnormal radiographs in a correct manner! How often do the reports of fellow radiodiagnosticians conflict the one with the other, especially in the elucidation of thoracic and cranial lesions with their frequent intriguing shadows!—I am, etc.

Devonport

J B GURNEY SMITH

Endocrines in Gynaecology

SIR—May I add somewhat belatedly to the comments you have already published on Mr Aleck Bourne's paper (Jan 18 p 79)? As Dr G I M Swyer (Feb 1 p 198) and Dr S L Simpson (Feb 15, p 270) have already said, there is nothing new in the concept of varying tissue sensitivity to hormones, but there was good reason for Mr Bourne to stress it, for it is often neglected in practice. One may add to the examples already given and point out that sensitivity may vary from individual to individual, which makes the expression of exact dosage difficult from one side of an individual to another (as in unilateral gynaecomastia, fibroadenosis, and acromegaly) from one part of an organ to another (as in nodular goitre and again in fibroadenosis of the breast), as well as from one whole organ to another as in the example quoted by Mr Bourne and in a patient once under my care who suffered from both atrophic rhinitis and fibroadenosis of the breasts. In this unfortunate patient I found that the fibroadenosis responded well to androgens and that the atrophic rhinitis was rapidly relieved by oestrogens, which, however, made the fibroadenosis worse. The problem was solved by local administration of testosterone ointment to the breasts and of oestradiol in oil to the nose.

There are, however, two statements in Mr Bourne's paper with which I cannot agree. He states that "primary amenorrhoea can never be cured." It is true that cures are rare but I have seen two recoveries among many failures. The more recent was a young Jewess of 17 with an infantile figure, no visible or palpable breast tissue, a minute uterus and only a trace of pubic hair. Treatment for some months with a high dosage of oestrogen caused her breasts to develop, pubic hair to grow and her uterus to increase in size. Soon after uterine bleeding occurred. Treatment was changed from continuous to cyclical, and after six regular periods oestrogen (withdrawal bleedings had occurred) was stopped. The periods remained almost regular. Two years later (three years from the beginning of treatment) she married and within four months was pregnant. Her baby is due next April. It is possible that I am committing the *post hoc propter hoc* fallacy, but I don't think so.

Mr Bourne is also too dogmatic in his remarks about the use of androgens in metropathia. Though it is certainly true that a high proportion of patients must ultimately come to x-rays or hysterectomy, many severe cases can be kept in good health by an occasional course of methyl testosterone which is comparatively cheap and which does not produce virilism in the dosage required. A few milder cases make a complete and apparently permanent recovery. Hysterectomy is far too often performed in cases of menorrhagia. No harm is done and much unhappiness is avoided by a preliminary trial of medical treatment. I feel sure that Mr Bourne, whose work with Lord Moran on the use of thyroid extract in the menorrhagia of puberty must have saved many young girls from hysterectomy, would be well advised to give a further and perhaps more energetic trial to the use of methyl testosterone in the menorrhagia of riper years—I am, etc.

London W 1

RAYMOND C

Chronic Middle Ear Suppuration

SIR—I think that a description of treatment of chronic middle ear suppuration by a very simple and efficient method is worth while. These cases can be divided into two classes: (1) Cholesteatoma (2) Other chronic cases of otitis media—I am not considering such conditions as malignant disease, tuberculosis, etc. The nature of the discharge is of some importance—that is, whether it is mucoid or purulent—but a condition of great importance is the odour of the discharge. There may be no odour, these cases are amenable to simple treatment. On the other hand the discharge may have an offensive odour, which may be either the nauseating stink of a true cholesteatoma or simply a bad smell from putrefaction. Chronic middle ear suppuration is of course primarily due to infection from the upper respiratory tract, including the nasal accessory sinuses, and proper care of these conditions is essential in treatment. However, there are other factors of importance such as the general health, the patient's constitution, family and economic considerations—these conditions all require attention.

Doctor and patient should both fully understand that the essence of treatment is to keep the ear clean and dry. It must also be realized that in the presence of a perforation of the tympanic membrane unless the Eustachian tube is completely obstructed reinfection of the middle ear is constantly recurring and is inevitable when sepsis from the upper respiratory areas is forced into the middle ear by blowing the nose etc. If the perforation is completely sealed then this "through channel" of infection is eliminated. The size of the perforation has little bearing on the actual treatment, if the perforation is so small that the tympanic cavity cannot be easily treated it means that the suppuration is very mild and will recover itself if permitted, if the perforation is larger, access to the tympanic cavity is facilitated.

The first step is to eliminate the odour, and this can be done by thorough mechanical cleansing, and in doing this the shape of the auditory canal must be realized. Patients can be instructed to do this by the method taught by Prof. Neumann of Vienna: rolling a small fine pointed cone of wool about 1 in. (2.5 cm) in length and gently tucking this into the canal, repeating until every corner is cleansed properly, and then instilling one or two drops of alcohol. This is done as often as is necessary to keep the ear clean and dry, it is a safe method, is ideal for children, and the patient's friends can be taught. In a week or ten days if properly carried out, the odour, except in the presence of cholesteatoma, will have gone, and the next line of treatment is used. This consists of what I call the "pipette and powder" treatment, and again the patient's relations can learn to carry it out.

The patient lies on the side with the ear to be treated directed upwards. The ear is carefully mopped out, and then irrigated with aqueous solution of acriflavine (1 in 1,500) by means of a rubber-capped pipette. By squeezing and releasing the rubber cap the tympanic cavity is gently washed out, unless the perforation is so small that it is unnecessary. A few pipettefuls of acriflavine will cleanse the cavity. It is now carefully but thoroughly dried once more, and the ear canal is filled with powder which is actually tamped well into the canal and then a small pledget of gauze inserted to prevent the powder from falling out. The nature of the powder is of minor importance, it is not the chemical action of the powder that is important but the mechanical "corking" of the perforation to prevent infection being forced into the middle ear. I have used plain boracic powder, boracic and iodine powder, penicillin and sulphanilamide powder. The results are the same. Plain boracic powder is "lumpy" and not so easy to manipulate. Penicillin and sulphanilamide powder is a fine dry powder easy to use, but may be followed by an allergic dermatitis. Boracic and iodine powder (0.1% iodine) is a good powder, but occasionally a patient is sensitive to iodine.

If discharge persists the powder will quickly be softened, and to the non expert gives the appearance of profuse pus. In such a case it is necessary to repeat the treatment until the powder is found to remain dry. When the powder remains dry all that is necessary is to put in more powder as often as necessary to keep the ear filled. This "cork" or "plug" of powder is kept in the ear for three months or more, but it must on no account be allowed to be wetted—it must be kept clean and dry. After three months the powder may be allowed to disintegrate. It interferes very slightly with hearing after the first few days. It is surprising to find the number of even fairly large perforations that are found healed when this powder eventually disintegrates. I have not used this method with a genuine cholesteatoma but then genuine cholesteatoma is becoming rarer, being merely a result of neglect or wrong

ful treatment, the best treatment is prevention. The 'pipette and powder' treatment is equally applicable to the later stages of acute otitis media, which is the precursor of chronic otitis media, and which is so often prolonged by reinfection by means of the 'through channel' nose blowing, etc.

Once more I wish to stress the point that in the conservative treatment of chronic middle ear suppuration it is necessary to realize that the condition is much more than just a localized infection in an area which appears to be somewhat difficult of access. When properly administered the sulphonamides and penicillin are of considerable value, but their use does not prevent reinfection, and the principles enunciated—namely, the keeping of the ear clean and dry and the prevention of the "through channel" of reinfection—must be observed—I am etc.,

Brisbane Queensland

ERNEST CULPIN

Limb Haemangiectasis and Cirsoid Aneurysm

SIR—In regard to examples of the association of developmental haemangiectatic hypertrophy of limbs associated with cirsoid aneurysm I think there is still a tendency to regard the cirsoid aneurysm as the cause of the limb enlargement instead of recognizing that both conditions are due to some developmental abnormality, probably during early intrauterine life in the nervous regulation of the blood supply and nutrition of the affected part. Certainly the same type of limb enlargement occurs in the absence of any actual cirsoid aneurysm. Typical cases are distinguished by increased length of long bones in the affected extremity, often there are vascular hamartomata in the affected extremity some times in other parts of the body. The bony enlargement seems to be connected with increased arterial blood supply possibly associated with increased size of the nutrient artery. Occasionally apparently similar cases are met with in which no enlargement of long bones can be made out. Can it be because in such cases the nutrient blood vessels of the bones are not involved? Sometimes parts of the body other than limbs have been similarly affected by what one may term 'haemangiectatic hypertrophy'. Some cases of hemihypertrophy appear to be the result of a similar developmental agency. Probably the rare cases of monstrous "true gigantism" of fingers, toes, hands, or feet are due to a somewhat different developmental agency.

My excuse for writing this letter is that I have taken continuous interest in the subject since my article on "Haemangiectatic Hypertrophy" in 1918 (*Brit J Child Dis* 15, 13). Since then my name has frequently been attached to the syndrome in Britain and other countries as well as the name of Klippel, who stressed the 'osteo hypertrophic' changes associated with the dilatations of blood vessels (cf also F P Weber "Angioma Formation in connexion with Hypertrophy of Limbs and Hemihypertrophy," *Brit J Derm Syph*, 1907, 19, 231).—I am, etc.,

London W 1

F PARKES WEBER

Erythroblastosis Foetalis and Breast-feeding

SIR—The case report by Dr Rosemary Davies (Jan 25, p 138) of a breast-fed child with erythroblastosis foetalis in which recovery followed the cessation of breast-feeding calls for some comment. The recovery may well have been due to the transfusion of 170 ml of blood—about one half of the child's total blood volume—two days after the institution of artificial feeding. It is also well known that infants who for some reason have lost much blood frequently require more than one transfusion before recovery occurs.

It has been repeatedly shown¹ that small quantities of protein, capable of producing immunity responses and thus presumably undigested, are absorbed in infants and hence the theoretical possibility that agglutinins could be absorbed from breast milk. But the amount of undigested protein absorbed in this way is minute compared with the total quantity ingested and digested and it would be surprising if of the agglutinins present in breast milk sufficient could be absorbed to be of any clinical importance. The presence of Rh antibodies in breast milk does not necessitate their absorption and as far as I am aware no direct evidence of the intestinal absorption of Rh antibodies has been recorded. It would be a very great pity at our present

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state of knowledge if infants with haemolytic disease of the newborn or what would soon follow, if infants with anaemia or jaundice suspected of being due to Rh antibodies were subjected to the known increased hazards of artificial feeding when there is as yet no evidence that breast milk is in any way harmful in these cases—I am, etc.,

Sheffield Yorks

JOHN L. EMERY

REFERENCES

- 1 Du Bois R. O., Andresen A. F. and Schloss, O. M. (1925) *Proc Soc exp Biol* N.Y. 23 176
- 2 Lippard V. D., Schloss O. M., and Johnson P. A. (1936) *Amer J Dis Child*, 51 562

Women Doctors and Service Specialist Appointments

SIR,—The Medical Women's Federation has been informed of the extreme difficulty which is being experienced in finding replacements from civilian life for the specialists (men and women) in the Services whose release is behind all other medical personnel—in the Army for instance, it is 12 groups behind. There is at present no conscription of women. As many women doctors know in June 1945 the Ministry of Labour by a Cabinet decision abandoned the call up of women and the doctors were included in the general ruling. The Medical Women's Federation wrote a letter at the time to the Ministry of Labour which was afterwards reported in the medical Press, pointing out that this exemption was contrary to the wish of medical women, it deplored the position and said that in professional matters women doctors wished to be treated as doctors and not to have special privileges as women. Similar representations were made by the Services themselves and by the Central Medical War Committee. The Ministry of Labour, however, was not willing to rescind the order as applying to women doctors, but pointed out that they were at liberty to volunteer.

It must be admitted that recently the Service intake of volunteer women doctors has been very small. This has had the unfortunate consequence of delaying the release of serving specialists both men and women, and of necessitating the call-up of an unfair proportion of men doctors many approaching 40 on whom it may inflict serious hardship. Young women of the graded or full specialist class must realize furthermore that their immunity from conscription is certainly not entirely to their advantage. B1 posts and higher hospital appointments are being reserved to a great extent for returning Service doctors or for those who are "recruitable" in order that, in the latter case, there shall be some specialists trained in due course to replace those who are now going into the Services.

The Medical Women's Federation wishes to draw the attention of all young women specialists to this urgent need, recognizing however that this is only a short term measure. Long-term policy involves the consideration of the conscription of women doctors equally with men but this is bound up with the rectification of certain anomalies in the status of medical women serving with the Army and R.A.F. In spite of this however, the Federation urges eligible women specialists to offer their services now chiefly for the sake of those who are being retained unwillingly or called up and perhaps also for their own sakes as, on leaving the Services they will be in a strong position in applying for further appointments—I am, etc.,

Bromley Kent

MARY F. LUCAS KIFNE,
President Medical Women's Federation

Food for Invalids

SIR—I have been reading the interesting debate in Parliament on Jan 22 (*Journal* Feb 1, p 204) on this subject. The accounts given by the *British Medical Journal* and by the *Lancet* are substantially the same, with one very important exception. The following paragraph which appears in the *Lancet* does not appear in the *British Medical Journal*:

Mr S. Hastings asked the Minister if he would give figures to compare the amount of priority milk ordered by doctors in residential areas such as Bath, Bournemouth, Hove or Hampstead with that in industrial areas like Tyneside or South Wales. Mr Strachey in December 1946 the number of domestic consumers obtaining priority milk on medical grounds per thousand of population was: Bath and Bathaven 31, Bournemouth and Christchurch 38, Hove and Brighton 33, Hampstead, 47, Tyneside, 15, S. Wales 15.

I am not for the moment concerned as to what is the explanation for the interesting fact that there are more than three

times as many persons receiving priority rations in Hampstead than in Tyneside, but it would be interesting to know why the *British Medical Journal* omitted to report this question and Mr Strachey's answer to it—I am, etc.,

University of Manchester

ROBERT PLATT

* * Because our Parliamentary correspondent did not report the passage quoted above, presumably in order to allow space for a fuller report of other matters excluded from the pages of the *Lancet*—ED. B.M.J.

Non-agenized Bread

SIR—I care not for the finer points in the differential diagnosis of hysteria in dogs, neither would I wish to dissuade white-bread eaters from consuming agenized flour—bleached with NCl_3 —should they so wish to do. I have however a foolish personal prejudice against eating bread made from flour which produces fits, whether hysterical or not, in dogs and which may cause their death after a few weeks.

Is it possible now to obtain bread made from plain whole meal, not improved in any way and with no extraneous substance added or none of the whole meal removed? Is there any easy test one could apply to make sure that the flour has not been improved—something like the 'starch and iodide' test for free chlorine? Finally, Sir, I should be grateful for information as to where, pending any action which may be taken by the various ministries concerned, I can obtain guaranteed non-agenized bread in the London area—I am, etc.,

Harrow Middx

W. MUNRO LESLIE

Endogenous Depression in General Practice

SIR—I first hasten to inform Dr A. L. Rowson (Feb 15, p 271) that my question was asked in good faith and was not intended to be either rhetorical or rude. I did not realize that he had had institutional experience in psychiatry. I imagine that all who work in mental hospitals would be glad to see both change and development. Many experienced psychiatrists have in fact practically pleaded for certain improvements, and I see no objection to a Royal Commission.

But as I do not think that things are as bad as Dr Rowson would have us believe I would take up a few of his points and emphasize some safeguards. The first is the increasing use of admitting patients without certificates, either as voluntary boarders or temporary patients. No one is allowed to detain a voluntary boarder for more than three days after he has given in his notice to quit, so if either the patient or his relatives think he is unhappy, or not making progress, he can go.

Then as regards E.C.T., this is never given or continued without the patient's consent, and if no progress is being made the treatment is stopped. I simply do not understand the statement—no reference being given—that patients fear electrical convulsions, though this was not uncommon when chemical convulsants were in use. Is Dr Rowson perchance thinking of intravenous cardiazol or its analogues? In any case the patient can always refuse a second treatment. Nor I submit is E.C.T. customarily given without previous psychotherapy and diagnosis. The development of the clinic to which the doctor either brings or sends his patient has great possibilities and let us hope, will be used more frequently still—I am, etc.,

Cambridge

A. KNYVETT GORDON

* * This correspondence is now closed—ED. B.M.J.

Treatment of Patients

SIR—Dr Kenneth Sheldon (Feb 1, p 195) drags up the old, old accusation that there is one law for the private patient and one for the panel. He talks about the proud boast of the principal has been how many patients he could dispose of in the hour. Why not? Surely patients have no wish to sit for hours in a doctor's waiting-room while the latter spends twenty minutes on each case of impetigo or scabies?

One can very easily dispose of say fifteen cases of "repeats" of medicine, certificates, injections and short "spot diagnoses" in from half to three-quarters of an hour—and these are what the bulk of our surgeries consist of—and inform the others that their case may take some time to go into and that it would be preferable to do it in their own homes at their own bedside.

At a time when parts of the lay Press are more than usually critical of our profession it seems a pity that these accusations are made by our own colleagues against men and women who also 'like time to examine their patients,' but do not always find it necessary to exalt their own "professional consciences"—I am, etc.,

Waddesdon Bucks

W A BELLAMY

Diet and Canine Hysteria

SIR,—Pyridoxine—vitamin B₆—(*J Nutrit*, 1938, 16, 197) is essential to the dog. Deficiency causes convulsions like epilepsy, dermatitis, and a microcytic hypochromic anaemia (*Amer J med Sci* 1940, 199, 518). Treatment with pyridoxine cures. May not this be the cause of canine hysteria or epileptiform fits referred to in Mr Hamilton Kirk's letter (Feb 1, p 200)?—I am, etc.,

Blyth Northumberland

A G NEWELL

Eye Surgery

SIR,—I believe there is no doubt as to the validity of the justification which Mr H B Stallard puts forward (Feb 1 p 200) for his views on Kronlein's operation and for his statement with regard to the relative radiosensitivity of glioma of the retina as compared with a malignant melanoma of the choroid. Mr Stallard has taken advantage of opportunities of performing Kronlein's operation which few have had. It is an operation which is not often called for, and I do not doubt that many ophthalmic surgeons of wide experience have never performed it. Mr Stallard has done a service by bringing forward the advantages and scope of the operation and by describing the technique so clearly.

I should have thought there was no doubt as to the accuracy of the statement 'Malignant melanomata of the choroid are not so radiosensitive as glioma of the retina.' The manner in which a retinal glioma can be watched to disappear with the ophthalmoscope is quite remarkable, and the fact that, as Mr Stallard says, 'A retinal glioma has disappeared, and there have been no recurrences in periods up to fifteen years after irradiation, some useful vision has been retained and the child's life saved' would seem to justify the use of the term 'cure'. A number of cases of malignant melanoma of the choroid have been treated by radium, but I believe none has shown a comparable result.—I am, etc.,

Salisbury

R FOSTER MOORE

Prevention of Rust on Instruments

SIR,—With reference to the question and answer under the above heading (Jan 25, p 168), the inquirer asks whether any substance can be added to boiling water to prevent rusting of instruments during sterilization. The reply is substantially that there is no time for appreciable rusting to occur during this process. This statement is incorrect as regards cutting instruments made of a high carbon steel, for example cataract knives, whose edges are rapidly spoilt by corrosion when boiled in 2% Na CO₃. While complete protection during water boiling cannot be achieved without using solutions of ammonium or sodium hydroxide (whose carry-over at even small dilutions might damage an eye), it is possible to reduce boiling corrosion to negligible proportions by the use of 2% A C 10 emulsified in a 2% w/v Na CO₃. 10H₂O solution in water (*vide Foster, Le May and Johnstone Proc roy Soc Med* 1945 38, 465). A C 10 consists of 95% of a light petroleum neutral oil and 5% of a complex of sodium salts of petroleum sulphonic acids.—I am, etc.,

Leeds

JOHN FOSTER

History of Arab Medicine

SIR,—Had your correspondent, I B George (Feb 1, p 202), been a little better acquainted with the literature of his subject, he would have known that Dr Neligan was summarizing (Dec 14, 1946 p 919) a passage from the late Prof E G Browne's *Arabian Medicine* (Cambridge, 1921, p 2). Here it is

'When we speak of 'Arabian Science' or 'Arabian Medicine' we mean that body of scientific or medical doctrine which is enshrined in books written in the Arabic language, but which is

for the most part Greek in its origin, though with Indian, Persian, and Syrian accretions, and only in a very small degree the product of the Arabian mind. Its importance, as has long been recognized, lies not in its originality, but in the fact that in the long interval which separated the decay of Greek learning from the Renaissance it represented the most faithful tradition of ancient wisdom, and was during the Dark Ages the principal source from which Europe derived such philosophical and scientific ideas as she possessed.'

Most handbooks of the history of medicine say much the same thing, but it might be objected that most of their authors were not well acquainted with Arabic literature at first hand. Prof Browne was

Were it not for your correspondent's onslaught on the late Dr Neligan, one might take his letter for a hoax. Thus he assures us that the Christian Church regarded belief in infection or contagion as heretical, that only a Moslem physician dared to say that the 'black death' was spread by infection and contagion and that he anticipated Pasteur by five centuries. Well, the best contemporary account of the epidemiology of the pestilence of 1347-9 was that of Guy de Chauliac who observed it in Avignon, his account is reprinted in Haeser's well known *Lehrbuch* (vol 3, pp 175-6). According to de Chauliac the disease "was so contagious, particularly when there was blood in the sputum (italics mine), that not only by staying with the patient but by merely looking on him one took the disease from another, so that people died without nurses and were buried without priests." Guy de Chauliac was neither a Moslem nor a heretic, but the Pope's own surgeon. The words I have italicized show him to have been a good observer. The plague broke out at Avignon in January, 1348, and was at first primary pneumonic plague. Later in the year it was clinically bubonic plague. The former is of course infectious from person to person the latter not. It would be interesting to know when the Christian Church decided that it was heretical to believe pestilences were contagious. Isidore, who was, I think, a bishop, roundly stated (about 700 years before the 'black death') *Pestilentia est contagium quod, dum unum apprehenderit celeriter ad plures transit*. It is hardly necessary to say that what Galen, Isidore, de Chauliac, and the Moslem physician understood by contagion or infection had no relation to Pasteur's doctrine of *contagium vivum*. The analogy is with the conduction of an electric current or, better, with the sympathetic vibration of a tuning fork picking up its fundamental note. It was, as Prof Singer pointed out more than thirty years ago, the Italian physician Fracastorius who first took the step of postulating a living contagium. Very few of his contemporaries realized the importance of his suggestion, but, as he dedicated his book to a cardinal, the notion was not regarded as heretical.

I suggest that Dr Neligan was a good deal better acquainted with the history of medicine than your correspondent.—I am etc.,

MAJOR GREENWOOD

Colonial Medical Service

SIR—In recent months a number of disparaging letters from members of the Colonial Medical Service have appeared in your *Journal*. Obviously the facts stated were true of particular cases, though they would appear to portray one side of a picture only, to the entire exclusion of the other. These letters might easily have turned me from my decision to join the Service had not I applied out of some sense of vocation.

As a very junior member of the Service, though not so young in the profession, I am not qualified to make generalizations, but for the sake of those who might be deterred in their choice of a career I will record briefly some of my first impressions of work in Africa. Although in a relatively remote out station, I have found ample scope for my bent which happens to be surgery, and am already experiencing the truth of a statement made to me on my way out to the effect that "your work will be just what you make it. The natives will soon discover your bent and your abilities or shortcomings, and every case successfully dealt with will inevitably produce two more. This generalization refers equally to preventive medicine, and some of my predecessors have left indelible memorials written on the landscape.

Admittedly administration can be irksome when one would rather give one's time to other calls, but ample time in one's

programme can be made for clinical work. Facilities are primitive compared with home standards, and although a photograph of an English theatre is liable to produce a mild nostalgia there is a definite satisfaction to be found in improvising and "making do." A medical officer is expected to practise everything relating no matter how remotely, to his profession but each has his own bent, and in my short experience I have not been disappointed by lack of interesting work. One of the great sources of satisfaction is that with much material at hand one can select for hospital treatment only those for whom improvement or cure can be almost guaranteed. How different to many of the patients who take one's time in dispensaries at home. All I have written refers to the only station of which I have experience, but I trust it will serve to illustrate that there are localities in which a doctor prepared for a relatively lonely existence will find life not only fertile with interest but offering much compensation, rather in the knowledge of suffering relieved than in salary increments—I am, etc.,

EAST AFRICA

* * This correspondence is now closed—ED, BMJ

POINTS FROM LETTERS

National Health Service—Dr A E CLAYTON (Shrewsbury) writes: "The vocation, aims and work of a doctor may be expressed as follows: (1) To assuage human suffering and misery both of body and mind, however caused, with a view to the restoration of health; (2) failing the latter, to make the conditions of living as tolerable and pleasant as possible. These are simple words but they cover an immense field. To accomplish these aims certain values ought to be paramount—for example, there is the value of a doctor's sympathy with his patient particularly when issues of life and death are at stake, his sense of unity with him in the sharing of a common heritage. These are the values integral to an enlightened humanitarianism, the values of the Christian ethos, with all they imply, the value of a patient's belief and faith in his doctor. Are these values denied? If so then I don't think it much matters which framework you have for a health service or any other activity."

Within the chamber of human conflict with disease and in many other situations the State is not competent, and never can be to assess the values and control the operations of the human spirit. In the sixteenth century the issue was King v Parliament; in 1947 it is the State; the integrity of the human personality. The profession, though it may not know it, is 'the thin red line,' and whether we know it or not the public certainly does not.

Dr L LEY (Great Yarmouth) writes: "I would ask the members of the BMA if they are prepared open-eyed to surrender themselves and the profession to Government muddle and mismanagement. It is perfectly certain that if half or even a third of the GPs in the country refuse to work the Act it must be utterly unworkable by the remainder, and will be completely discredited."

The Need is Unity—Dr J B DAVID (Trebetherick, Cornwall) writes: "What strikes a comparative newcomer to the arena of battle is the apparent disunity among the profession. Can it be wondered that abroad we thought in so muddled a fashion and called the BMA leaders obstinate old reactionaries? We were not convinced of the implications of anything. As things are at present there is no inducement to the Minister to have one iota of the Act altered: he believes probably rightly that he only has to start the scheme and nearly half the profession will enter at once. Of a truth the doctrine of 'divide and rule' has come home to us with a vengeance. What are we to do? I do not know. But unless we can become more united as a profession and are able to produce an 80% No we shall find ourselves passing down the broad and easy road to slavery."

An 84 hour Week—Dr R DINGWALL KENNEDY (Edinburgh) writes: "Dr Gerald Rosemont's suggestion (Feb 8, p 233) of an 84 hour week for GPs calls for certain amendments."

Who will take his calls when he is out? I am not quite clear what is meant by this question. From what follows in Dr Rosemont's letter it would appear to mean: Who will answer the door, telephone, etc? And if that is so the answer is simple: the same person or persons doing so now unless and until the promised clinics are forthcoming and the doctor's house becomes, for the first time in history, his castle. If on the other hand the question really asks who will act as locum in emergency calls the answer is not to be found in an 84 hour week. If a night-duty rota can be arranged so can a half-day and holiday rota. During the war many small medical communities worked out their own self help scheme."

Obituary

THOMAS WILLIAM SHORE, OBE, MD

A link with the St Bartholomew's of the last century has been severed by the death, on Feb 19, at the age of 85, of Dr T W Shore, whose close connexion with the hospital and school went back for sixty years.

Thomas William Shore was born on Nov 5, 1861, and was educated at Burnley Grammar School and at Hartley College, Southampton. Coming to London at the age of 18, he entered Bart's with a scholarship in science. Many prizes fell to his lot during his student career, including first-class honours in zoology and botany. St Bartholomew's in the early 'eighties was a very different place from to-day, though it was equally stimulating, and its teachers and clinicians, while fewer, were equally renowned. It was before the advent of the telephone or the motor-car, and Shore used to recall that when a member of the staff was wanted at night a porter was sent in a hansom to fetch him. The number of students was not smaller than it would be now in a normal year but the visiting staff numbered only twenty—four full and four assistant physicians, a corresponding number of surgeons, two physician accoucheurs and two ophthalmic surgeons.



1 Topical Press

It was a brilliant staff and included several men who later became presidents of the Royal Colleges. At this time too "Barts" was almost a forcing ground for medical baronets. Shore was house-physician to Samuel Gee, an outstanding teacher at the bedside, whose aphorisms were collected by another of his students. In those days a house-physician was appointed for a full year.

In 1884 the year after he qualified, Shore was made assistant demonstrator in physiology, and after four years became full demonstrator, an appointment always considered a stepping-stone to the medical school staff. From 1886 onwards he was lecturer in comparative anatomy, and in 1892 when the medical curriculum was enlarged to a five years course, he became lecturer in biology. These lectureships he retained until 1909 and there are many who recall him as a singularly able teacher. His biology lectures were illustrated by some most graphic work on the blackboard, and it has been said that his drawings of the division of cells and the development from the cell to the adult stage were as enlightening as Cantu's famous film, and even more instructive because they were slower.

In 1891 he became warden of the residential college, a post held when Shore himself was a student by another famous son of Bart's Sir Norman Moore. He occupied the house to which Sir James Paget once brought his bride. This position with the secretaryship of the School, Shore held until 1898 and in it he revealed his great ability as an educationist and administrator. His reign as dean began in 1906 and ended with his retirement in 1930. Great changes took place in the College and the Hospital during this period—the completion of the library, the building of the dissecting-room, the establishment of new lecture theatres, biological laboratories (his special interest), the out-patient department, the surgical and pathological blocks and the nurses' home.

Shore gave the best of his strength and affection to St Bartholomew's, but he found time for a good deal of work outside. In 1919 he was made a member of the Consultative Council of Medical and Allied Services. For a short period he was examiner in natural history to the University of Aberdeen and for longer periods examiner in the same subject to the Army and the Indian Medical Services and in biology to the Royal College of Surgeons. For as long as eighteen years he was

in science to the Naval Medical Service. He helped the British Medical Association to which he was originally elected in 1894, on some headquarters committees, including the Central Medical War Committee of 1914-19, to which he gave invaluable service as chairman of a subcommittee. When the Association met at Cambridge in 1920 he was vice president of the Section of Medical Education. In addition to numerous articles in the scientific journals he wrote a book, *Practical Biology* published in 1887. One of his sons by his first wife is Dr T. H. G. Shore, of Plymouth.

In his retirement Dr Shore lived first at Upper Norwood, within easy reach of his old haunts. The news of his death, which we recorded briefly in our issue of March 1, will be received with sadness by innumerable old Bart's men, who remember him with gratitude both for his patience and skill as a teacher and for his labours for medical education in general.

PIERRE JANET, M.D.

Pierre Janet has died in Paris at the age of 87, and the world has lost one of the greatest clinicians of our age in psychological medicine. A pupil of Charcot, he had learnt to recognize the existence of psychogenic disorders as distinct from physical, for Charcot had experimentally reproduced under hypnosis disorders like hysterical paralysis. No one has had a wider experience than Janet of such disorders, nor was there a more acute observer. His descriptions of the clinical manifestations of these disorders surpass in extent and accuracy anything that we have elsewhere.

Janet's ideas as to the nature and origin of the psychoneuroses based as they were on his earlier philosophic studies, are the common sense theories most acceptable to the ordinary medical practitioner especially as he fulfils more than any other clinician of the past the modern demand that the human personality of mind and body should be treated as a unity. He viewed the personality as a synthesis of all our impressions and experiences in life. At any special time we have a certain amount of vital energy. If that energy is at a high level the personality functions as a synthesis we feel fit for anything and capable of meeting all our responsibilities in life, if at a low level we shrink from life and feel it a burden even to entertain a friend. The psychoneuroses are due to a lowering of the psychological level so that the personality ceases to function as a whole. When there is simply a lowering of psychological tension the personality is enfeebled, so that we have the condition of psychasthenia (obsessions, neurasthenia etc.) with indecision, lack of adaptation, and withdrawal from reality. (We all know that we are more liable to neurotic reactions when we are run down.) In other cases the tension is so low that the personality instead of maintaining itself as a synthesis falls apart, in which case there appears dissociation or splitting of the personality as in hysteria somnambulism, and so forth.

Janet's theory of dissociation, therefore, differs from that of Freud. In Janet's view it is the result of lack of energy to hold the personality together, whereas according to Freud dissociation is due to active repression of what is unpleasant. The lowering of psychological tension is sometimes constitutional, sometimes due to illnesses, sometimes due to emotional strain or to psychological causes like worry. It is this linking up of the physical, emotional, and psychological factors by Janet which appeals to the ordinary physician as being philosophically sound 'common sense' and it is surprising that he has not more adherents in the medical profession in this country. But the great vogue of Freud, and his derivatives, is probably to be found not only in his deeper investigations into the causes of neurosis and their purposive nature but in the fact that his methods have secured better therapeutic results than those of Janet. Both of them revived the original trauma which caused the hysterical symptoms both (at first) used hypnosis to do so and both got emotional responses, but Freud got results by his method of abreaction while Janet was not so successful. We can only suggest that this difference was due to the fact that while both revived the experience and the emotion Freud linked it up with the conscious mind by getting the patient to 'talk it over' afterwards with the result that the dissociation was 'reduced' whereas Janet does not appear to have done so so that both the dissociation and the symptom

persisted. But psychoanalytic theories would be none the worse for some of the balance of Janet's philosophic views which are at the same time practical and convincing. Let us hope that Janet's death may stimulate in this country a renewal of interest in his works which are well worthy of study.

Pierre-Marie Felix Janet was born in Paris in 1859 and took his degree in philosophy in 1882, and his M.D. in 1893. He was attached to the Salpêtrière, and then appointed to the University ultimately becoming Professor at the Sorbonne from 1898-1902. From then onwards he devoted most of his life to research, became President of the Académie des Sciences Morales et Politiques in 1925, and gave many lectures abroad.

J. A. H.

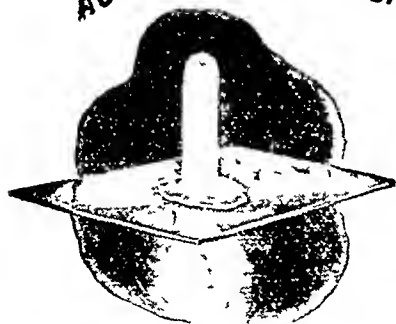
Dr ANDREW PATERSON died suddenly on Feb. 11 at the age of 40. Only three months ago Dr Paterson had been appointed a senior physician at the Maudsley Hospital Postgraduate Medical School, London. He qualified at Edinburgh in 1935 and proceeded M.D. in 1942. In 1938 he was appointed assistant in research in psychiatry to the Regius Professor of Physics at Cambridge.

Mr O. L. Zangwill writes from the Institute of Experimental Psychology at Oxford: 'As research psychologist to the Brain Injuries Unit in Edinburgh during the war it was my privilege to work for some years in very close association with the late Dr Andrew Paterson. Perhaps, therefore, I may be allowed to pay a brief tribute to his outstanding qualities as a research psychiatrist. Andrew Paterson combined remarkable clinical acumen with a deep concern for the fundamental problems of psychology and philosophy. His interest in the theory of knowledge, bred of an early training in philosophy, led him to seek in the psychological analysis of the effects of brain injury a key to the basic problems of perception and thought. In developing his ideas, moreover, he was ever prepared to welcome the co-operation of all whose interests lay along lines similar to his own. Towards experimental psychologists in particular his attitude was one of unfailing sympathy and co-operation. He was one of the all too rare clinical psychiatrists who take seriously the problems and methods of experimental psychology. By Andrew Paterson's premature death not only has British psychiatry lost one of the most distinguished of its younger practitioners but general psychology is the poorer for the loss of a devoted ally and fellow traveller. His memory will remain an inspiration to all who see in the elucidation of brain mechanisms the most fruitful approach to the fundamental problems of human experience and conduct.'

Dr ELIZABETH HAMILTON BROOK died in an Edinburgh nursing home on Feb. 22. She qualified M.B., Ch.B. at Edinburgh in 1906 and took the D.P.H. in 1910. In 1915 Dr Brook was a member of one of the teams of doctors and nurses sent out by the Scottish Women's Hospitals to Serbia. She rendered valuable service there under the leadership of Dr Elsie Inglis. Most of her work was done at Kragujevatz where typhus cases were arriving in large numbers every day. On returning to this country Dr Brook continued to work in the public health service in Lancashire until her retirement some years ago.

Dr G. A. Auden, Threlkeld, Cumberland, writes: 'May I be allowed to correct a printer's error in the obituary notice of Dr BRICE COLLYER (Feb. 1, p. 203)? Langdon Down should be Langdon-Brown, who succeeded Horder as house physician to Dr Samuel Gee. I think too that it was not James Berry but his brother Arthur who was his contemporary at Whitgift School, for the former was senior to Collyer by ten years. Arthur Berry was senior wrangler in 1886 and was elected a Fellow of King's College, Cambridge. Another contemporary and close friend of Collyer's was W. M. Geldart who became a Fellow of All Souls and Vinerian Professor of English Law at Oxford. It was my privilege to enjoy his friendship since he was Gee's house-physician in 1894. At that time he had two great heroes—Cromwell and Napoleon a drawing of whose bust hung over his mantelpiece in his rooms. But his interests were many and diverse combined with a remarkably accurate memory. He was never tired of quoting the terse and characteristic sayings of Dr Gee. When I spent a few days with him immediately before Christmas he repeated long pieces from Wordsworth, Tennyson and Shakespeare without hesitation and with manifest enjoyment. This accuracy of memory extended to his clinical work and thus enhanced his powers and acumen as a physician. He greatly enjoyed travelling abroad to South Africa and the Mediterranean and on the Continent with his wife whose sudden death in 1941 broke a very happy and close companionship and left a terrible gap in his life.'

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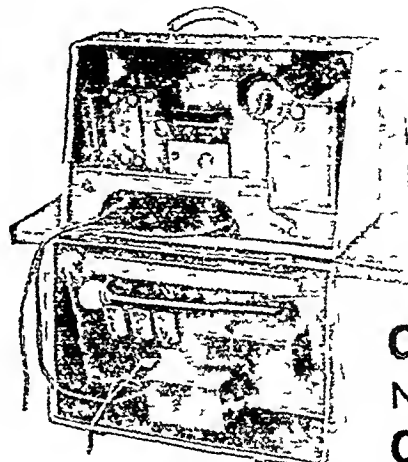
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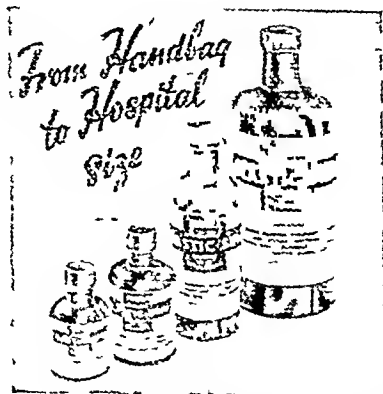
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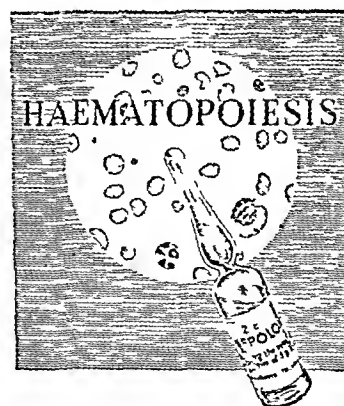
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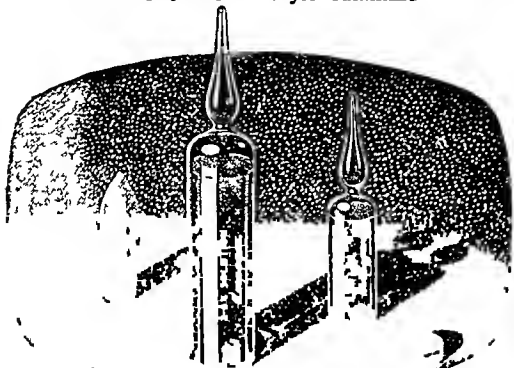
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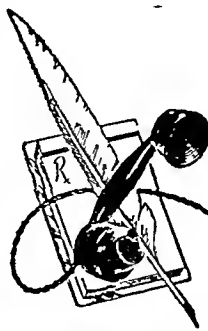
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Universities and Colleges

UNIVERSITY OF OXFORD

In a Congregation held on Jan 23 the following degrees were conferred

B M—G Freeman J B Walker E J Madden J Gask R A L Leatherdale

UNIVERSITY OF CAMBRIDGE

The following medical degrees were conferred on Jan 31

MD—J R Bolton R F Tredgold B J O Winfield A R Kelsall W H Tattersall

MB BChir—A V Adams *E M M Besterman *G Raperport *J Fiddess *D Seymour *E B Davies *P A Emerson *A D R MacAulay *J McMillan *J J Morland *J C Ward J A Elliott *D C Bradford *R J Alcock *P W S Coghill *C S Kirkham *E D Marsh *J P Paul *J P Stephens *A D Thomson W J B Rogers E S O Smith *C P Bennett *A O Chase *W M B Strangeways *D A Li Bowen *T W Backhouse *J P Bull *P W Rowsell R H C Robins *J H Steeds *D W Burnford *K G Irving *J F F Rooney *J E H Stretton *J Crossley *G R Freedman *I S M Jones *K S Murray D G Miller I R D Proctor *L C Lancaster *H E S Marshall *K Till *M F Smith

* By proxy

Titles of the degrees of MB, BChir, were conferred by diploma on Mrs S M Godfrey in January

Michael Harty, MB, BCh, has been appointed temporary University Demonstrator in Anatomy for three years from Jan 1

UNIVERSITY OF LONDON

LONDON HOSPITAL MEDICAL COLLEGE

The Little Triennial Prize for 1946, value £120, has been awarded to Dr F O MacCallum, *proxime accessit* Dr Sheila P V Sherlock (value £50)

UNIVERSITY OF LEEDS

A week end course in industrial medicine will be held on Saturday and Sunday, May 3 and 4, and the programme is as follows: May 3, 2.30 p.m., Dr A J Amor, 'The Clinical Approach to Industrial Medicine', 3.45 p.m., Prof G P Crowden, 'Fatigue in Industry', 5.30 p.m., Dr G R Hargreaves, 'Psychiatry in Industry', May 4, 10.30 a.m., Dr F F Hellier 'Industrial Dermatitis', 11.45 a.m., Dr J Vaughan Jones, 'Rehabilitation', 2.15 p.m., Dr C Sutherland, 'Respiratory Disease in Industry'. Full particulars and form of enrolment may be obtained from the senior administrative officer, the Medical School, Leeds, 2

UNIVERSITY OF MANCHESTER

The Council of the University has approved the promotion of Frederick Arthur Langley, MSc, MB, ChB, from Assistant Lecturer to Lecturer in Pathology, from September next

Ralph Arthur Bailey, MD, and Eugène Leeson Willis, FRCS, have been appointed Clinical Demonstrators in Anatomy

UNIVERSITY OF SHEFFIELD

The following appointments were made at a meeting of the University Council on Feb 21: Honorary Lecturer in Public Health: LI Roberts, MD, MRCP; Honorary Lecturer in Radiological Anatomy: J Wilkie, MB, ChB; Honorary Lecturer in Bacteriology: L G Cook, MB, ChB; Assistant Lecturer in Physiology: A A Glynn, MB, BS. The resignation of Dr D J Clark of the post of Honorary Lecturer in Public Health was received and Dr Clark was thanked for his services to the University

ROYAL COLLEGE OF SURGEONS OF ENGLAND

The following surgery lectures will be delivered at the College (Lincoln's Inn Fields WC) at 5 p.m. on each day: March 31, Sir Cecil Wakeley, Surgery of the Thyroid Gland, April 1 and 2, Prof James F Brailsford, Bone Tumours, April 9, Mr F A R Stammers, Surgery of the Posterior Fossa of the Skull, April 10, Mr Philip H Mitchiner, Gangrene (excluding Gas Gangrene), April 11, Mr H S Soutter, Surgical Treatment of the Oesophagus, April 14, Mr L R Broster, Surgery of the Suprarenal Gland, April 16, Prof R V Bradlaw, Tumours of the Jaws, April 17, Mr George F Siebbing, Radiotherapy in the Treatment of Cancer, April 21, Mr Rainsford Mowlem, Replacement of Skin Loss in Traumatic Injuries, April 23, Mr Julian Taylor, Surgery of the Anterior Cranial Fossa, April 24, Sir Lionel Whitby, Blood Transfusion. The fee for the whole course is £5 5s. Fellows and Members of the College and Licentiates in Dental Surgery will be admitted on payment of a fee of £3 3s. Applications accompanied by a cheque for £5 5s. or £3 3s., should be sent to the assistant secretary of the College

Medical Notes in Parliament

FREEDOM TO PRINT

In the House of Commons on Feb 25 Sir W SMITHERS asked the Prime Minister if, since the use of industrial electricity was to be resumed in some areas only, he would ensure that all weeklies and similar periodicals should be suppressed or allowed to go to publication without discrimination

Mr ATTLEE said that to avoid discrimination the restrictions on the publication of weekly and other publications imposed from Saturday, Feb 15, applied equally in all areas of Great Britain. Similarly, the removal of the restrictions, announced on Feb 21 to permit the resumption of publication on and after March 3, applied to all areas, irrespective of the resumption in the use of industrial electricity in any particular area

Sir W SMITHERS said 'Was the Prime Minister aware of a strong and widespread feeling that the suppression of these periodicals was for political ends?'

Mr ATTLEE: If the hon Member shares that impression he had better get rid of it, because the whole point is that it applies equally to all political opinions

Mr FRANK BYERS: 'By what statutory or other authority was this suppression made, and will the Prime Minister give a categorical assurance that there was a statutory authority?'

Mr ATTLEE: It was actually done by agreement—(Cries of 'Oh!')

Mr BYERS: In that case is it not a fact that those people who are not members of the PPA are not bound by the agreement which was reached?'

Mr ATTLEE: This was done by agreement

The point made by Mr Byers was raised again on Feb 26 when Mr SHINWELL said he had been asked whether there was any statutory provision for the action taken in the suppression, temporarily, of periodicals. The answer was that there was, of course, no statutory provision, but it was possible to gain the consent of those who represented for the most part the weekly periodicals

Mr BYERS: Sixty per cent

Mr SHINWELL said there was a majority. There was naturally some discontent about the decision, but the action had to be taken having regard to all the circumstances, and he thought the action taken by those responsible for conducting negotiations was, on the whole, satisfactory

Mr BYERS asked why the order said that publications "are not permitted"

Mr SHINWELL replied that he had to rely for the most part on voluntary co-operation (Laughter) but an instruction of some sort had to be given. The parties concerned naturally sought guidance, but the matter would be disposed of very shortly. Already an arrangement had been made for the resumption of those periodicals

Mr BYERS: In other words it was a bluff!

In the House of Lords on Feb 27 LORD WOLVERTON asked under what statutory powers the Government suspended publication of certain periodical journals. An extremely important point was that of discrimination. The Prime Minister had stated that the course was adopted by agreement—it was understood with the Periodical Press Association. Not all periodicals belonged to that association. The Minister of Fuel and Power had stated there was no statutory provision for the action taken. The manner in which the direction was issued was entirely unsatisfactory because it was regarded in many instances as an order. A very dangerous precedent had been established, and he hoped that nothing of the sort would occur again

The EARL OF INDESLEIGH asked if the legal position had been made perfectly clear to the proprietors of local weekly newspapers. There had been some loose and, no doubt quite inaccurate talk of a ban on retail periodicals. That was the wrong word to use in connexion with what was a purely patriotic compliance with the Government's wishes. A current story, which came originally from American sources was that an American firm had offered to print and finance in dollars the weekly *Economist* and to import it at no cost in dollars. Was there any truth in the statement that an import licence for such an edition of the *Economist* was refused and if so on what grounds?

LORD DE LISLE and DUDLEY said the unfettered liberty of the Press—subject to the laws of blasphemy, libel, and other necessary regulations—was one of the bulwarks of our freedom. Anything which curbed or indirectly threatened it must be jealously guarded against and investigated by Parliament. He did not regard even a fuel crisis as a necessary or good excuse

for the suppression of comment on public events and particularly when in many cases, it was intelligent comment.

The EARL of GAINSBOROUGH asked why *his* the Oxford undergraduate periodical, was included—although it was produced by hand.

LORD CHORLEY said the Government of this country had for many years past recognized the vital importance in a democratically governed country of the complete liberty of the Press, and the vital part played by the Press in moulding the opinion by which political work was guided in this country. It was in view of the gravity of the situation that action was taken to suspend publication of the periodicals for a short period. It was in no sense a censorship or attempt to gag the Press, but a necessary step in a grave crisis. It was quite impossible in the circumstances to get into touch with all the proprietors concerned. It was obviously known to those concerned that there was no statutory power under which the Government would or could suspend newspapers.

VISCOUNT SWINTON asked whether it was worth doing at all. The sentences imposed on the papers were longer than anybody, and certainly the papers supposed. The Minister of Fuel and Power said that this would be a matter of three or four days, but it had been going on for several weeks and still there was no end. When the Minister or his representatives gave these papers the advice or instruction, were they advised or instructed that this absence of light was to last for three or four days and was it upon this comforting assurance that a proportion of the papers agreed to suspend their activities? Both Houses of Parliament had been led to suppose that there was no legal power to order this suspension.

LORD AMMON said that there was no legal sanction but directions could be made against a firm under Defence Regulation 55. But as the ban was to be lifted on Monday next it would not be worth while to do so.

SCOTTISH HEALTH SERVICE BILL

The Standing Committee on Scottish Bills further considered the National Health Service (Scotland) Bill on Feb 11, 13, 18 and 20. Clauses 6-20 with only minor amendments were ordered to stand part of the Bill. Discussion of Clause 21 on the provision of services by local health authorities, and of Clauses 22 and 23 was completed on Feb 25. Unfortunately it was not possible to give any account of these proceedings in our 'Pemmican' issues of Feb 22 and March 1.

When the Committee met on Feb 27 it was agreed that during the further consideration of the Bill the Committee should sit three days a week. Clause 24 was approved and Clause 25 was ordered to stand part of the Bill.

On Clause 26 Mr BUCHANAN said that compulsory vaccination in Scotland had to a large extent died down and the signing of objectors' declarations had become a commonplace. The position was that while the Bill abolished compulsory vaccination all reasonable arrangements would be allowed to the medical profession for them to vaccinate. The Clause was ordered to stand part of the Bill.

A drafting amendment was made on Clause 27, and Mr REID asked for information about the responsibility of local authorities. He asked whether it was intended that a lunatic should go to a State institution but a mental deficient to a local authority institution.

Mr BUCHANAN said it was not the intention of the Scottish Office to work this Clause when the Bill first came into operation. He was told that mental deficiency did include lunacy but he would look into the declaration again. In many matters the Scottish Office wished to see work done by particular authorities and not imposed on the whole of Scotland. The Clause as amended was ordered to stand part of the Bill as was Clause 28.

Mr REID asked whether Clause 29 was wide enough to ensure that there could be different appointed days for different parts of the same subsection. Mr BUCHANAN said that Clauses 20 and 21 would operate from the passing of the Bill but the other Clauses would operate from the appointed day, April 1, 1948. It was left to the discretion of the Secretary of State to decide when and how Clause 27 should operate. Under that Clause the Secretary of State had power to fix the appointed day. Clause 29 was then ordered to stand part of the Bill as was Clause 30 on executive councils. Clause 31 which sets up local representative committees, was also ordered to stand part of the Bill.

On Clause 32 which imposes on each executive council the duty of making arrangements with medical practitioners for the provision of personal medical services Mr REID moved to omit the words "whether at a health centre or otherwise." He said this was one of the most important clauses because it laid down the conditions under which the whole of the medical practitioner service of the country was to be employed.

Mr HASTINGS saw no reason for these words to be left out. They had been inserted in the English measure so that there would be no ambiguity.

Mr BUCHANAN said that when he consulted the drafting experts they did not know how the words ever got into the Bill. He was prepared to drop them as they possibly made things more ambiguous. Mr Reid's amendment was accepted.

Remuneration of Doctors

Mr REID then moved to insert a proviso that arrangements made under the Clause shall provide for remuneration in every case by capitation fees and might provide for additional remuneration by salary in any case where the executive council was satisfied that, owing to sparseness of population or other local circumstances, capitation fees would not provide adequate remuneration. He said that so far as he could find nothing in the Bill instructed the Government on the method of remuneration of general practitioners. At the last General Election the Labour Party policy was to have a full time salaried medical service. Mr Bevan speaking on the English Bill, was at pains to maintain that policy as an ultimate objective. Mr Reid did not know whether Mr Buchanan agreed with all that had been said by his English colleagues.

Mr BUCHANAN said that on the broad principles he accepted the Labour policy.

Mr REID argued that it was a fallacy to say that because it may be right to have a quarter of the medical profession on a salaried basis it was right to have them all on that basis. In view of the Labour Party policy the Committee must take it that the aim was that a salary should be a large part of the doctor's remuneration. He did not see how that helped the young doctor unless it was said that for the first five years a man was in practice he should get a basic salary. Mr Reid would not object to that but said the Committee could not say that Scotland was under-doctored and also that it would be extremely difficult for a young man to establish himself. He hoped that at the relevant time Mr Buchanan would assure the Committee that although assistants were hardly mentioned in the Bill they would be worked into the scheme. At what level and for what number of patients would the Government start to pay a basic salary? It was time that the medical profession was given some information. It was likely that Scotland would be able for some time to have a larger number of doctors per thousand than in England.

Mr BUCHANAN said that a basic salary was an essential element of the scheme although there might be one or two isolated cases where one could depart from it. There ought to be provision for the young doctor. During the war years no one had been poorer paid or worse treated than doctors' assistants. His nephew, who began with a Glasgow doctor found that he was getting about 6½d an hour and was packed off to all the maternity cases at night. Medical practice must be open to men on the grounds of their ability and not according to how well their pockets were filled. In 1942 the British Medical Association made a draft proposal which contained the element of basic salary. Medical Practices Committees made up of doctors alone decided where there was need for a doctor and he could then go in and start. That did not mean that he would get enough to live on. A basic salary plus capitation fee would enable a doctor without means to make his start. The basic salary should be used to attract the best kind of doctor to the poorer localities.

Mr MCKIE said the fear and anxiety of medical practitioners in the rural areas of Scotland under this Clause was legitimate and justifiable and Mr Reid's amendment sought to place them in a position to carry on their work in the future.

The proposed amendment was defeated by 21 to 11 and the Committee adjourned.

Control of Penicillin

Sir JOHN MELLOR on Feb 25 said that under Order No 731 of 1946 anyone who asked a chemist to sell him penicillin was guilty of a criminal offence unless he tendered a medical prescription. There was no longer any shortage of penicillin and the order was now quite unjustified. As he understood medical opinion in relation to penicillin that substance was in no way harmful but doctors considered that the reaction of the body to it tended to diminish with frequent use. Continuous use of many drugs would be undesirable but their sale was not limited by legislation. Under the Poisons Act and the Dangerous Drug Acts the Home Secretary had power to make regulations restricting distribution but he was not aware that any legislation had been passed to restrict the sale of therapeutic substances which were not harmful.

Mr JOHN LEWIS said the House should bear in mind that this drug could only be used with effect by injection. At

person who proposed to use it without a medical certificate had to give himself injections. No medical man would be happy if he knew that a patient without instructions and advice was injecting himself with whatever amount of penicillin he thought fit. In any case this valuable drug should not be wasted. He suggested that the Minister of Health should find out whether penicillin tablets of 500 units each, which could be bought in any chemist's shop without a doctor's certificate, were of any use. Wing-Commander ROLAND ROBINSON wished to know if the Government was seeking to narrow the use of penicillin in Britain so that it could be exported in competition with America.

Dr SANTO JEGER said the supply of penicillin should be controlled because when a new drug was discovered the public got the idea that it was a cure-all. There had been correspondence recently in the medical Press on deleterious effects following the use of penicillin lozenges.

Mr LEONARD replying for the Ministry of Supply said there was no serious risk that penicillin supplies would be insufficient to meet the requirements in this country of medical, dental, and veterinary practitioners. America had started with control and that control was lifted. Because of what happened afterwards it had been deemed in the national interest to reimpose it. Mr BEVAN had been advised by medical experts and also by Sir Alexander Fleming that there would be danger in the uncontrolled use of penicillin and that this should not be permitted. He was advised that there was a danger to patients and others by the creation of a strain of organisms resistant to penicillin treatment. A draft Bill had been prepared to control the sale and supply of penicillin otherwise than by Order.

Refugee Doctors

On Feb 20 Dr SANTO JEGER asked the Minister of Health whether in view of the fact that a larger number of doctors than at present available was necessary to implement his new National Medical Service next year and, in view of the fact that the Central Medical War Committee passed a resolution on this subject, he could state his policy on the admission of refugee doctors with foreign qualifications to practise in this country.

Mr BEVAN said the views of the Central Medical War Committee on this matter were sought by the Home Office acting in consultation with his Department. The Committee was consulting certain other professional bodies before communicating its views to the Home Office. (See Supplement Feb 8 p 25)

Streptomycin—Dr STEPHEN TAYLOR asked on Feb 18 whether Mr BEVAN would inform the medical profession of the hospitals at which the Medical Research Council tests of streptomycin were carried out so that they could send patients. Mr BEVAN replied that appropriate hospitals and clinics in the areas in which the tuberculosis trial centres were situated had been informed. The particulars would be circulated more widely if it was found advisable to draw upon larger areas for the limited number of cases of suitable type with which it was possible to deal.

Penicillin—At the request of Mr BEVAN, Mr Wilmot is retaining the Control of Penicillin Orders till other arrangements can be made. During January 1947, 225,387 mega units of penicillin were produced in the United Kingdom. The amount produced in this country is steadily increasing and is sufficient to meet all prescriptions and leave a small surplus for export.

Smallpox—Mr CREECH JONES stated on Feb 26 that the incidence of smallpox in Hong Kong had given rise to anxiety but the epidemic showed signs of abating. Proved cases in 1946 numbered 1,998 with 1,306 deaths. Between Dec 27 and Feb 6 there were 266 cases.

Typhus—No further cases of typhus have been reported on HMT *Empire Deben* since her return to this country with four such cases.

The National Society for the Prevention of Blindness announces that as papers submitted for the glaucoma prize of \$500 offered in 1944 did not conform to the criteria set up by the ophthalmological committee selected to award the prize it is again offered for the most valuable original paper adding to existing knowledge of the diagnosis of early glaucoma or the medical treatment of non-consecutive glaucoma. Papers may be presented by any practising ophthalmologist of the Western Hemisphere and may be written in English, French, German, Italian, Spanish or Portuguese. Those written in any of the last four languages should be accompanied by a summary in English. Closing date for receipt of papers is December 1947. The criteria may be secured by writing to the National Society for the Prevention of Blindness, 1790, Broadway, New York 19, New York, U.S.A.

The Services

Lieut Gen Sir Alexander Hood, Director General of the Army Medical Services, has been elected chairman of governors of the Star and Garter Home for Disabled Sailors, Soldiers and Airmen, Richmond, in place of Sir Arthur Stanley, who has resigned because of ill health.

Capt (Hon Major) D A Brigg, Capt (Hon Capt) S Lask and Lieut (Hon Capt) G Bennett, R.A.M.C., T.A., have been awarded the Efficiency Medal (Territorial).

Capt (Hon Major) W R Blunt, R.A.M.C., has been awarded the Efficiency Medal (Territorial).

CARDIFF MEDICAL EX-SERVICE ASSOCIATION

The first annual dinner of the Cardiff Medical Ex-Service Association will be held at Park Hotel on Saturday, March 15, at 7 p.m. for 7.45 p.m. The dinner is primarily for medical men who are old students or members of the staff, past and present, of the Cardiff Medical School, who have served in either Great War. Guests may be invited provided they are ex-Service medical men. Tickets (12s 6d each, exclusive of wines) may be obtained from the secretary, Mr K M Wheeler, Surgical Unit, Royal Infirmary, Cardiff.

Medical News

The annual general meeting of the Society of Public Analysts and other Analytical Chemists will be held at the Royal Society's rooms (Burlington House, Piccadilly, W.) on Friday, March 7, at 3.30 p.m., and will be followed, at 4 p.m., by an address by the retiring president, Dr G W Monier-Williams.

A meeting of the Microbiological Panel of the Food Group of the Society of Chemical Industry will be held at the Chemical Society's rooms (Burlington House, Piccadilly, W.) on Wednesday, March 12, at 6.30 p.m., when papers will be presented on 'The Biological Stability of Beer,' by Mr B M Brown, and 'The Biological Stability of Cider, Fruit Juices, and Soft Drinks,' by Prof B T P Barker and Dr V L S Charley.

The annual general meeting of the Institute of Almoners will be held at Friends House, Euston Road, London, N.W., on Friday, March 14, at 6 p.m., when Dr J A Charles will deliver an address.

The annual dinner of the Midland Branch of the Society of Medical Officers of Health will be held at the Whitehouse Hotel, Congreve Street, Birmingham on Tuesday, March 18.

A meeting of the Food Group of the Society of Chemical Industry, to which all members of the Agriculture Group are invited will be held at the Royal Institution (Albemarle Street, W.) on Wednesday, March 19, at 6.30 p.m., when Dr W G Ogg will present a survey of the work of the Rothamsted Experimental Station.

The first convention of the Society of Chiropractors (21, Cavendish Square, London, W.1) will be held at Friends House, Euston Road, London, N.W., on Thursday, Friday and Saturday, March 20, 21, and 22. The convention will be opened on March 20 at 2.30 p.m., by Sir Hugh Lett, President of the British Medical Association, at 3 p.m. Prof A B Appleton will deliver a lecture on 'Posture', and at 7.15 p.m. the annual dinner (tickets £1 10s) will be held at the Savoy Hotel. On March 21 lectures will be delivered by Mr Philip Wiles on 'Pain and Deformity of the Metatarsals and Toes' at 10 a.m. by Mr Denis Browne on 'Minor and Major Deformities of the Feet in Children' at 11.30 a.m. and by Prof A J E Cave on 'The Foot as a Sensory Organ' at 6 p.m. On March 22 at 10.30 a.m., the annual general meeting of the society will be held and at 3 p.m. Dr Allan Yorke will lecture on 'Hyperkeratosis of the Sole of the Foot'. The convention fee is 10s 6d for members and 5s for students at any of the schools of chiropraxy recognized by the Board of Registration of Medical Auxiliaries. During the convention there will be an exhibition and visits may be paid to the three schools of chiropraxy in London.

The second International Congress of the International Academy of Legal and Social Medicine will be held at Brussels and Liège from June 25 to 28 and will be divided into five sections: legal medicine in its application to crime, social medicine, industrial medicine, medico-legal and social psychiatry and scientific police methods. The languages will be English and French. Those who wish to present reports or read papers should notify without delay the president of the Congress Prof Dr M De laet, Faculté de Médecine, 7 Rue de la Gendarmerie, Brussels or one of the general secretaries Prof Dr P Moureau (47, Rue Villette, Liège) or Prof Dr F Thomas (23, Kluyskensstraat, Ghent).

Sir Harold Hartley, delivering an address on "A Century of Chemistry" at a joint meeting of the Royal Society of Arts and the Chemical Society at the Royal Society of Arts on Feb 19, with Sir Thomas Holland presiding, said that they were commemorating the first meeting of the Chemical Society, which took place there in 1841. The Society had been founded just over half a century after Lavoisier had laid down the first clear distinction between physical and chemical change. Dalton's atomic theory soon followed, and made possible the work of Berzelius determining the atomic weight of every known element and the composition of many compounds. Liebig, Wohler and Dumas had been laying the foundations of organic chemistry by making series of derivatives from natural products. By 1841 the authority of Berzelius had been seriously challenged, and when the Chemical Society had been founded there was a drift from theory towards empiricism. Kekulé's theory of atom linkage had enabled him to assign definite structures to organic compounds, and in 1860 Cannizzaro's treatise had led to general agreement on atomic weights and the number of atoms in a molecule. In 1860 only 60 elements had been known. The development of the periodic table by Newlands, Lothar Meyer, and Mendeleeff had enabled prediction of the properties of unknown elements, which were discovered with the help of the spectroscope. The outstanding work in organic chemistry since 1900 had been on the materials and processes of living organisms. X rays were of decisive help in elucidating the structure of the main constituents of living organisms—the polysaccharides and the proteins—and work on the structure of proteins was beginning to reveal the processes of growth. Our knowledge of the enzymes, vitamins, hormones, and auxins had advanced rapidly and the identification of the vitamins had been of profound importance in nutrition. The isolation and in some cases the synthesis of the hormones had been of great value in curative medicine.

The third Annual Convention of the American Society for the Study of Sterility will be held at Hotel Strand, Atlantic City, New Jersey, on June 7 and 8. There will be lectures, discussions, and demonstrations with the object of bringing to the medical practitioner recent advances in this field. Further information may be obtained from Dr John O Haman, 490, Post Street, San Francisco, 2 California, U.S.A.

The King has sent an annual subscription of £1,000 for 1947 to King Edward's Hospital Fund for London.

As the result of improved methods of mass production the Commonwealth Serum Laboratories at Melbourne, Australia, are producing 50 times as much penicillin as in December, 1943. The supply is now sufficient for Australia's own needs. The retail selling price is about 3s 5d for 100,000 units.

Food and Nutrition is a magazine issued every fourth week from the Ministry of Food and published by H.M. Stationery Office, price 3d. The January issue contains articles on ten ways of cooking sausages, the nutrients in milk, with an observation on milk collection, distribution, and consumption, the latest "points" value news, and a note on the growing of bananas in Iceland.

Penicillin is available in two forms, the ordinary yellow penicillin, and "white" penicillin, which may be crystalline or amorphous. The Ministry of Health has asked pharmacists to note that when dispensing N.H.I. prescriptions for extemporaneously prepared topical preparations the ordinary yellow penicillin or solution tablets should be used. "White" penicillin should be reserved for the preparation of injections and eye drops. The pricing of prescriptions dispensed during February will be done on this basis.

Dr H. P. Chu, dean of the National Medical College at Shanghai and formerly secretary of the Chinese Medical Association, has arrived on a three months' visit to this country arranged by the British Council. This is the first time he has visited Britain. He is studying undergraduate and postgraduate medical education, the curricula of British medical schools, and all forms of medical teaching, including the training of nurses. Arrangements have been made for him to have discussions with the appropriate authorities and to visit teaching hospitals and other institutions in London and the provinces.

The Secretary of State for Scotland has appointed Mr G. H. Kimpton to be an Under Secretary in the Department of Health for Scotland. He will be in charge of the Divisions of that Department which deal with health services in Scotland. Mr Kimpton joined the Department in 1913 and has had wide experience of health and housing matters. He was promoted to the rank of Principal in 1935 and became an Assistant Secretary in 1940. He served as a member of the Inter-departmental Committee on the Rents Restriction Acts.

Dr T. S. Marshall has been appointed Regional Blood Transfusion Officer in charge of the Regional Transfusion Centre temporarily housed at Meanwood Park Colony, Tongue Lane, Leeds. The centre, which is responsible for the transfusion needs of the Leeds Regional Hospital Area, will move later this year to premises at Seacroft Hospital, Leeds.

EPIDEMIOLOGICAL NOTES

Smallpox at Grimsby

In the outbreak of smallpox at Grimsby infection originated in a common lodging house between Jan 31 and Feb 2, but the source remains unidentified. The second generation of cases involved two elderly inmates of the common lodging-house who sickened on Feb 13 and 14 and have since died. The disease was first detected on Feb 17.

Between Feb 27 and March 3 there have been 10 cases diagnosed in the third generation and two of these patients have died, one of them before the appearance of a focal rash. All were in the direct line of contact with second generation cases and were under surveillance in Grimsby at the time of onset. Ten contacts at the common lodging-house remain untraced and there is no information about their movements. They are believed to include mariners, either aboard trawlers and coastal vessels or visiting Scandinavian ports, and also migrant Irish agricultural labourers. The present uncertainty calls for the greatest vigilance on the part of practitioners.

Typhoid at Watford

Three cases of typhoid have occurred in one family in the Watford area. The first case was notified on Wednesday, Feb 5, and no further notifications have been received since then. Investigations have shown that the mother is a carrier and the usual precautionary measures have been taken.

Influenza and Measles

Influenza apparently reached its maximum incidence in the week ending Feb 8. In the 126 great towns 646 deaths were attributed to influenza during the first six weeks of this year. This should be compared with 1,337 in the same period last year.

The epidemic curve of measles is reaching a maximum, although a further rise during the next few weeks is probable judging from past experience. The notifications during the weeks preceding the peak in the present epidemic so far have been below the level of the last two outbreaks of 1943 and 1945.

Discussion of Tables

In England and Wales a decreased incidence was recorded during the fortnight for scarlet fever 156, whooping cough 309 and dysentery 48. A rise in both weeks in the notifications of measles gave a total increase of 5,587 cases. A decrease of 71 in the notifications of diphtheria in the week ending Feb 1 was offset by an increase of 57 in the following week.

The decrease in the incidence of scarlet fever was general throughout the country, while the fall in cases of whooping-cough was greatest in the north.

The returns for diphtheria for the week ending Feb 1 were the lowest ever recorded, being 4 below the previous record low level at the end of December. The notifications of diphtheria for the first few weeks of this year are less than half of those recorded in the same period of last year and only one sixth of the average of the first weeks of 1937-9.

In Scotland the weekly fluctuations in the notifications of infectious diseases tended to cancel each other out during the fortnight. The only diseases showing a continuous trend were acute primary pneumonia with a total increase of 82 cases and cerebrospinal fever with a total decrease of 11. The incidence of dysentery, with a decrease of 22 followed by a rise of 16, was mainly affected by the experience of Edinburgh where the cases fell from 16 to 1 and then rose to 13.

In Eire the increased incidence of measles was due to two outbreaks. Cork Castle town R.D. 26 cases and Mayo, Belmullet R.D. 17 cases. In the first week of the fortnight the notifications of whooping cough in Dublin, C.B. fell from 78 to 43. The rise in the incidence of scarlet fever was due to a small general increase. Notifications of diarrhoea and enteritis during the week ending Feb 1 (12 cases) were the lowest for twelve months.

In Northern Ireland the epidemic of measles in Belfast C.B. has passed its maximum. 1,499 cases were notified in the fortnight compared with 1,799 in the preceding two weeks. (See also Feb 15, p. 280.)

Week Ending February 22

The notifications of infectious diseases in England and Wales during the week included scarlet fever 1,081, whooping cough 2,227, diphtheria 217, measles 15,765, acute pneumonia 1,139, cerebrospinal fever 90, acute poliomyelitis 14, dysentery 92, smallpox 2, typhoid 3. Deaths from influenza in the 126 great towns numbered 135.

INFECTIOUS DISEASES AND VITAL STATISTICS

No 5

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Feb 1

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year for (a) England and Wales (London included) (b) London (administrative county) (c) Scotland (d) Eire (e) Northern Ireland
Figures of Births and Deaths recorded under each infectious disease are for (a) The 126 great towns in England and Wales (including London) (b) London (administrative county) (c) The 16 principal towns in Scotland (d) The 13 principal towns in Eire (e) The 10 principal towns in Northern Ireland
A dash — denotes no cases a blank space denotes disease not notifiable or no return available

Disease	1947					1946 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever Deaths	83	5	23	1	2	71	6	40	1	2
Diphtheria Deaths	176	9	59	28	13	496	32	108	75	16
Dysentery Deaths	61	3	10	2	—	407	13	56	—	—
Encephalitis lethargica acute Deaths	2	—	—	—	—	2	—	—	1	—
Erysipelas Deaths	—	—	41	5	1	—	—	55	8	2
Infective enteritis or diarrhoea under 2 years Deaths	92	9	14	12	3	39	3	4	23	1
Measles* Deaths	13,501	482	254	50	767	1,167	221	93	112	4
Ophthalmia neonatorum Deaths	52	—	16	—	—	54	5	16	1	—
Paratyphoid fever Deaths	1	—	2(B)	—	—	2	—	—	—	—
Pneumonia influenzal Deaths (from influenza)	1,278	79	27	18	7	1,794	128	124	35	14
Pneumonia primary Deaths	148	23	10	—	1	297	48	40	10	8
Polio-encephalitis acute Deaths	12	—	310	39	19	118	510	28	23	17
Poliomylitis acute Deaths	1	1	1	8	1	13	1	1	—	—
Puerperal fever Deaths	—	—	18	—	—	2	22	—	—	—
Puerperal pyrexia† Deaths	126	10	10	1	—	160	11	15	1	2
Relapsing fever Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever Deaths	1,135	89	288	41	36	1,351	135	225	22	33
Smallpox Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid fever Deaths	6	1	1	5	—	7	—	—	3	—
Typhus fever Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough* Deaths	1,890	156	295	60	43	1,265	118	93	25	4
Deaths (to 1 year) Infant mortality rate (per 1,000 live births)	558	14	10	—	2	414	65	10	45	17
Deaths (excluding still births) Annual death rate (per 1,000 persons living)	7,079	1,222	775	204	204	7,211	1,231	931	281	202
Live births Annual rate per 1,000 persons living	9,677	1,485	1,189	266	266	7,354	1,050	865	316	281
Stillbirths Rate per 1,000 total births (including stillborn)	245	30	38	—	—	214	28	32	—	—

* Measles and whooping-cough are not notifiable in Scotland and the returns are therefore an approximation only
† Includes primary form for England and Wales London (administrative county) and Northern Ireland
‡ Includes puerperal fever for England and Wales and Eire
It is still not possible to publish the return of births and deaths for Eire for the weeks ended Oct. 26, Nov. 2, 9, 16, 23, 30, Dec. 7, 14, 21, 28, 1946, Jan. 4, 11, 18, 25, Feb. 1, and 8, 1947

No 6

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Feb 8

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year for (a) England and Wales (London included) (b) London (administrative county) (c) Scotland (d) Eire (e) Northern Ireland
Figures of Births and Deaths recorded under each infectious disease are for (a) The 126 great towns in England and Wales (including London) (b) London (administrative county) (c) The 16 principal towns in Scotland (d) The 13 principal towns in Eire (e) The 10 principal towns in Northern Ireland
A dash — denotes no cases a blank space denotes disease not notifiable or no return available

Disease	1947					1946 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever Deaths	94	8	19	10	2	98	6	24	4	3
Diphtheria Deaths	233	23	68	20	7	477	27	140	41	24
Dysentery Deaths	49	6	26	4	—	337	24	65	—	—
Encephalitis lethargica acute Deaths	1	—	—	—	—	4	1	1	—	—
Erysipelas Deaths	—	—	45	6	2	—	—	46	8	4
Infective enteritis or diarrhoea under 2 years Deaths	106	13	20	27	1	48	5	10	27	1
Measles* Deaths	17,258	583	326	66	740	1,211	237	221	85	1
Ophthalmia neonatorum Deaths	59	3	17	—	1	67	5	20	—	—
Paratyphoid fever Deaths	3	—	—	—	1(B)	8	—	—	—	—
Pneumonia influenzal Deaths (from influenza)	1,583	111	13	35	12	1,832	114	107	40	14
Pneumonia primary Deaths	211	30	12	7	304	49	36	13	6	—
Polio-encephalitis acute Deaths	1	—	285	49	14	84	528	43	14	16
Poliomylitis acute Deaths	10	2	1	7	—	11	—	1	1	—
Puerperal fever Deaths	—	1	6	—	—	1	6	—	—	—
Puerperal pyrexia† Deaths	115	11	18	—	—	173	16	10	1	1
Relapsing fever Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever Deaths	1,130	68	244	21	30	1,405	124	178	21	33
Smallpox Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid fever Deaths	7	—	—	6	—	6	—	—	3	1
Typhus fever Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough* Deaths	1,842	161	384	66	30	1,253	100	69	49	8
Deaths (to 1 year) Infant mortality rate (per 1,000 live births)	672	79	79	—	14	462	63	67	40	5
Deaths (excluding still births) Annual death rate (per 1,000 persons living)	8,308	1,515	834	205	205	6,582	1,049	837	274	185
Live births Annual rate per 1,000 persons living	9,547	1,534	1,191	331	331	7,382	1,106	874	418	258
Stillbirths Rate per 1,000 total births (including stillborn)	308	38	39	—	—	231	31	33	—	—

* Measles and whooping-cough are not notifiable in Scotland and the returns are therefore an approximation only
† Includes primary form for England and Wales London (administrative county) and Northern Ireland
‡ Includes puerperal fever for England and Wales and Eire
It is still not possible to publish the return of births and deaths for Eire for the weeks ended Oct. 26, Nov. 2, 9, 16, 23, 30, Dec. 7, 14, 21, 28, 1946, Jan. 4, 11, 18, 25, Feb. 1, and 8, 1947

Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Sulphonamide Snuff for Colds

Q—*Could frequent snuffing of sulphapyridine powder as a preventive of colds cause damage to the blood similar to that resulting from prolonged overdosage by mouth?*

A—It is difficult to believe that anyone would take sulphapyridine snuff every two or three hours daily throughout a winter and even if he did he would be lucky to escape colds. Assuming, however, that this is what is meant, the answer is that in a small minority of individuals a toxic effect on the bone marrow might be produced. This has been the experience when sulphanilamide or sulphadiazine has been given in small doses for long periods with a view to preventing recurrences of rheumatic fever. Sulphapyridine is very insoluble. Taken as snuff most of it would be carried to the pharynx in mucus and swallowed, still in solid form, with the same result as if it had been taken by mouth. A more suitable sulphonamide for use as snuff, when this treatment is really indicated is sulphathiazole. It is very doubtful whether sulphonamide snuffs are of any value except for the treatment of certain specific bacterial infections or carrier states.

Pseudo-Hermaphrodite

Q—*A healthy woman aged 35 recently gave birth to a 9½-lb (4.3-kg) baby. Presuming the baby to be a girl the labia majora are wide with a small rounded swelling in the centre of each giving the appearance of a scrotum divided in two down the middle and are separated by a mucous membrane. The clitoris is slightly enlarged and the labia minora are absent. The vagina is represented by a shallow dimple and the umbilicus is immediately above the symphysis pubis. Is there any test to determine the sex, and is hormone treatment of use?*

A—It seems likely that the small rounded swellings in the labia are gonads, and, if this is so, they are probably testes, the "labia majora" being in fact a bifid scrotum and the enlarged clitoris a rudimentary penis. This type of abnormality of the external genitalia is by no means uncommon. The lower abdominal wall is not so often involved, but this feature of the case is not surprising bearing in mind that the external genitalia are developed in the area of the ectodermal cloaca, which extends initially from the body stalk to the rudimentary tail.

It will be difficult to prove the child's sex by chemical or other clinical tests. Estimation of the excretion of the 17-ketosteroids in the urine might be of some value. Thus if the child were female the virilism (for example, the enlarged clitoris) will probably be the result of overactivity of the adrenal cortex and the ketosteroid excretion would be high. On the other hand, if it is a male, the 17-ketosteroid excretion is likely to be as in normal male babies—at an extremely low level. However, too much reliance could not be placed on tests of this kind because the normal excretion levels of the various hormones and their end-products have not yet been established for infancy and childhood. It will almost certainly be necessary to determine the sex by biopsy of the gonad, and at the same time it will be desirable and important to carry out laparotomy to see what internal genital organs are present. One of the difficulties is to decide the time at which surgical intervention should be carried out. Every case has to be judged on its merits but the general view is that operation should be deferred until after puberty—that is until such time as there is evidence as to the nature of the secondary sex characters including the mental outlook and sex impulses. In addition to determining the true state of affairs by laparotomy it will then be possible at the same time to carry out some sort of sex-formative operation, and in doing so the wishes of the individual should be kept in mind. Thus, if the natural inclinations are feminine the testes in the labia and the phallus could be removed.

If it is decided to adopt this waiting policy the child should in the meantime be brought up as a male. Nearly all these cases turn out ultimately to be male, and in any case there is less risk of social difficulties if a female pseudo hermaphrodite is sent to a boys' school than if a male pseudo hermaphrodite is sent to a girls' school. The later developments in cases of this kind are varied and difficult to foretell even if the nature of the gonad is known. Secondary sex characters, including sex desire, depend so much on the other endocrine organs and the ultimate outlook of the individual may be feminine or masculine. It is unlikely that hormone therapy will be of practical value in any attempt to alter the sex at a later age, the better plan will be to aim at modifying by plastic surgery the genital apparatus to suit the individual rather than vice versa.

A Child in Moral Danger

Q—*I was called to see an 11-year-old girl with bronchitis. Her mother confided to me that her husband, recently returned after an absence of six years, had been behaving very strangely towards the girl. He takes her out each evening and the neighbours are beginning to talk. The mother coming suddenly into the house has often found them in compromising positions. On one occasion she found her husband embracing the girl with his hands on her breasts which are fairly well developed. The maternal grandmother has seen many similar incidents once she saw them separating from an embrace and the girl was flushed and panning and looked frustrated. The husband was untouched by an appeal from his wife pointing out the impropriety of his conduct. What do you advise?*

A—Under Section 61 of the Children and Young Persons Act, 1933 if a juvenile court is satisfied that a child is in need of care or protection it has various powers, including the power to remove the child from home or to place it under supervision. A child in need of care or protection is among other things, one whose parent or parents are not looking after it properly and who is in moral danger. If evidence could be adduced that a father is interfering sexually with his child even though such interference did not merit a criminal charge of incest, the child would almost certainly be deemed to be in need of care or protection. Proceedings under this section can be initiated, *inter alia*, by the police or by an authorized person. In practice the only "authorized person" is the NSPCC.

In the present case the doctor (or, indeed, anyone else in whom the mother had confided) should in the first instance explain the legal position to the mother as set out above. It is then for her to decide, preferably in consultation with the police or the NSPCC (she would probably prefer the latter) whether the evidence is strong enough to bring a case, it being borne in mind that both the father and the girl will probably vehemently deny all the allegations made. If, however, the mother's observations can be confirmed in court by those of the grandmother there would seem to be some chance of a case under this section being successful. On the other hand if it is felt that the evidence is not sufficient, then the mother and grandmother can do no more than continue to keep watch. It may well be, of course, that the threat of proceedings will deter the father from making any further advances—at least for the time being. In considering what action to take, the mother will naturally have regard to the effect of such proceedings, or the threat of them, upon her marriage. If, as the result her husband leaves her, she would then be free to apply to the court for a maintenance order giving her the custody of the child.

The address of the headquarters of the NSPCC is Victoria House, Leicester Square, London, WC2.

Bleeding Tooth-sockets

Q—*Apart from mechanical means what specific remedies can be applied for a bleeding tooth socket following dental extraction?*

A—Mechanical methods offer much the best hope of stopping haemorrhage from a tooth socket, but these methods may be combined with the local use of drugs. Snake venom or pectin derivatives can be used locally and general agents such as calcium may be injected. Mechanical means are usually sufficient by themselves. It is important, however, that the

plug should not be pushed into the tooth socket but only placed over it as prevention of the normal clot forming in the socket inevitably leads to sepsis sequestration of the bony walls and delayed healing

Cooking Eggs and Salmonella

Q—You published (Oct 19 1946 p 583) an annotation about the danger of infection of dried egg powder by salmonella organisms. Is there any method of cooking which will neutralize this danger?

A—Salmonella organisms have the usual susceptibility of non sporogenous bacteria to heat, that is to say, at 55°C they are killed within 30 minutes and at higher temperatures in proportionally shorter periods survival at over 70°C being measured in seconds rather than in minutes. The following culinary methods of using egg or egg powder must be considered in this light. In the preparation of salad creams no heat is employed, the organisms survive unless killed by vinegar. When poaching eggs (this applies only to shell eggs) the yolk is not adequately heated and the organisms survive, this is the commonest mode of infection. The same applies to light boiling. In scrambling and omelette making, if the whole of the mixture is coagulated the organisms will be killed if any of it remains fluid they may not. Only cake-making may be considered entirely safe.

Dermatomyositis

Q—A boy of 16 is suffering from dermatomyositis. What are the aetiology and the prognosis of this condition and is there any possibility of cure?

A—The aetiology is unknown, some believe the affection to be infective others that it has an endocrine origin—especially related to dysthyroidism. Prognosis is very variable recovery may occur or the affection may remain stationary at a stage not causing great disability. Death is often by intercurrent respiratory disease if disablement involves the chest musculature. Biochemical investigation may help to indicate a method of treatment, especially in relation to sodium and potassium metabolism. A similarity to myasthenia gravis and to Addison's disease should not be overlooked. Occasionally epinephrine has seemed to help. Treatment is essentially symptomatic.

Itching of the Hands

Q—A lady aged 40 complains of intolerable itching of the hands soon after immersion in cold water. With warm water the irritation is not so marked. Examination reveals no abnormality of the skin the local temperature being unaffected. She is subject to Raynaud's phenomenon and moderate chilblains on the fingers in the winter. Any advice would be appreciated.

A—It would be interesting to know how long the patient has been subject to this trouble and whether it followed any infective illness. The condition would seem to be related to cold urticaria which is generally seen at puberty or after an infective illness. This is apparently due to the local effects on the smaller vessels and nerve-endings of a metabolite produced in the tissues by the cold. Benadryl might control such a reaction. Vitamin K therapy might improve the poor peripheral circulation and reduce the tendency to such reaction.

Third-generation Syphilis

Q—Is congenital syphilis a cause of sterility or infertility? If not is it possible for a congenital syphilitic to transmit the infection to his or her offspring?

A—Congenital syphilis is no more likely to cause sterility or infertility than the acquired form or than any disease which affects the organs of procreation. Naturally such conditions as congenital tabes or GPI are likely to cause infertility and gummas of the testicles to result in sterility. Such conditions are rare. It is generally believed nowadays though it is denied by some that third generation syphilis does occur but it is certainly very rare. It does not seem possible for a congenitally syphilitic male to produce a syphilitic baby by a healthy mother.

Letters and Notes

Photographs of Nigerian Pagans

An exhibition of photographs, taken by Dr Joseph Denfield was opened on Monday, Feb 10, by Mr Michael Huxley, Editor of the *Geographical Magazine* at the Ilford Galleries, 101, High Holborn, London, WC1. These photographs were taken by Dr Denfield during his tour of military service in Northern Nigeria. They illustrate vividly the life of the pagan inhabitants of the Bauchi Plateau who live in conditions almost entirely unaffected by Western civilization. Apart from their very high artistic merit many photographs bring out points of medical interest: the use of keloids for personal adornment, the decorative value of nose and lip plugs, duck-billed women, a fashion originally introduced to make females unattractive to raiders from other tribes but persisting even when raiding has ceased. A tight string round the neck is said to be a sovereign remedy against endemic goitre, which has a high incidence in some of the villages.

The Igwe tribe is divided into male and female sections: a male of the female section is forbidden to wear any clothes whatsoever, while his hair must be dressed in feminine style. Psychoanalysts have not yet visited this tribe. One photograph illustrates the flogging ceremony of the Fulani. It may seem a little odd to select your herdsman because of his power to endure a severe flogging without flinching, but like the Spartans in ancient Greece no Fulani youth even to-day has any chance of obtaining a wife unless he has proved his manhood in this way. The exhibition will remain open for some weeks.

Control of Measles

Mr ELWIN HARRIS FRCS (Bristol) writes: I am interested in the articles on measles in the *Journal* for Feb 8 (pp 209 and 225). Many years ago oiling the patient was recommended for scarlet fever, and I have always used it in the treatment of measles. The treatment consists of a hot blanket bath followed by the application of oil to the whole body. The oil used is of eucalypti 10 min (0.6 ml) and of olive oil 1 oz (28 ml). This is carried out each evening and in severe cases in the morning as well. I cannot recall a single case of oil in media complicating measles during twenty-two years of general practice. I have attributed the efficacy of the treatment to the fact that the patient inhales the eucalyptus through out the night, but your articles suggest that it may be otherwise. Not only is the treatment effective in preventing complications, but it is extremely soothing to the patient and induces sleep. Oiling floors and sheets is hardly practicable in domiciliary practice, but oiling the patient is easy and, in my experience, extremely effective.

Correction Whooping-cough Immunization

In the answer to the question (Feb 1 p 207) as to which public health authorities were carrying out immunization against whooping cough on a large scale it was stated that trials had been organized in the boroughs of Tottenham and Wembley and in the City of Manchester using American vaccines. A somewhat similar trial using Sauer vaccine was undertaken in Oxford in 1944 with the co-operation of the medical officer of health and the Medical Research Council. This Oxford trial should have been mentioned in the original answer.

—Correction

In the *Journal* of Feb 8 at page 224 under "Books Received" the editors of the book *The Nation's Food* were incorrectly designated the following is correct: A L Bacharach, M.A., FRIC and T Rendle, FRIC, with an introduction by Sir Joseph Barcroft CBE, FRS.

In the reply to a question on the increase in tuberculosis (Jan 4 p 39) the figures for tuberculosis from 1939 to 1944 were those for males only.

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, WC1. TELEPHONE: EUSTON 2111. TELEGRAMS: *Athology*. Western London. ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Authors desiring REPRINTS should communicate with the Publishing Manager, B.M.A. House, Tavistock Square, WC1, or receipt of proofs. Authors overseas should indicate on MSS if reprints are required as proofs are not sent abroad. ADVERTISEMENTS should be addressed to the Advertisement Manager, B.M.A. House, Tavistock Square, London, WC1 (hours 9 a.m. to 5 p.m.). TELEPHONE: EUSTON 2111. TELEGRAMS: *Britmedads*, Westminster, London. MEMBERS' SUBSCRIPTIONS should be sent to the SECRETARY of the Association, TELEPHONE: EUSTON 2111. TELEGRAMS: *Medisecra*, Westminster, London. B.M.A. SCOTTISH OFFICE: 7 Drumsheugh Gardens, Edinburgh.

NEGOTIATING COMMITTEE

The Negotiating Committee met Mr Aneurin Bevan, the Minister of Health on Friday, Feb 28. The representations made to the Minister were based on the following resolution passed at the Special Representative Meeting of the Association on Jan 28, and subsequently adopted by the Negotiating Committee

"That the Association, having considered the final results of the plebiscite and the Minister's letter of Jan 6 to the Presidents of the Royal Colleges and desiring to secure for the people the best possible health service, is willing that discussions be entered into with the Minister to that end, provided that such discussions are comprehensive in their scope, and that the possibility that they may lead to further legislation is not excluded and that after the conclusion of these discussions, a second plebiscite be taken on the issue of entering the Service"

- As an outcome of the meeting, six subcommittees of the Negotiating Committee dealing with general practice hospital and specialist services, public health mental health services, eye services and superannuation, respectively will begin comprehensive discussions with the Ministry based on the resolution of the Representative Body

Association Notices

SCHOLARSHIPS IN AID OF SCIENTIFIC RESEARCH

The Council of the British Medical Association is prepared to receive applications for Research Scholarships as follows: an Ernest Hart Memorial Scholarship of the value of £200, a Walter Dixon Scholarship of the value of £200, and four Research Scholarships, each of the value of £150. These Scholarships are given to candidates whom the Science Committee of the Association recommends as qualified to undertake research in any subject (including State Medicine) relating to the causation, prevention or treatment of disease. Preference will be given, other things being equal to members of the medical profession. Each scholarship is tenable for one year, starting on Oct 1. A scholar may be reappointed for not more than two additional terms. A scholar is not necessarily required to devote the whole of his or her time to the work of the research but may hold a junior appointment at a university, medical school, or hospital, provided the duties of such appointments do not interfere with his or her work as a scholar.

Conditions of Award Applications

Applications for scholarships must be made not later than Saturday, May 31, on the prescribed form, a copy of which will be supplied on application to the Secretary of the Association, BMA House, Tavistock Square, London WC1. Applicants are required to furnish the names of three referees who are competent to speak as to their capacity for the research contemplated.

Branch and Division Meetings to be Held

NORTH OF ENGLAND BRANCH—At Royal Victoria Infirmary, Newcastle-upon-Tyne, Thursday, March 13, 7.15 p.m. Clinical demonstration by Mr J. V. Todd. Treatment of Common Foot Disorders, 8.45 p.m., Surg. Rear-Admiral R. J. Willan. Forty Years Experience of Haematuria in Surgical Practice.

RICHMOND DIVISION—At Royal Hospital Richmond, Friday, March 14, 9 p.m. Dr R. M. B. MacKenna. Modern Trends in Dermatology.

WAKEFIELD, PONTEFRAC T AND CASTLEFORD DIVISION—At Clayton Hospital Wakefield, Thursday, March 13, 8.15 p.m. Prof R. E. Tunbridge. Peripheral Vascular Disorders.

DIARY OF SOCIETIES AND LECTURES

ROYAL COLLEGE OF SURGEONS OF ENGLAND Lincoln's Inn Fields, WC—*Mon* 3.45 p.m. Dr L. E. Glynn. Aneurysms and Aneurysm Formation. 5 p.m., Prof E. Goldby. Intra Cranial Anatomy of the Trigeminal Nerve. *Tues* 3.45 p.m. Prof P. R. Peacock. Aetiology of Gastric Cancer. An Experimental Approach. 5 p.m., Prof E. Goldby. The Anatomy of the Optic Pathways. *Wed* 3.45 p.m., Prof A. Haddow. Cancer as a Problem in the Transformation of Cells and Viruses (1) Carcinogenesis by Chemical Agents. 5 p.m., Prof C. M. West. The Reproductive System (1). *Thurs* 3.45 p.m. Prof A. Haddow. Cancer as a Problem in the Transformation of Cells and Viruses (2). The Nature and Role of Tumour producing Viruses. 5 p.m., Prof C. M. West. The Reproductive System (2). *Fri* 3.45 p.m., Dr J. R. M. Innes. Some Aspects of Animal Pathology of Interest to the Medical Worker. 5 p.m. Dr T. E. Barlow. The Development and Form of the Bronchial Tree.

ROYAL SOCIETY OF MEDICINE

Section of Experimental Medicine and Therapeutics—*Tues*, 5 p.m. Discussion. New anti-malarials and malarial control. Openers: Brig J. S. K. Boyd, and Prof N. Hamilton Fairley.

Section of Psychiatry—*Tues*, 5.30 p.m. Paper by Dr Russell Davis. Disorders of skill, an experimental approach to some problems of neurosis.

Section of Physical Medicine—*Wed*, 4.30 p.m. Paper by Mr H. E. Griffiths. Analysis of function.

Section of Proctology—*Wed*, 8.30 p.m. A clinical pathological meeting will be held.

Section of Ophthalmology—*Thurs*, 5 p.m. (Cases at 4.30 p.m.) Discussion. Allergy in Ophthalmology. Openers: Mr O. Gayer Morgan, Dr C. J. C. Britton, and Dr J. T. Ingram.

Clinical Section—*Fri* 5 p.m. (Cases at 4 p.m.)

BIOCHEMICAL SOCIETY—At Guy's Hospital Medical School, St. Thomas' (March 15), 2.30 p.m. Annual general meeting. Communications and demonstrations.

BRITISH INSTITUTE OF PHILOSOPHY—At Eugenics Theatre, University College, Gower Street, WC, *Fri* 7.30 p.m. Prof L. J. Russell. Philosophy and Life.

MEDICAL SOCIETY OF LONDON 11 Chandos Street, Cavendish Square, W—*Mon* 8.30 p.m. Discussion. Modern Treatment of Thyrotoxicosis. To be introduced by Dr Horace Evans and Mr Geoffrey Keynes.

ROYAL INSTITUTE OF PUBLIC HEALTH AND HYGIENE 26 Portland Place, W—*Wed* 3.30 p.m. Miss Isabel Macdonald. The History of Nursing (Illustrated).

WEEKLY POSTGRADUATE DIARY

EDINBURGH POSTGRADUATE BOARD FOR MEDICINE—At Edinburgh Royal Infirmary, *Tues* 5 p.m. Prof J. H. Gaddum. Introduction of New Remedies.

LONDON SCHOOL OF DERMATOLOGY 5 Lisle Street, Leicester Square, WC—*Tues* 5 p.m. Dr R. F. Bettley. Eczema. *Thurs* 5 p.m., Dr J. L. Franklin. Occupational Diseases of the Skin.

BIRTHS, MARRIAGES, AND DEATHS

The charge for an insertion under this head is 10s. 6d. for 18 words or less. Extra words 3s. 6d. for each six or less. Payment should be forwarded with the notice, authenticated by the name and permanent address of the sender, and should reach the Advertisement Manager not later than first post Monday morning.

BIRTHS

CATTERALL—On Feb. 8, 1947, at Preston Royal Infirmary to Elizabeth (née Cormack) wife of Dr S. Catterall, Brockhall, Langho, Lancs., a daughter.

GORDON—On Feb. 8, 1947, at Nuffield House, Guy's Hospital, to Sally (née Allingham) wife of Dr John Gordon of Esher, a son—Andrew Charles John.

LONDON—On Feb. 5, 1947, at Burgh Heath, Surrey, to Stella (née Charter) wife of J. J. London, M.B. B.Ch., a son—John Richard.

LITTLE—On Feb. 12, 1947, at Bangor, N. Wales, to Margaret Neved (née James) wife of Dr D. Crawford Little, a son.

MCBOYLE—On Feb. 16, 1947, to Catherine wife of Dr J. R. McBoyle, 57 Earl Marshal Road, Sheffield, a son, both well.

RIORDAN—On Jan. 18, 1947, to Olga wife of Dr T. P. Riordan of Willoughby, Barley Lane, Goodmayes, a son—Kevin Vaughan.

ROHAN—On Jan. 27, 1947, at Shrublands Nursing Home, to Chris (née Macleod) wife of Dr J. C. Roban, 34 Coombe Road, Croydon, a son—Denys.

VARIAN—On Jan. 11, 1947, at Bath, to Katha wife of Mr S. N. Varian, a son—Nigel Stephen.

WYSE—On Feb. 6, 1947, to Major and Mrs R. W. Wyse, Southlands, Ellesmere Park, Eccles, Lancs., a son.

MARRIAGES

ALLEN-COLINS—On Feb. 1, 1947, at the Savoy Chapel, London, Dr Richard Allen R.A.F.V.R. of Brighthelm to Miss Judy Collins C.S.P. of Bromley.

HARRIS-OSMOND—On Jan. 29, 1947, in Nairobi, Kenya, Norman Francis Harris to Dr L. B. Mary Osmond (née Watch).

HAWKINS-FROLIC—On Feb. 14, 1947, Peter Shaiyle Hawkins M.R.C.S. to Frieda Elizabeth Frolic.

IGHODARO-COLE—On Jan. 25, 1947, at Newcastle-upon-Tyne, Samuel Osarogie Ighodaro M.A. of Benin City, Nigeria, West Africa, to Irene Elizabeth Beatrice Cole M.B. B.S. of Freetown, Sierra Leone, West Africa.

MORRICE-STEWART—On Feb. 6, 1947, at Manchester, George Morrice M.B. Ch.B. Aber. to Margaret Stewart daughter of Dr A. B. Stewart 25 Windsor Road, Manchester 10.

DEATHS

BRIGO—On Feb. 21, 1947, at 11 Sunnysbank Road, Edgerton, Huddersfield, William Edward Brigo M.B. Ch.B. aged 31.

CUMMINS—On Feb. 8, 1947, at Smyrna Beach, Florida, Major Arthur Gordon Cummins M.C. late R.A.M.C.

GRAY—On Jan. 21, 1947, at Totana, Murcia, Spain, Albert G. Gray M.B. Ch.B. aged 70.

LEDGER—On Feb. 7, 1947, at Torquay, A. Vernon Ledger M.D. (formerly of Plymouth).

MCFILL—On Feb. 3, 1947, in London, A. N. R. McNeill D.S.O. M.B. Ch.B. D.P.H. Colonel A.M.S. (ret.) beloved husband of Nora McNeill.

NAVARRA—On Feb. 22, 1947, at Llandudno Hospital, Norman Navarra I.R.C.P. M.R.C.S. D.P.M. formerly Deputy Medical Superintendent City of London Hospital, Dartford, aged 70.

SMITH—On Jan. 30, 1947, at 150 Derby Road, Long Eaton, Nottingham, Reginald Farmery Smith M.R.C.S. L.R.C.P. beloved husband of Helen (Carmichael) M.B. Ch.B.

THE "COSTOCLAVICULAR SYNDROME"

BY

E. D. TELFORD, F.R.C.S.

Emeritus Professor of Surgery, University of Manchester

AND

S. MOTTISRSHAD, M.D., F.R.C.S.

Assistant Lecturer, Department of Anatomy, University of Manchester

While the symptoms which may arise from pressure on the neurovascular bundle as it passes from the thoracic inlet to the arm, although many and varied, are well known and easily recognizable, there is no general agreement on either the site or the mechanics of the compression. There is no doubt that earlier writings have over-simplified the position, and only in recent years does it seem to have been realized that there is no one cause of pressure common to all cases.

The present study is based on (1) the findings at 120 operations undertaken for the relief of pressure on the neurovascular bundle of the arm, (2) examination of the effects of posture of the shoulder girdle on the radial pulse in a series of 120 medical students, (3) the evidence obtained by dissection of 30 bodies.

Operation Findings

These are based on the records of 120 patients who were operated upon by one of us (E. D. T.) between 1908 and the present time for symptoms of pressure on the neurovascular bundle of the arm. Of the 120 cases there were 16 in which the customary symptoms were accompanied, and to a great extent overshadowed, by complications. The remaining 104 cases were of the ordinary textbook type.

The Complicated Cases

Fourteen of these showed extensive arterial thrombosis and in the other two the outstanding complaint was a profuse hyperhidrosis of the hands. In all the cases of thrombosis a well-developed cervical rib was present, but in no single case was any deformity, narrowing, or periarthritis found in the artery where it lay on the rib. In 12 patients the thrombosis extended no higher than to some point between the bifurcation of the brachial artery and the lower border of the pectoralis major. In only two cases was the thrombosis found to extend upwards towards the cervical rib. In neither of these did it reach the rib, but began 1 cm. distal to it in an aneurysmal dilatation of the vessel with much periarthritis.

In two patients the hyperhidrosis of the hands was profuse enough to prevent them following their employment. In one of these the cause was a well formed cervical rib and in the other a taut fibro cartilaginous band representing the forward end of a rudimentary cervical rib.

The Uncomplicated Cases

In 12 of the 104 cases pressure on the lowest trunk of the plexus was due to a strong taut band springing from the pointed tip of a small cervical rib. This band passes downwards and forwards in the anterior border of the scalenus medius. If the anaesthetist is asked to deepen the breathing the lowest trunk is seen to be lifted up by the band, it has in fact in most cases a permanent notch at the point of contact.

A condition which was very similar was found in another 8 cases. The insertion of the scalenus medius was carried forward further than normal with the result that the lowest trunk and the artery were not in contact with the rib but were raised by the V formed on one side by the lateral tendinous edge of the scalenus anterior and on the other by the sharp anterior border of the scalenus medius. In all these cases a partial detachment of both muscles resulted in cure. In 2 cases both girls aged 14, the cause of pressure was a large excelsus boss arising at the point where a well developed cervical rib reached the first thoracic rib. In 8 patients resection of an apparently normal first thoracic rib cured the trouble. In two at least of these there was a distinct scoliosis of the cervico-dorsal spine. In 5 patients no adequate cause was found. They were unrelieved by operation, and may have been instances of brachial neuritis or of prolapsed disc.

The remaining 69 cases showed cervical ribs in various stages of development. In none of these cases was there any naked-eye evidence that either plexus or artery had been damaged by pressure of the clavicle. In the majority the lowest trunk, when freed, showed a permanent notch made by the upper edge of the rib across which it had been tightly stretched. In 3 cases there was an aneurysmal dilatation of the third stage of the subclavian artery starting 1 cm. distal to the rib. With two such cases already mentioned this gives 5 cases of dilatation in 120 patients—a proportion which is in close accord with Husted's (1916) report of 25 instances in 525 patients.

Previous writers have stated that these 'cervical ribs' are in some patients true first thoracic ribs in a deformed and rudimentary state. This observation can be confirmed by taking antero-posterior skiagrams by the moving mandible technique. This permits an accurate count of the cervical vertebrae and should be done in all cases of suspected cervical rib.

Constriction of Axillary Artery by the Median Nerve

A young man aged 23 complained that when his left arm was hanging down by the side he felt numbness and tingling in the hand. This not only gave him much trouble at his work but had led to his being invalided out of the Army. It was noted that depression of the shoulder obliterated the radial pulse but left the third stage of the subclavian artery unaffected.

At operation no cause was found in the neighbourhood of the first rib. A second incision was made below the clavicle through which the axillary artery and adjacent nerves were freely exposed. It was then seen that on downward traction of the arm the artery was compressed by the grip of the two heads of the median nerve and that all pulsation ceased below this point. The opportunity of two incisions, one above and one below the clavicle, was taken to determine what pressure the clavicle could exert on the first rib. A piece of diaphyseal tubing of a calibre equal to that of the artery was threaded between the wounds and behind the clavicle parallel to and in front of the vessel with the shoulder in the normal position. On depression of the shoulder the tube fell out because

clavicle moved away from the rib. In this patient, a broad-shouldered well-built man, there could be no possibility of pressure on the neurovascular bundle in depression of the shoulder.

From the above findings in 120 interventions it is clear that no one happening—e.g., clavicular pressure—can explain all cases of pressure lesions of the plexus.

Movements of the Shoulder in Relation to the Radial Pulse

It is an old observation that in certain positions of the shoulder the radial pulse is diminished or completely arrested. Some writers have taken for granted that the cause of this interference is costoclavicular pressure. For instance, Falconer and Weddell (1943) state that "more than one postural manœuvre involving the shoulder girdle may result in compression of the subclavian vessels." But it is not the subclavian artery that is compressed. A simple observation will show that there is a normal pulse in the first stage of the axillary artery well below the clavicle and that the clavicle has nothing to do with the arrest of the pulse in the arm on pure depression of the shoulder. From this point of view we examined a large series of medical students.

In the extensive literature of cervical rib difficulties arise from a lack of exact definition of the position of the arm and shoulder. In what follows we mean by "depression" a position of the arm held vertically by the side in the posture of carrying a heavy bag, and by "retraction" we imply a displacement of the shoulder backwards, a bracing back of the shoulder as in "throwing a chest". The results are set out in the accompanying Table. From this it is

Table Showing the Effect of Different Postures of the Shoulder in 240 Arms with the Subject in the Erect Position

	Depression of Shoulder	Retraction (Bracing Back) of Shoulder	Extension of Neck (Adson's Manœuvre)	Abduction of Arm		Adduction of Arm Against Resistance
				90°	180°	
70 males (i.e. 140 arms)	56 68 16	53 70 17	118 20 2	131 6 3	75 42 23	18 38 84
30 females (i.e. 60 arms)	30 48 22	23 64 13	94 6 0	91 6 3	35 35 30	9 16 75

seen that in depression of the shoulder there were 116 instances of diminution and 38 of arrest of the radial pulse—i.e., the radial pulse showed some alteration in 64%. In retraction of the shoulder there were 134 instances of diminished and 30 of arrested pulse—i.e., the radial pulse was modified in 68%. In abduction of the arm to 90° the effect is but slight, in only 18 cases—i.e., 7.5%—was any difference noted. In abduction to 180° the proportion of cases in which some alteration was found rose to 54%.

The results when the subject attempts adduction against resistance are of special interest. Whereas in passive abduction to 90° the percentage of alteration is as low as 7.5, when the arm is actively adducted there is a steep rise to 90%. This seems to indicate that some muscular action has come into play. The subject will be referred to later. If the same observations are made with the subjects recumbent it is found that there is no difference in the results from depression of the shoulder in the erect and recumbent positions. This finding suggests that the cause is purely mechanical and unaffected by gravity. In the recumbent position the effects on the pulse in abduction to 180° are noticeably slighter. This may be due to the effect of gravity.

Anatomy of the Axillary Artery

Bearing in mind the fact that the arrest of the pulse in the axillary artery this region was dissected in 18 bodies. In 12 out of 18 dissections the axillary artery at the level of the second rib took an abrupt lateral turn for 1.5 cm and then again changed direction to pass directly down into the arm. The trunks of the plexus were arranged round the first part of the artery in the following manner: the superior trunk was placed postero-lateral, the middle trunk posterior, and the inferior trunk postero-medial to the vessel. The lateral and medial heads of the median nerve were given off the plexus just at the point where the artery made its S turn opposite the second rib. They lay one in front and the other behind the artery, embracing it in a scissor-like grip which when the shoulder was depressed by traction on the arm could be seen to constrict the vessel. In the remaining 6 subjects the lateral curve of the vessel occurred opposite the first rib. Thus the superior trunk lay anteriorly, the middle trunk postero-medially, and the inferior trunk medially to the artery. The two heads of the median nerve are, in this type, so disposed that they cannot constrict the vessel however much the shoulder is depressed.

The above relationships differ from those usually described owing to the fact that our dissections were made with the arm close alongside the trunk. In the usual position for dissection—i.e., abduction to 90°—the S bend of the vessel is straightened out. The heads of the median nerve are in relation to the third part of the artery when the arm is abducted but to the junction of the first and second parts when the arm is by the side of the body.

The evidence afforded by the operation described above and by observations from our dissections would seem to suggest that the arrest of the radial pulse in depression of the shoulder is due to compression of the artery by the heads of the median nerve. It is not without significance that these postures caused changes in the pulse in two-thirds of the students and that a relationship in which such constriction was mechanically possible was found in 12 of 18 bodies.

The explanation of the arrest of the radial pulse in abduction is not easy. Dissection shows that with the arm alongside the body the neurovascular bundle lies at a distance of 3 to 4 cm below the coracoid process. As the arm is abducted the distance alters little, for although the bundle rises slightly the coracoid is elevated at its tip and moves backwards owing to rotation of the scapula. This movement carries the pectoralis minor upwards and backwards so that the neurovascular bundle is obliged to move slightly backwards under this muscle to reach the abducted arm. During abduction the humerus rotates laterally to prevent the impingement of the greater tuberosity against the acromion. The humeral head protrudes into the lax part of the joint capsule, causing a prominence under the tendon of the subscapularis. The neurovascular bundle as it emerges from under the pectoralis minor is pressed against the head of the humerus covered by the tendon of the subscapularis. Division of the pectoralis minor at its insertion frees the bundle, and its close apposition to the humerus is relieved.

It has already been shown that, whereas simple abduction of the arm to 90° interferes with the radial pulse in 7.5% of subjects, the ratio rises at once to 90% if the subject forcibly adducts the arm. By this action the pectoralis minor and subscapularis would be tightened to an extent sufficient to cause compression of the axillary artery. Whilst making this suggestion with reserve we would state definitely that in none of our dissections did we find any

evidence to support Wright's (1945) contention that trouble may arise from forcible contact with the coracoid process itself

Movements of the Clavicle in Relation to the First Thoracic Rib

The relations between the clavicle and the first rib were studied in 25 bodies. In these formalized bodies it is necessary to cut across a certain amount of muscle if full movement of the clavicle is to be obtained. To guard against the possibility that this cutting of muscle might falsify the findings, five fresh post-rigor bodies were examined in the post-mortem room. There was, however, no difference in the findings in the two sets of bodies.

When the shoulder girdle is depressed by pulling the arm downwards alongside the trunk the clavicle describes an arc moving downwards and forwards so that the further the shoulder is depressed the further forward the clavicle moves, widening the interval between the clavicle and the first rib. At no point in this excursion could the clavicle be made to impinge on the subclavian artery, but the interval between the two bones is narrowest (1.5 cm.) when the clavicle lies opposite the upper border of the first rib. In order to press the clavicle directly backwards on the first rib it is necessary to open the sternoclavicular joint and to sever the intra-articular disk.

As regards the plexus itself depression of the shoulder causes the superior and middle trunks, together with the contribution from the seventh cervical nerve to the long thoracic nerve (nerve to the serratus anterior), to be tightly stretched across the tendinous edge of the scalenus medius. The inferior trunk is pulled hard down into the angle of junction of the scalenus medius and the first rib. It is not possible by this manoeuvre to compress the artery against either of the scaleni. The vessel can still be moved freely from side to side in the interval between the scaleni, but the S curve is abolished.

When the shoulders are retracted the acromial end of the clavicle rises and the bone lies across the root of the neck above the level of the first rib. The clavicle now makes an angle of 30° with the first costal cartilage. In this position the tendon of the subclavius compresses the subclavian vein against the first rib, but the clavicle itself does not press on that vessel. The middle third of the clavicle pushes the neurovascular bundle backwards against the anterior border of the scalenus medius, and in the presence of a resistance—e.g., a cervical rib or an abnormally placed first rib—could compress the bundle.

The excursion of the clavicle in abduction shows little or no difference from that already described in retraction.

Discussion

The literature of brachial plexus pressure has increased considerably in recent years. This is due in part to the striking rise in the number of cases of paraesthesia of the hand and arm in middle-aged women who are overworked, underfed, and spend much time carrying shopping baskets. The general tendency is to suggest that the troubles are due to compression of the plexus between clavicle and first rib. This is a pure supposition unsupported by any anatomical evidence. Some confusion in the literature further arises from papers which base definite opinions on an insufficient number of cases or include abnormal types—e.g., scoliotics. Moreover, not enough attention has been paid to a separate analysis of the movements of depression, retraction, and abduction.

In a normal person standing in the erect position the clavicle is presumably not pressing on the bundle. The moment that pure depression of the shoulder begins the

clavicle moves away from the bundle, and the further the depression the further is the clavicle away. It seems clear, therefore, that symptoms referable to the plexus arising in depression of the shoulder are not due to pressure by the clavicle, and we believe that they are caused purely by drag on the nerve cords. In this position of the limb we have shown that the plexus is stretched taut over the edge of the scalenus medius, and this is especially likely to happen where that muscle has its attachment carried forward further than usual on the first rib.

It is otherwise with retraction and with abduction. Here the clavicle in its middle third presses the neurovascular bundle against the scalenus medius. With a normal muscle such pressure is trivial, it possibly explains those cases where prolonged abduction of the arm, as in dressing the hair, causes temporary 'pins and needles'. Should, however, the resistance be stiffened by a cervical rib or an abnormally high first rib the pressure might easily become more serious.

It seems likely that the patients may be divided into two groups. In one, the smaller group, the pressure is cervical, and in this type the symptoms are those of the whole plexus pressure. They are produced by retraction and abduction, and are felt at places from the deltoid region down to the hand. In the second group the symptoms are referable predominantly to the distribution of the lowest trunk and are due to hanging up of the plexus over a cervical rib, a band, the scalenus medius or an abnormal first rib when the shoulder is depressed. We believe this to be much the larger group.

Summary

An account is given of the findings in 120 operations and 30 dissections with observations on 120 students.

No one mechanical cause can explain all cases. Damage by pressure of the clavicle cannot happen in pure depression of the shoulder but is a likely event in retraction and abduction if cervical rib or abnormal first rib be present. These cases will probably show whole plexus symptoms.

The most common cause of symptoms is the hanging up of the plexus on a cervical rib or other mechanical obstacle. These cases are likely to show lowest trunk symptoms.

The phenomenon of alteration in the radial pulse on movements of the shoulder is due to causes distal to the clavicle. It has nothing to do with the costo-clavicular syndrome.

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WATER AND SALT DEPLETION*

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Comparison of Effects

The main differences are shown in Table V. Their theoretical explanation, as already suggested, appears to derive from the contrast in conditions of extracellular-fluid osmotic pressure. In pure water depletion (Fig 4A) the extracellular fluid tends to become hypertonic and its volume to be maintained by withdrawal of water from the cells. In consequence of the relative normality of the plasma volume, oligæmic symptoms, such as lassitude,

TABLE V—Comparison of Effects of Water and Salt Depletion

Manifestation	Pure Water Depletion	Pure Salt Depletion
Dehydration	+++ primary or simple	+++ secondary or extra cellular
Thirst	+++	Absent
Lassitude	+	+++
Orthostatic fainting	Absent till late	+++
Urine volume	Scanty	Normal till late
NaCl in urine	Often +	Always absent except in Addison's disease
Vomiting	Absent	May be +++
Cramps		
Plasma NaCl	Slight increase or normal	Diminished +++
Blood urea	+	+++
Plasma volume	Normal till late	Decreased +++
Haemoconcentration	Not till late and slight	+++
Blood viscosity	Normal till late	Increased +++
Blood pressure		Fall +++
Water absorption	Rapid	Slow
Mode of death	? due to rise of osmotic pressure	Peripheral circulatory failure

giddiness, fainting, and fall of blood pressure, are absent or do not develop until a late stage. Thirst is pronounced because of cellular desiccation. In pure salt depletion (Fig 4B) the extracellular fluid tends to become hypotonic and so water is not sucked from the cells and there is little or no thirst. The kidneys, working to preserve isotonicity of the extracellular fluid, excrete water, therefore, while water is being ingested and absorbed, urine volume is not significantly decreased, and may be increased. The volume of the extracellular fluid falls. The decrease of plasma volume causes prominent symptoms of peripheral circulatory failure due to oligæmia and increase of blood viscosity.

Mixed Water and Salt Depletion

Pure water depletion may be defined as reduction below normal of total body water without significant reduction of

total body salt, pure salt depletion, as reduction below normal of total body salt without reduction of body water beyond that which is inevitable from loss of extracellular osmotic pressure. Mixed water and salt depletion may be defined as reduction below normal of total body water and total body salt, the water reduction being greater than that consequent upon the secondary dehydration of salt depletion. This occurs in patients in whom there have been abnormal losses of secretions *without free intake of water*, the water loss tends to outstrip salt loss because the secretions lost are either isotonic (gastric or intestinal juices) or hypotonic (saliva, sweat), and, in addition, there is extra depletion of water in the continuous unavoidable losses, averaging about 1.5 litres daily, which occur from the skin and lungs and in the urine. Patients suffering from mixed depletion, as above defined (water loss in excess), have a mixture of the symptoms of pure water and of pure salt depletion. This is because the extracellular-fluid volume is diminished, due to the reduction in total sodium and chlorine, but there is also a tendency for the shrunken extracellular fluid to be hypertonic owing to the disproportionate water loss. The tendency to hypertonicity causes some with drawal of water from the cells. The clinical picture, therefore, is such that patients show the circulatory and other features due to reduction of extracellular-fluid volume, but are also thirsty, have dry mouths, and have early oliguria.

Any condition causing secretion losses unaccompanied by adequate water intake will result in mixed depletion. Cases of acute vomiting provide the commonest examples. In protracted vomiting, such as occurs in pyloric stenosis, the effects of salt depletion tend to dominate the picture because water intake usually goes on until the late stages, so that there is a prolonged phase of selective drain of chlorine and sodium. Estimations of plasma concentrations of sodium and chlorine are even more fallacious as indicators of total loss of these ions in mixed depletion (water loss in excess) than in pure salt depletion, because of the tendency to hypertonicity in the diminished extracellular fluid. In any case, plasma chlorine estimations in vomiting, as already pointed out, are no guide to the concentration of sodium ions, because of the much greater loss of chlorine than of sodium (see Fig 8). In mixed depletion due to vomiting it is possible for the concentration of sodium ions, largely partnered by HCO_3 , and the plasma osmotic pressure to be raised when the concentration of chlorine ions is decreased. In severe diarrhoea without vomiting (see Fig 8) the converse may be true. The concentration of chlorine ions may be a little lower, or normal, or even raised while the concentration of sodium ions is decreased. Rogers (1921) found serum chlorides in cases of cholera before treatment to be as high as 0.79%.

Occurrence of Pure and Mixed Depletions in Practice

Pure water depletion is frequent in the circumstances already described, pure salt depletion or mixed water and salt depletion, however, are still more common because of the many causes of vomiting and diarrhoea. It is necessary to enumerate only a few of these causes to realize the frequency with which water and salt may be lost from the body. For example, vomiting may occur from gastritis, gastro-enteritis, appendicitis, pyloric or intestinal obstruction, and peritonitis, associated with pregnancy, after administration of anaesthetics, in alcoholism, in uraemia, in diabetic ketosis, in sea-sickness, and in such intracranial conditions as concussion, meningitis, cerebral tumours, and cerebral vascular lesions. Diarrhoea may occur from enteritis and colitis, from dysentery and cholera, from pancreatic insufficiency, in sprue, from ulcerative and neoplastic conditions of the intestines, and in patients in whom

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ileostomy has been performed (Cave, 1946). The special frequency of vomiting and diarrhoea in children is well known, their particular vulnerability to water and salt loss has already been mentioned.

The present frequency of pure salt depletion resulting from the treatment with water alone in those who have lost both salt and water has been emphasized. In recent months I have seen such unrecognized salt depletion in ten patients: two with severe gastro-enteritis, one with ulcerative colitis, two with chronic alcoholism, and in five after operation (gastrectomy, cholecystectomy, ileostomy, and two gastro-enterostomies). All ten had been diagnosed as suffering from dehydration. Four of the five post-operative cases had been treated with intermittent spells of gastro-duodenal suction drainage. All the patients had been on forced fluids, and intake and output charts were being kept. All had become extremely ill and were drowsy, apathetic, or stuporous. None complained of thirst, and none had chloride in the urine. All had lowered blood pressures, in three the systolic pressure was below 90 mm Hg. The blood urea levels were raised, the highest being 280 mg per 100 ml. After the diagnosis of salt depletion had been made, all, except one of the alcoholics, were treated by the administration of large amounts of intravenous saline (5 to 9 litres of isotonic saline) and all except the untreated alcoholic and the ileostomy case (plasma Na 242 mg %), rapidly recovered. In the Tropics I saw many instances of the salt-depletion syndrome, from simple sweating to sweating plus vomiting and diarrhoea, develop in patients suffering from various forms of medical and surgical illness.

The failure to recognize the true nature of the salt depletion syndrome often occurs because the patient's deterioration is explained in terms of pathological states which are essentially secondary but are mistakenly thought to be primary. Thus in many cases the frequent high blood urea levels lead to a diagnosis of uraemia. The tendency to vomiting in the late stages sometimes suggests a diagnosis of acute dilatation of the stomach or paralytic ileus, the lowered blood pressure and the manifestations of peripheral circulatory failure may cause the condition to be ascribed to 'shock'.

Diagnosis

The differential diagnosis between water and salt depletion and mixed depletion is a comparatively easy matter, depending on recognition of their different modes of causation and awareness of the facts of their clinical and pathological differences.

Estimation of the chloride content of the urine is a most important diagnostic test. Qualitative diagnosis of the type of depletion is not enough. It is essential also that the attempt should be made to arrive at a quantitative diagnosis of the amount of the deficiency of water or salt or of water and salt.

Prevention

This, again, is mainly a matter of awareness of the possible development of water and salt depletion. Fortunately, this state of alert anticipation now generally exists so far as water is concerned. It has become nearly as automatic to chart fluid intake and output of seriously ill patients as to record their temperature and pulse rate.

The best guarantee that water intake is sufficient is an adequate urine volume, in regard to which there are two points of practical importance. The first has already been mentioned: it is that in patients who have inefficient kidneys, incapable of secreting concentrated urine, the daily output of urine may need to be not less than 1.5 litres. Apart from permanent renal inefficiency, temporary

damage is frequent in illness, therefore it is seldom advisable to be satisfied with a urine volume of less than 3 pints or 60 oz (1.7 litres) daily. The point is that, when gross secretion losses are occurred, 24 hours is too long a unit of time to allot for a review of the output within its span the patient can die of dehydration. In such cases the urine volume and chloride content should be reported to the doctor eight-hourly. The aim should be a pint (570 ml) per eight hours.

We are not generally aware of the potential hazard of salt depletion. However, it is to be hoped that its importance will soon be realized in this country in all cases suffering losses of alimentary secretions. In the Tropics when patients are sweating its menace enters into every form of medical and surgical illness. Whenever salt depletion may occur, the routine testing of the urine for chloride is a matter of first importance—more important indeed than the taking of the temperature or the counting of the pulse, not, of course, that these essential procedures should be omitted. The aim in adults should be an NaCl concentration of 3–5 g per litre.

Treatment of Established Depletions

At the outset it is desirable to call attention to the grave consequences of wrong treatment. In pure water depletion patients require water and water only until the deficit has been replaced. The administration of isotonic saline tends to increase existing extracellular hypertonicity, to intensify thirst and to add to the difficulties of already embarrassed kidneys. It may be lethal (McCance and Young (1944) may be quoted). Let us suppose that a patient is unable to take anything by mouth and that in consequence, he is given during 24 hours 1,500 ml of normal saline intravenously—that is, 1,500 ml of water and (approximately) 15 g of salt. He will require 1,000 ml of this water to make good the unavoidable losses from his lungs and skin, and so his kidneys will have the impossible task of excreting 15 g of salt in 500 ml of water. The casual administration of saline to young infants is even more dangerous than it is in adult life, for the infant kidney is much less capable of dealing with the superfluity of salt (Young, Hallum and McCance 1941; McCance and Young, 1941). Wrong treatment in salt depletion on the other hand, chiefly consists in failure to administer saline. In consequence the state of salt deficiency is not relieved and the patient may die of oligemic circulatory failure. It is probable that hundreds, if not thousands of patients in this country die annually from salt depletion. In the Tropics the mortality must be much greater.

Though the common and most important therapeutic error in salt depletion is the negative one of omitting to give salt, sometimes there are serious consequences due to the positive error of pressing the administration of water beyond the amount required to compensate unavoidable water losses. When the patient is collapsed and the pylorus closed, the administration of much water by mouth may lead to overfilling of the stomach and to regurgitation or vomiting of the gastric contents, in which the patient may drown, so gravely depressed is the cough reflex. I have seen it happen. Again, when the stage of low blood pressure has been reached anuria develops. Water introduced into the blood stream, whether by absorption from the alimentary tract or direct as intravenous glucose solution cannot then be excreted in the urine and may cause death from water intoxication (Weir, Larson, and Rowntree, 1922; Helwig, Schutz, and Curry, 1935). Since the plasma and tissue fluid are hypotonic the water must enter the cells. It is probable that resurgence of the cerebral cells is the cause of death, which may be preceded by convulsions. It

is well known that "stokers' cramps" of salt-depletion heat exhaustion particularly tend to be precipitated by the ingestion of large amounts of water

The special parenteral methods of administration of glucose solution subcutaneously and intraperitoneally—for example, in infants—may precipitate collapse in severe salt depletion by removal of salt from the already depleted plasma. This is because sodium and chlorine ions rapidly diffuse into a tissue depot of injected glucose solution (Darrow and Yannet, 1935). The administration of potassium salts is dangerous in sodium depletion. (In this connexion one has only to remember their danger in Addison's disease.) Sometimes the error of giving potassium to salt-depleted patients who are receiving sulphonamides arises from the routine administration of potassium citrate to alkalinize the urine. In such cases sodium citrate should be used.

Enough has been said about the consequences of wrong treatment to show that there are serious pitfalls in the treatment of different types of dehydration due to water and to salt depletion. The subject is far from being as simple as is often assumed—an assumption which may lead to the control of water and salt administration being left to nurses or junior residents. The essential principle in the treatment of water and salt depletion is that the patient shall be given water or salt, or both, in the amounts that each is lacking. Therefore, as in all conditions, correct diagnosis—in this instance quantitative as well as qualitative—is essential to correct treatment. The facts and principles on which diagnosis depends have been dealt with and need not be recapitulated. The main questions which arise in practical treatment are (1) What fluid should be administered? (2) How much? (3) By what route? (4) At what rate?

1 The Fluid to Administer

In water depletion, water should be administered by mouth or per rectum, unless the circumstances of the case compel the use of alternative routes—intravenous, subcutaneous, or intraperitoneal. If one or other of these latter routes must be used, then the best vehicle for water is isotonic glucose solution (5%). In salt depletion isotonic saline solution (0.85%) should be administered when the salt deficiency is giving rise to symptoms and while chloride is still absent from the urine. In very severe salt depletion, with vomiting and circulatory collapse, intravenous administration is indicated, as other routes may be too slow to save life, while oral administration carries the special risk of drowning or, short of drowning, of infecting the bronchial tree. When symptoms are relieved, or when chloride reappears in the urine, isotonic saline should be discontinued in favour of hypotonic saline. It is never desirable to continue isotonic saline administration longer than is necessary, because as soon as salt depletion is relieved there is a tendency for patients receiving isotonic saline to retain sodium and chlorine out of proportion to water (Coller, Job, Vaughan, Kalder, and Moyer, 1945). For adults the hypotonic concentration of choice is 1/2 isotonic (0.425%) until the salt balance appears to be fully restored, and then, if food is not being taken and salt intake must be derived from fluid 1/3 isotonic for maintenance. If parenteral routes are being employed these strengths may be achieved by mixing one part of isotonic saline solution with one or two parts of isotonic glucose solution. In the case of children particular care should be taken not to continue too long with isotonic saline; indeed, some authorities consider the possible dangers to infants to be so great that isotonic saline should never be used. Suitable hypotonic concentrations for infants are 1/4 or 1/5 isotonic—that is for parenteral use one part of isotonic saline mixed with three or four parts of isotonic glucose solution. In mixed water and salt depletion, or if there is any doubt as to the nature of the depletion, the patient should from the start receive hypotonic saline in the strengths above indicated.

It may be asked whether simple saline solution is sufficient to repair electrolyte deficiencies consequent upon loss of alimentary secretions, and, in particular, whether or not adjustments in the nature of the solution should be made to rectify alterations in the acid-base balance. This question is not really finally settled but most authorities would I think, agree with Gamble (1942) that saline or saline mixed with glucose solution is all that is needed. For a discussion of the considerations involved Gamble's monograph should be consulted.

2 Amount of Fluid

The essential principle is that the amount given, whether of water or saline, shall be enough to restore the patient to a normal state of balance. As shown in preceding sections, the initial deficit in a 70-kg (or 11-stone) man may range up to a maximum of 10 litres (18 pints) of water in water depletion or the equivalent of 10 litres of isotonic saline in salt depletion. The clinical criteria for the rough estimation of the volume of depletion have been given. In addition to the initial deficit, allowance must be made for losses going on during the period of fluid administration. The best check on restoration of water and salt is provided by eight hourly measurements of the volume of urine and estimation of its chloride content. The aim per eight hours in an adult should be a urine volume of not less than a pint (570 ml) and a salt content of 3 to 5 g per litre. In infants urine measurement and testing for chloride present special practical difficulties. Yet they would seem to be even more important than in adults, because infants die so quickly from fluid depletion and because their kidneys have not the same power of correcting therapeutic errors. I have not the practical experience needed to attempt to define figures. All that can be said is that infants need to pass relatively much larger volumes of urine with lower chloride content.

During the intravenous administration of saline some NaCl may spill into the urine even though the patient is still grossly salt deficient. For this reason if testing the urine shows the presence of chlorine it is wise to discontinue the saline, substituting glucose solution if it is desired to continue a drip infusion, and then half an hour and an hour and a half later instruct the patient to pass urine. The 30 minute specimen should be discarded and the 90 minute specimen tested for chlorine.

In fluid restoration a quantitative attitude of mind is essential, and it is necessary to realize clearly the considerable magnitude of fluid deficit which may be present in a case of water, salt, or mixed depletion. Fortunately we are passing out of the days when patients deficient of perhaps 1½ to 2 gallons (6.8 to 9 litres), and suffering continuing losses, received a pint or two of fluid, though the approach is still often too homoeopathic.

3 Route of Administration

Some remarks concerning this question have already been made. In severe salt or in mixed depletion the intravenous route should be used and the continuous drip method employed. Otherwise, whenever circumstances permit, the oral route is the best. If the patient has difficulty in drinking a most valuable device, is the transnasal intragastric drip. This method consists in fluid administration, by continuous drip, through a Ryle's tube passed via the nose into the stomach. It was particularly exploited by Ransome, Gupta, and Paterson (1944), who have recorded their experience with 355 acute medical cases, and their paper should be consulted for details of the very simple technique. Their work was done at a large military hospital in Assam, and more than 100 of the cases were in-patients in various degrees of coma from cerebral malaria. The nursing facilities were far from being on the scale of British civil hospitals yet the method was found easy to run in practice. Nauth-Misir (1946) has written on the use of this method in infants, in whom it would seem to be particularly useful. The technique of the continuous intravenous drip, originated by Matas (1924), is too well known to need comment.

I would like to draw attention to the value of rectal fluid administration when properly carried out in accordance with the principles of Murphy (1909, 1916). The technique and also other methods of parenteral fluid administration have been described (Marriott and Kelwick, 1937).

4 Rate of Administration

The desirable rate of fluid administration depends on the state of the patient. The need for rapid intravenous administration arises in patients suffering from peripheral circulatory failure due to severe salt depletion or mixed depletion. Such cases are urgent emergencies and the rate of administration for adults should be of this order: the first pint in 10 minutes, the second pint in 15 minutes, the third pint in 20 minutes, and the fourth pint in 30 minutes, then a pint every two hours till the blood pressure is restored to normal. Thereafter a pint every four hours (more under tropical conditions). In infants the quantities should be on a similar scale in proportion to body weight. In less acute depletions slower restoration is indicated. However an adult suffering from a degree of either water or salt depletion sufficient to cause symptoms will need to receive within the first 24 hours a minimum of a gallon (4½ litres) of appropriate fluid. Watch must always of course be kept on urine excretion and for signs of oedema, especially pulmonary oedema.

Complicated Cases

Special difficulties and dangers are associated with fluid administration to patients who have suffered from acute haemorrhage or who are anaemic or hypoproteinaemic (Power, Pedersen, and Maddock, 1942), to those in whom anoxia or toxæmia has increased capillary permeability especially the permeability of pulmonary capillaries (Daly 1946), and to those whose kidneys are badly damaged. In all such cases most careful consideration must be given to what is done, and very close watch maintained for the development of pulmonary oedema during fluid administration. Patients who have suffered from haemorrhage should receive preliminary blood transfusion to restore blood volume. Those who are seriously anaemic should if possible have their haemoglobin restored by drip transfusion (Marriott and Kekwick 1935-1940) while fluid administration by other routes proceeds. Patients with hypoproteinaemia should if possible similarly receive plasma transfusions, and anoxic patients should be given oxygen.

Water and salt are, perhaps, practically the most important substances it is in our power to administer. They can be so used that they can achieve seeming miracles, or they can be so misused as to lead to a fatal issue. Their proper use is not the simple matter it is often assumed to be. The true approach to understanding is one of humility.

Postscript

A few days before these lectures were delivered an article by Prof E B Verney appeared (*Lancet* 1946, 2, 739 and 781) which I did not see until later. In this important paper, recording much precise experimental work, it is shown that liberation of posterior pituitary antidiuretic hormone is determined by the osmotic pressure of the arterial plasma. The hypothesis is advanced that changes in this pressure are appreciated by 'osmoreceptors' which are continually engaged in controlling the antidiuretic function of the pituitary. Verney's work thus confirms, from another angle the paramount importance of the maintenance of the isotonicity of the extracellular fluid. It also implies that renal activity in preserving such isotonicity may be largely or wholly dependent on the functional linkage between the neurohypophysis and the kidneys. The influence of the pituitary antidiuretic hormone on renal water excretion has of course been known for many years—largely due to the researches of Verney. However his latest work, showing that the production of this hormone is related to plasma osmotic pressure, makes a big forward step. His findings do not affect the clinical views expressed in these lectures, but they are important in helping to reveal the physiological mechanism by which the kidneys guard the osmotic constancy of the 'internal environment'.

I wish to thank Prof J L Gamble, of Harvard, for his generous permission to reproduce his diagrams (Gamble, 1923, 1942) showing the composition of the body fluids. His concise monograph (1942) is a masterpiece of lucid verbal and diagrammatic exposition. To Prof R A McCance I am indebted for supplying references, and would like to pay tribute to the great importance of the work he has done in this field. I wish also to thank Dr D A K Black, Dr R A Kekwick, and Dr N F MacLagan, who have kindly given

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THE SWALLOWING OF FOREIGN BODIES

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Recently an epidemic of foreign-body swallowing resulted in the admission of 11 cases into a military hospital in the course of a few months*. For the purpose of investigation the 11 "swallowers" were compared with 11 psychopaths and 11 clearly stable prisoners as controls. The psychopathic controls were the usual unstable, impetuous, emotional types with overflowing crime sheets, the normal controls were deserters, most of them young men whose nerve had gone during the course of the Italian campaign, but who had otherwise blameless records and were well-behaved in prison. I interviewed the prisoners alone, if necessary several times. I explained that the inquiry was a medical one, that nothing they said would be held against them, and that they had nothing to gain personally, though ultimately all prisoners might benefit from the information obtained.

* See Major Hallett's paper, which includes cases not in this series. Some of my series had had operations in other hospitals previously, hence any discrepancies.

Results

The most striking fact which emerged was that the "swallowers" (Group I) fell very definitely into two sub-groups (a) those who had only pretended to swallow, or who had swallowed harmless objects in an entirely calculating manner in the hope of being sent to hospital, which was outside the prison, and (b) those who had swallowed objects when in a highly emotional state with a considerable degree of depression present. In the latter group operation was necessary on various occasions, the six of them having had 15 abdominal operations in all (over a period of months or years) compared with two operations needed by the former. The accompanying tables make a comparison of the swallowers and the control groups on matters which I hoped would throw light on the causes of the swallowing, to facilitate ease of comparison the subgroups Ia and Ib are compared on a basis of 11 (see the figures in parenthesis).

Table I (A) shows the preponderance of bad home conditions in childhood. As the items enumerated—

TABLE I

	Group Ia* (5 Cases)	Group Ib (6 Cases)	Group II (11 Cases)	Group III (11 Cases)
No. of operations required	2 (4)	15 (27)	0	0
A Home conditions in childhood				
Father violent	0	3 (6)	1	0
alcoholic	0	2 (4)	2	1
brutal	1 (2)	3 (6)	3	1
Parental disharmony	1 (2)	2 (4)	4	1
separation	0	1 (2)	1	1
Total	2 (4)	11 (20)	11	4
B Youthful instability				
Truancy from school	1 (2)	2 (4)	3	0
Adolescent delinquency	1 (2)	3 (6)	4	0
Violent tempered child	2 (4)	2 (4)	1	0
Nervous child	2 (4)	1 (2)	2	0
In reformatory	2 (4)	0	2	0

* The results showed Groups Ia and Ib so essentially different that the comparison of figures for the total of Group I seemed valueless. The figures in parenthesis are on a basis of 11 (approx).

alcoholic father, matrimonial disharmony, etc.—are various aspects of an unsatisfactory home situation I felt it legitimate to add these. It will be seen there is the usual preponderance of these factors in the psychopaths, whether swallowers or not. Table I (B) shows a similar but less striking difference in traits indicative of instability in childhood. The matters recorded in Table II were designed to

TABLE II—Adult Instability and Affective Reactions

	Group Ia (5 Cases)	Group Ib (6 Cases)	Group II (11 Cases)	Group III (11 Cases)
Anxious in prison	1 (2)	6 (11)	4	3
Depressed	0	6 (11)	3	2
Emotional	2 (4)	4 (8)	4	1
Aggrieved	0	2 (4)	1	0
Paranoid attitude	0	2 (4)	1	0
Aggressive	1 (2)	3 (6)	1	0
Harassed and drawn faces	1 (2)	6 (11)	3	1

reveal traits indicative of markedly emotional personalities. Anxiety and depression were recorded from subjective complaints, the other items were my observations. It will be seen that there is a steady decline in the incidence of affective reactions from Group I to Group III, but the most striking difference is between Groups Ia and Ib. Of the latter group of 6 "true swallowers," 6 were anxious and depressed, 4 had drawn faces, and 4 were very emotional, in contrast to 1, 0, 1, 2, for the same traits in Group Ia.

Table III deals with factors which my previous experience of prisoners suggested might be of aetiological significance—namely, treatment by the prison staff, prohibition of smoking, and the food. It will be seen that the results

TABLE III—Aetiological Factors

	Group Ia (5 Cases)	Group Ib (6 Cases)	Group II (11 Cases)	Group III (11 Cases)
Complaints				
Of bad treatment in prison	0	1 (2)	2	0
Of no smoking	3 (6)	4 (8)	4	5
Of poor food	1 (2)	2 (4)	2	0
Effects of solitary confinement				
Severe	0	4 (8)	1	1
Moderately severe	1 (2)	2 (4)	3	0
Dislike	2 (4)	0	4	4
Indifference	2 (4)	0	3	6

were much the same for all the groups, the ban on smoking heading the list. It is noteworthy that out of 33 prisoners, 22 of whom had been selected as the most recalcitrant, only 4 should allege unsatisfactory treatment and 5 complain of the food—results which reflect favourably on the prisons concerned.

Solitary Confinement—The prisoners were locked in their cells from 4.30 p.m. to 6 a.m., and for dinner. Their reactions to this have been recorded as follows: (1) Severe and moderately severe, referring to the intensity and duration of depressive reactions, with or without anxiety, the latter did not exist without the former. The depressions were not "psychotic"—i.e., there was no retardation or delusions, etc.—but both severe and moderately severe reactions would ordinarily have caused these patients to be admitted for observation for their own safety. (2) Dislike—a term used to designate a natural but not pathologically intense objection to solitary confinement. (3) Indifferent—some prisoners being apparently completely unconcerned about it. Solitary confinement produced the greatest reaction among the true swallows, and, as the histories show, appeared to have been the most immediate precipitant factor, for 4 were severely and 2 moderately affected—i.e., all were reacting to a pathological extent. The other psychopaths—Group II—came next: 3 were moderately and 1 severely affected—the last a depressed schizoid type who made a determined attempt at suicide. Only 1 normal control was severely affected and none moderately. Again it is noteworthy that of the pseudo-swallowers, only 1 had a moderately severe reaction and none a severe one.

An attempt was made to carry out intelligence and personality pointer tests, similar to those used at Officers' Selection Boards. These resulted in failure. Lack of time made testing in groups necessary, with the result that the psychopaths and swallows mostly behaved so preposterously—ranging from a sullen refusal to co-operate to giggling like hysterical schoolgirls—that no results were obtained. But it gave me an illuminating insight into the difficulties of the prison staff.

Discussion

The numbers concerned in this inquiry are too small for statistical analysis. The results, however, are in keeping with my own impressions over a longer period, but their validity is also largely dependent on the honesty of the prisoners' statements. Apart from lack of insight, one naturally suspects that these might be influenced by fear or by a desire to curry favour. But I had made it quite clear that the men had nothing to gain personally, nor would those in charge be informed of anything which might cause prejudice, and their case histories would be recorded anonymously. The prisoners seemed to be replying honestly, and the preposterous behaviour of the psychopaths was not suggestive of any feeling of intimidation. Some representative case histories should assist in assessing the results.

Group Ia—One man was in prison for absence and stealing, he was plausible and took prison philosophically.

He admitted he had pretended to swallow some wire, but "would not have been so silly" as really to swallow anything harmful. Another was in prison for robbery with assault. Deported from Australia as undesirable when a youth, he struck me as a hard, tough, calculating type who would be undeterred from any crime he could get away with. He readily admitted he had lied about swallowing, remarking spontaneously that he knew it was dangerous. Another, who swallowed a toothbrush and buttons, said he would not have done so had he expected to lose the whole of his remission. This remark sums up the attitude of this group: they would do anything that gained them something, provided the disciplinary consequences were not too severe and that they did not really injure themselves.

Group Ib—One man swallowed foreign bodies three times. His parents had separated, he had been a hot-tempered and delinquent boy, who, when his sisters married men he did not like, stole their cutlery "to try and break their homes up." He felt that his family was against him, that "someone would get him," and asserted that a theft of mail for which he was in prison was due to a desire to make "fellows at the unit who had victimized him suffer." He swallowed as "he could stick it no longer in prison." When I saw him after his second attempt he said "I wish I had succeeded. If they put me back in that hell I shall do it again," which he did, necessitating a third abdominal operation. On examination he was backward and though only 26 his face was heavily lined; he was tense with emotion, spoke of his "wrongs" with great feeling and exhibited dread of solitary confinement. Another man who swallowed three times had left home at 14 as he had a violent alcoholic father who beat him. He had twice been a corporal and twice imprisoned for stealing and had been punished for numerous absences. Recently he had improperly used an Army vehicle to drive about a girl "he was very much in love with," and finally stole it. She wanted to throw him over in consequence, and he then "beat her up." After his court martial he said he tried to commit suicide six different ways. In the cells at night he could not sleep "for thinking what a fool he had been," and kept on ruminating about violence and suicide. He was a sturdy individual, with heavily lined facies, co-operative but listless. His depression improved somewhat in hospital, but as soon as he returned to prison he swallowed a foreign body again, necessitating further operation. He lay brooding in hospital, and after trying to strangle himself with a pyjama cord was transferred to a neuropathic hospital.

These are typical examples of this group, and bring out the striking contrast between the two classes of swallower illustrating their past and present instability and their unsatisfactory home lives, and emphasizing the detrimental effect long hours of solitary confinement can have on emotionally unstable prisoners. This would appear also to be the view of such an authority as Norwood East* (It should be added that the long hours of solitary confinement were necessitated by shortage of staff and suitable accommodation and were not favoured by the commandants—though it is also necessary to realize that the problem is complex, as undiluted psychopathy in dormitories is not conducive to peace and quiet).

In contrast to the psychopaths, it is remarkable how completely indifferent some of the stable types were in this respect, nevertheless, with young deserters, some of whose nerve had gone under very severe stress and who were clinically indistinguishable from those who went "down the line" medically, it is very questionable whether solitary confinement is not uneconomical in retar-

rehabilitation as soldiers, which is the aim of military prisons

Finally, these findings would appear to reflect on a small scale the problem of the disposal and reform of the psychopath generally. Clearly law and order must be maintained, but the objection to our present methods is that they so often do not deter the psychopath, while if they result in severe emotional reactions and repeated disturbed behaviour they are not of reformatory value. But, utilitarian reasons apart, punishment causing such a degree of purposeless mental suffering is surely as repugnant as the infliction of physical suffering, which nowadays is contrary to accepted doctrine. Moreover, paradoxically the psychopath, who from the very temperamental defects which drive him into crime tolerates the rigid discipline of prison life less well than the stable criminal, is morally less culpable. For the former often appears genuinely incapable of controlling his impulses, whereas the latter desists from crime

if it does not pay and takes his punishment philosophically if caught. It is to be hoped that the Criminal Reform Bill will grapple with this problem.

Summary and Conclusions

Eleven cases of the swallowing of foreign bodies by prisoners were investigated. 5 only pretended to do so, or swallowed harmless objects, and required two operations between them, 6 swallowed objects and needed 15 major operations in all. The former were stable, the latter emotional and depressed and all 6 were markedly affected by solitary confinement. The swallowing of foreign bodies therefore appears either to be due to very mundane causes or to be caused by severe depression in unstable individuals.

I should like to make acknowledgments to Col G D Gripper, the O.C. of my hospital, and to Lieut Cols Jarret and Mackay, O.C.s of the military prisons concerned, who took great trouble to facilitate my investigation. I also wish to thank Capt Oliver, psychologist to a W.O.S.B. for his help in our abortive attempt to test the prisoners.

SWALLOWED FOREIGN BODIES SOME CASES TREATED IN A MILITARY HOSPITAL

BY

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Major, R.A.M.C.

The practice of swallowing foreign bodies as a means of gaining admission to hospital is not uncommon in military prisons. The treatment of these cases presents many problems, both surgical and psychiatric. There are two large detention barracks in the area served by this hospital and 19 individuals have been treated here for the condition. Some have been admitted on several occasions, making a total of 29 admissions.

It is proposed to deal with only the surgical aspect. The cases have been set out in the accompanying Table, from which it will be seen that the outcome has been as follows:

Foreign bodies passed per rectum	20
Operations	12
Gastrotomy	7
Caecostomy	1
Colostomy	1
Laparotomy only	3
Deaths	0

A surprising assortment of objects have passed through the intestinal tract with impunity. These include nails, pieces of glass, spoon handles, pieces of wire, brass buckles, broken razor-blades, and, on one occasion, a needle. They have appeared at intervals of from 48 hours to 12 days after being swallowed.

Table Showing Analysis of Cases

Case No	Date	Object Swallowed	Treatment	Comment
1	4-13/4/45 20/4/45-12/5/45	Collar hook and buttons Numerous F.B.s	No operation Gastrotomy on 22/4/45. 22 metallic F.B.s removed.	Passed per rectum Uneventful recovery
2	25/5/45-6/6/45 6/6/45	2 screws Numerous F.B.s	No operation Gastrotomy 11/6/45	Passed per rectum Uneventful recovery
3	17/4/45-2/5/45 21/4/45-15/5/45 23/5/45-6/6/45 12-29/6/45	Spoon handle Nails etc. Spoon handle and other F.B.s	No operation Gastrotomy 22/4/45. F.B. removed No operation Gastrotomy 18/6/45. Spoon handle removed. Other F.B.s had passed pylorus.	Passed per rectum Uneventful recovery Passed per rectum Uneventful recovery Other F.B.s passed per rectum
4	14-30/11/45	Spoon handle	No operation	On 24/11/45 F.B. still in stomach. Pre-operative radiograph after morphine and hyoscine showed F.B. to have passed pylorus. Ultimately passed per rectum. Transferred to mental hospital.
5	13/6/45-2/7/45	Nails and other small F.B.s	Laparotomy 18/6/45	Nothing palpable in stomach. Abdomen closed without further exploration. F.B.s passed per rectum.
6	8-30/7/45	Thermometer and various bits of wire	Gastrotomy 19/7/45. F.B.s removed	Uneventful recovery
7	10/1/46 17-20/6/45 18-24/6/45 19/6/45-22/9/45	Spoon handle Various small F.B.s Spoon handle 3 pieces of wire	No operation Laparotomy. Removal of wire from pelvic colon. Colostomy 30/6/45	Passed per rectum Progress of F.B. observed by radiographs every 3 days. Wire perforated pelvic colon on 11th day. Uneventful recovery.
8	5-16/7/45	2 spoon handles	Gastrotomy 6/7/45. F.B.s removed	Uneventful recovery
9	20-21/7/45	Pieces of glass	No operation	Passed per rectum after discharge from hospital.
10	7-18/8/45	Open safety pin	Laparotomy 7/8/45. Pin removed from caecum.	Uneventful recovery
11	17-18/9/45 20-25/8/45	Various small metallic F.B.s Spoon handle	No operation	Passed per rectum after discharge from hospital. Pre-operative radiograph after morphine and hyoscine on 25/8/45 showed F.B. to have passed pylorus.
12	24-25/1/46 7-20/11/45	2 spoon handles Spoon handle	Laparotomy. F.B. had passed pylorus. Abdomen closed without further search. Gastrotomy 30/11/45. F.B.s removed.	Passed per rectum Passed per rectum after discharge from hospital. Passed per rectum
13	24/11/45-13/12/45	Toothbrush handle spoon handle and wire	No operation	Uneventful recovery
14	10-17/1/46	Three small metallic F.B.s	No operation	Passed per rectum
15	16-18/1/46	Ring and other small F.B.s	No operation	Passed per rectum after discharge from hospital.
16	16-18/1/46	Spoon handle	No operation	"
17	16-18/1/46	Screws and other small F.B.s	No operation	"
18	19-26/1/46	Sewing needle	Laparotomy 20/1/46. Needle passed pylorus. Abdomen closed without gastrotomy.	Passed per rectum 26/1/46
19	21-23/1/46	Spoon handle and piece of wire	No operation	Passed per rectum after discharge from hospital.

Perforation occurred only in Case 7. On this occasion a piece of wire 3 in (7.5 cm) long became impacted in the pelvic colon for seven days. At operation the wire was found projecting into the peritoneal cavity through a hole in the pelvic colon and there was considerable pelvic peritonitis. The wire was removed, the bowel repaired, and a left iliac colostomy performed. This was later closed, but the man was in hospital for three months. The chances of perforation are evidently not great, nevertheless every effort must be made to avert it. It has been suggested that it is worth swallowing some cotton-wool in the hope that it will entangle a sharp foreign body in a woolly bolus. This was tried on one or two occasions, but with no noticeable effect. Liquid paraffin may safely be given, but it is not advisable, on theoretical grounds, to give any purgatives, as convulsive movements of the bowel might precipitate a perforation.

In some of the earlier cases in this series it was considered, from the size or quantity of objects in the stomach, that they were unlikely to negotiate the intestinal tract without damage, and in these laparotomy was performed. However, in several cases, although the foreign bodies had been shown in pre-operative radiographs, when the abdomen was opened nothing was palpable in the stomach. The abdomen was closed without further exploration, and in all cases the foreign bodies ultimately appeared per rectum. It seems likely that an injection of morphine and hyoscine relaxes the pylorus and helps the stomach to empty. This was given with success in Cases 3 and 11, and it is well worth trying where there is no indication for early operation.

Indications for Operation

1 It is advisable to remove objects which remain in the same position in the bowel for seven or eight days. The mucosa of the stomach which has retained foreign bodies for more than a week is found at operation to be very congested and oedematous. In these circumstances there is clearly a danger of perforation even with blunt objects. So long as there is slow progress operation is not called for. In several cases spoon handles have been passed naturally after 10 to 12 days.

2 Sharp-pointed needles or objects unlikely from their shape to negotiate the intestinal tract are better removed from the stomach, where their location is relatively easy and where the bowel can be most safely opened.

3 If perforation occurs

The routine treatment adopted has been to keep these men under observation on a normal diet and to take radiographs every three days. Operation was undertaken only in the presence of one or other of the indications enumerated above.

I am indebted to Col G D Gripper for permission to publish these cases.

At a meeting of representatives of special hospitals organized for postgraduate teaching held at the Hospital for Sick Children on Feb 11, with Sir Ernest Gowers in the chair, it was unanimously decided to set up a representative body to be known as the Association of Postgraduate Teaching Hospitals of Great Britain. Membership of the association is limited to hospitals or groups of hospitals having directly attached to them institutes federated or about to be federated to the British Postgraduate Medical Federation (University of London) or, in the case of provincial hospitals, institutes recognized and financially supported by a university as postgraduate teaching centres. The objects of the new association were defined as "to keep under review all matters peculiarly affecting the interests of the member hospitals, and to act as a negotiating body directly with the Ministry of Health, universities, local authorities, and other bodies on behalf of those hospitals on such matters as may peculiarly affect them." The acting hon secretary, Mr John Young of the Royal National Throat, Nose and Ear Hospital, Gray's Inn Road, London, W C 1.

VARIATION IN THE TITRE OF Rh ANTIBODY DURING PREGNANCY

BY

M D HICKEY, MD, MSc, MRCPI, DPH

AND

E de VALERA, MD, MAO, MRCPI

(From the Mater Misericordiae Hospital Dublin)

Many published cases indicate that severe erythroblastosis may occur where there is only a comparatively low titre of antibody in the maternal serum—for example, Cases 1, 3, and 6 of a series recently published by Cappell (1946). This author suggests that a rising titre of maternal antibody during pregnancy would indicate the presence of a Rh-positive foetus. He also says that the foetus may be affected without any such rise in titre taking place. In this connexion little attention appears to have been devoted to the possible effect which the continued presence of the foetus might exert on the titre of the maternal antibody by acting as an absorbing agent. For this reason the following case seems worthy of record.

Mrs W, Group O Rh-negative rr. Mr W, Group O, Rh positive R₂R. March 12 1942 Male full-term child, alive and well. Group O Rh positive, R₂r. June 24 1944 Male full term child ieterus gravis died in a few hours. Dec 5, 1944 Uterine bleeding, probably abortion. March 1, 1945 Abortion. Aug 1 1945 Abortion.

Aug 10 1946 Female child caesarean section at 32 weeks. Ieterus gravis. Transfused with Rh negative blood. Died after twelve hours. Group O. Red cells inagglutinable by anti-D serum, presumably due to blocking effect of incomplete anti-D from mother's serum. Weakly agglutinated by rabbit anti-human globulin serum (Coombs *et al*, 1946). Blood films frankly erythroblastic. Baby's serum gave positive blocking test. Antibody was not demonstrated directly by the conglutination method, but when the baby's serum was added to the first tube that showed no agglutination in a titration of the mother's serum by the conglutination method agglutination of Rh₊ cells resulted.

The mother's serum contained a weak antibody, complete anti-D, after the second pregnancy. The titre of this antibody fell after a few weeks. Her serum was first titrated by the conglutination method (Wiener, 1945) before the commencement of the last pregnancy. The titration figures given below suggest that the antibody titre was falling before pregnancy began. A rise occurred early in pregnancy, followed by a fall. This, we suggest, is probably due to the absorption of the antibody by the Rh positive foetus. Pregnancy was terminated when the titre started to rise—that is, about the 32nd week. Delivery was followed by an immediate marked rise in titre.

Date	Titre Complete Anti D	Titre Incomplete Anti D
31/10/45	Nil	t 96
4/3/46	"	t 32
5/4/46	"	t 128
15/5/46	"	t 8
31/5/46	"	t 4
13/6/46	"	t 8
29/7/46	"	t 16
7/8/46	"	t 16 tr t 32
27/8/46	"	t 256
30/9/46	"	t 256

Our thanks are due to Dr R R Race for genotyping Mr W and for confirming the presence of incomplete anti-D in Mrs W's serum.

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REPORT ON A CASE OF MELIOIDOSIS FROM SIAM

BY

J P J PATON

*Lieut-Col, R A M C, Officer Commanding Medical Division
of an Indian General Hospital, S E A C*

C R PECK

*Major I M S I A M C, Officer Commanding an Indian Field
Laboratory S E A C*

AND

A VAN DE SCHAAF

Captain Dutch Army Veterinary Corps

The following account of a fatal case of melioidosis which occurred in a Dutch ex-P O W in Siam may be of interest

Clinical Notes

A Dutch infantryman, a former P O W, aged 46 was admitted to a combined Indian general hospital in Bangkok, Siam, on Nov 6, 1945, with a complaint of weakness and fever

Previous History—He had been resident in various P O W camps in Siam for just over three years and in Nakom Patom, a town in Siam, for the last three months. On Sept 25 he was admitted to a hospital in Siam with a diagnosis of pneumonia. Next day B T malaria parasites were found in the peripheral blood. The patient responded to treatment with sulphapyridine and combined quinine and mepacrine therapy, and by Oct 10 the temperature was normal. Next day his temperature rose and he complained of fever and pains in the chest especially on the left side. On Oct 17 the white cell count was said to have been normal. Treatment with sulphonamides, penicillin, quinine and mepacrine was tried with no obvious effect, the pyrexia continued, and he was admitted on Nov 6 to the Indian General Hospital.

On admission he was pale, sallow, and undernourished. The tongue was dry and coated. There was no jaundice or any enlargement of the lymphatic glands. A slight tenderness was present over the caecum. The liver and spleen were not enlarged. The heart was within normal limits and the sounds were pure and of moderately good tone. A few rhonchi were audible at the bases of both lungs. There was no paresis of the cranial nerves. The tendon reflexes were diminished. The genito-urinary system was normal.

On Nov 8 the temperature was 102.4° F (39.1° C), pulse 116, and respirations 28. The tongue was moist and clean. There was no jaundice. Small palpable lymphatic glands in axillary and inguinal regions were noted. Abdominal examination disclosed no abnormality. The liver and spleen were not enlarged. The chest was clear and the heart was within normal limits with sounds of poor tone and rhythm grossly irregular (slow fibrillation). On examination of the nervous system the only points of interest were the inability to elicit knee-jerks and abdominal reflexes. The blood pressure was 105/70. The case was suggestive of "subacute bacterial endocarditis". Penicillin therapy was started 40 000 units at once and 20 000 units three-hourly. On Nov 13 the temperature was 103.8° F (39.9° C), pulse 120 and rhythm irregular. A few rhonchi were heard at both lung bases. The heart appeared enlarged to the right side. Pericardial friction sounds were not audible. Penicillin was stopped on Nov 14 and sulphathiazole, 2 g at once and 1 g four hourly, was given.

On Nov 15 the fluoroscopic report was "There is enlargement of the heart shadow, more marked on the right side. The apex beat is not very distinct. The left dome of the diaphragm is normal in shape and movements. The right dome of the diaphragm is not clearly visualized. Appearances suggestive of pericardial effusion." A pericardial puncture revealed no fluid. The pulse was now regular. Later the patient became breathless and there was dullness on percussion at the right base with crepitations. The liver was palpable (one finger). Pericardial puncture revealed no fluid. Penicillin 50 000 units was injected into the pericardial space. The blood pressure on Nov 20 was 90/55. Next day the dullness persisted at the base of the right lung. Moist rales were

heard over the middle and lower lobes of the right lung. On Nov 27 he was given 40 000 units of penicillin three hourly. Dullness at the base of the right lung, ? Grocco's triangle, was present on Nov 30. No fluid present. On Dec 2 the patient was still running a temperature, despite penicillin. The heart was enlarged to the right and left, the spleen was just palpable and the liver was not enlarged. Screening showed a right interlobar collection of fluid. The blood pressure was 90/70. A radiological report of the chest on Dec 6 was as follows: "There is a homogeneous dense shadow involving almost the whole of the right side of the thorax. The right costo-phrenic angle is completely obliterated. Fluid present." On the 7th the chest was explored and 10 ml of straw coloured fluid was withdrawn for examination in the laboratory. The chest was again explored on the 9th and 200 ml of straw coloured fluid was withdrawn. On Dec 11 he had diarrhoea, six stools a day, a course of sulphaguanidine was started, but it had no effect on the diarrhoea. A therapeutic emetine course was started on the 14th. The stools contained *Ankylostoma duodenale*. Treatment was not possible because of the patient's poor condition. On Dec 18 he became breathless, there was marked oedema of the feet and legs and ? ascites. The urine was clear "Mersalyl," 2 ml daily until the oedema subsided was prescribed. A generalized petechial rash appeared on the 19th, and the left knee-joint was hot and swollen (suggestive of septic arthritis). He was given penicillin, 40 000 units four-hourly, and sulphathiazole 2 g at once and 1 g four-hourly. Nikethamide was to be given if necessary. The urine contained a few white blood cells and granular casts. On Dec 20 the patient was moribund. The temperature was 97.4° F (36.3° C), pulse 140, and respirations 60. The oedema of the feet and legs and ascites had disappeared. The heart was enlarged to the right and left. The sounds were pure but of poor tone. The rhythm was regular. There was dullness over the base of the right lung posteriorly. Vocal resonance and fremitus were diminished. Breath sounds were not well heard. There were a few rales at the base of the left lung. Abdominal examination revealed no free fluid, but the tip of the spleen was palpable though not tender. The liver was not enlarged. The patient died at 4.40 p.m.

Laboratory Investigations

On Nov 6 the white cells numbered 17 500 per c mm (neutrophil polymorphs 75%, eosinophils 2%, large and small lymphocytes 18%, large mononuclears 5%). The sedimentation rate (Westergren) was 1st hour 105 mm, 2nd hour, 126 mm. On Nov 20 a blood count showed red cells 3 060 000, haemoglobin, 50% (Sahli), white cells 8 000 (neutrophil polymorphs 82%, eosinophils 2%, large and small lymphocytes 16%). On Nov 27 the white cells numbered 11 200 per c mm (neutrophil polymorphs 81%, eosinophils 2%, large and small lymphocytes 14%, large mononuclears 3%). A blood count on Dec 6 showed red cells 3 040 000, haemoglobin 47% (Sahli), white cells 11 800 (neutrophil polymorphs 81%, eosinophils 1%, large and small lymphocytes 16%, large mononuclears 2%). Malaria parasites were not found in peripheral blood smears taken on Nov 9, 10, 13, 14, 24, 30 and Dec 2. Examination of peripheral blood smears for *Spirochaeta recurrentis* was negative on Nov 6. Blood cultures for enteric group and other organisms made on Nov 6, 11, 21 and Dec 19 were sterile after 14 days. The Widal and Weil-Felix tests revealed nothing of significance, and *Brucella abortus* was not found. Examination of urine on Nov 6 and 15 showed albumin nil, sugar nil, deposits, nothing abnormal. On Dec 20 albumin and sugar were not present but there were a few granular casts per field. Culture of midstream urine was sterile on Nov 10 and 12. Faeces culture for the enteric group on Nov 7, 13 and 18 revealed no pathogenic organisms. Examination of faeces for *Entamoeba histolytica* on Nov 7 was negative. On Dec 14 ova of *A. duodenale* were found. The sputum was negative for acid fast bacilli when tested on eight occasions from Dec 8 to Dec 15. Examination of the pleural fluid showed no cells or organisms in direct smear, culture sterile, and guinea-pig inoculation for tubercle bacilli was negative.

Post-mortem Findings

A necropsy was performed (by C R P and A Van de S) on four hours after death with the following results. *Central nervous system* No macroscopical abnormality seen in skull, meninges

r surface of brain. Cut-sections of cerebral hemispheres cerebellum, and brain stem disclosed no lesions. *Respiratory system*. Trachea and bronchi contained some fine frothy fluid. Left pleural cavity dry and contained no adhesions. Right pleural cavity contained about 2 pints (114 l) of straw-coloured fluid. Both lungs were crepitant and on section revealed no lesions. Hilar glands appeared normal. *Cardio-vascular system*. Both layers of the pericardium were firmly adherent completely obliterating the pericardial cavity. Heart normal in size. Myocardium pale and flabby. Valves were competent, and exhibited no lesions. Endocardium appeared normal. *Alimentary system*. Oesophagus, stomach, and duodenum presented no unusual features. Numerous abscesses varying in size, were seen in the wall of the small bowel, at intervals of approximately 6 in (15 cm), from almost the commencement of the jejunum to about 3 ft (90 cm) from the ileo-caecal junction. No lesions were observed in the colon. The spleen was approximately three times enlarged. A cut section disclosed soft dark red pulp. The liver was swollen and pale, cut sections revealed no disturbance of the lobular pattern. The gall bladder contained about 2 oz (57 ml) of clear bile. Nothing abnormal was seen externally and in cut sections of the pancreas. *Urinary system*. Both kidneys were enlarged and contained numerous small abscesses particularly in the cortices. A number of these abscesses had coalesced to form a honeycomb appearance. The suprarenals appeared normal on external examination and in cut sections. Cultures on blood agar were made from heart blood from the spleen, and from the abscesses in the bowel and kidneys. The same organism was isolated in each case.

Bacteriological Findings

(By C R P and A Van de S)

The organism isolated presented the following features. Gram-negative rods approximately $1\ \mu$ in length showing some pleomorphism and bipolarity ("safety pin" appearance). Actively motile. Aerobic. Grew easily on ordinary media. Growth in broth resulted in pellicle formation with a ropy deposit in the depth of the medium and a peculiar aromatic odour. The pellicle became rough and wrinkled after four days. On nutrient agar button-like colonies with flat rims, and central crater-like depressions developed. Growth on 5% glycerin agar was first of the mucoid type but after three days developed the typical corrugated form of *Pfeifferella whitmori* (*Malleomyces pseudomallei*). Fermented lactose, glucose, mannite, dulcitol and saccharose, without gas formation. No indole formed from peptone water.

Animal Inoculation.—An adult male guinea pig inoculated intraperitoneally with 0.1 ml of a faintly opalescent saline suspension of the organism developed the typical "Strauss" reaction after 48 hours and died in four days. A post-mortem examination of the animal revealed both testicles were markedly swollen and inflamed. The tunica vaginalis was oedematous and haemorrhagic, and contained in the sac a small quantity of turbid fluid. Numerous miliary nodules were observed in the liver and spleen in the omentum and on the peritoneal surface of the bowel. Both lungs were congested. One small nodule was seen in the base of the right lung. The organism was recovered in pure culture from the heart blood and from the lesions in the liver and spleen.

Summary

A case of melioidosis diagnosed after death is described. The main clinical features were slow fibrillation, pericarditis with effusion, pleural effusion, diarrhoea, septicaemia as evidenced by the petechial rash and septic arthritis, and embolic nephritis.

It is believed that this is the second case of melioidosis to have been reported from Siam.

We are indebted to the Director of Medical Services, ALFSEA, for permission to publish this case and to Dr J C Cruickshank, of the London School of Hygiene and Tropical Medicine for kindly confirming the organism as *Pfeifferella whitmori*.

Since the completion of this paper one of us (C R P) has seen six other cases of melioidosis—one in Siam (reported on this page) and five in Rangoon. *Pfeifferella whitmori* was isolated post-mortem in two cases and in the other four cases during life, from sputum, urine, and pus from an abscess in the neck.

A CASE OF MELIOIDOSIS PRESENTING AS AN ABSCESS IN THE NECK

BY

C R PECK

Major IMS IIMC, Officer Commanding an Indian Field Laboratory, SEAC

AND

T ZWANENBURG

Lieutenant, Dutch Army Veterinary Corps

The following account of a case of melioidosis is considered worthy of publication.

Case Report

A havildar aged 25 of the Royal Rajput Regiment was admitted to an Indian general hospital (combined) in Bangkok Siam on Feb 2 1946, with a history of a swelling in the midline of the neck just above the suprasternal notch. It started one month before and when first observed by the patient the lesion was a small mass approximately $\frac{1}{4}$ in (8 mm) in diameter to which he paid no particular attention. It grew slowly and appeared to have caused no real discomfort. The swelling now was about $2\frac{1}{2}$ in (63 mm) in diameter, and fluctuant. It was not particularly tender and there was no erythema of the skin over it. There were no constitutional symptoms, fever or glandular enlargements. The general condition of the patient was good. Similar swellings were not observed elsewhere on the body. There were no associated cases in his unit. The patient had been resident in Siam, just outside Bangkok since August 1945. The leucocyte count, both total and differential presented no unusual features.

Progress.—The abscess was incised on Feb 9, and a small quantity of a peculiar tenacious yellowish brown pus evacuated. Microscopical examination of this material revealed 10 to 15 pus cells per field, amorphous debris and scanty Gram-negative rods about $1\ \mu$ in length exhibiting some degree of pleomorphism and bipolarity ("safety pin" appearance). Culture of the pus on blood agar resulted in a pure growth of *Pfeifferella whitmori* (*Malleomyces pseudomallei*) with features and pathogenicity to guinea pigs as described below. Subsequent progress of the patient was slow, healing of the lesion appearing to be considerably delayed in spite of general surgical measures, antiseptic dressings, etc. It was therefore decided to try the effect of an autogenous vaccine from the strain isolated. This was accordingly prepared, at a strength of 500 millions per cmm and sterility proved, in liquid and on solid media and by intraperitoneal inoculation of an adult male guinea pig. The initial dose administered subcutaneously to the patient was 0.1 ml. Subsequent doses were increased by 0.1 ml every four days until a maximum of 1 ml had been reached. No untoward reactions, local or general were experienced. After the first three or four doses the lesion began to show signs of acceleration in the rate of healing and within one month the condition had completely subsided and the patient was discharged from hospital as "recovered" much pleased with the end-result. A sample of blood serum obtained before starting the vaccine course showed agglutinins to a titre of 1:80 against a killed suspension prepared from the organism isolated. Unfortunately owing to our departure from the station and of the patient to his unit contact was lost. His present condition is therefore not known but efforts are being made to trace him. It was our intention to have estimated the agglutinin titre of this patient's serum on completion of the vaccine course but owing to an oversight and to the rush of work at that time this unfortunately was not done.

Bacteriological Findings.—The organism exhibited the following features. Gram-negative rods approximately $1\ \mu$ in length showing some degree of pleomorphism and bipolarity, the latter being particularly well seen in smears from the original pus, and from the peritoneal exudate of an inoculated guinea-pig. Actively motile. Grew well on all ordinary media. Growth in broth resulted in pellicle formation on the surface with a ropy deposit in the depth of the medium and a peculiar aromatic odour. After four days the pellicle became

gh and wrinkled. On nutrient agar button like colonies, with flat rims and central crater-like depressions developed. Growth on 5% glycerin agar was first of the mucoid type but after four days developed the typical corrugated form of *Pfeifferella whitmorei*. Fermented lactose glucose mannite dulcitate and dextrin with production of acid but no gas. Liquefied gelatin. Milk clotted in four days. Indole negative.

Animal Inoculation—An adult male guinea-pig inoculated intraperitoneally with 0.1 ml of a faintly opalescent saline suspension of the organism developed the typical "Strauss" reaction after 36 hours and died in 48 hours. Post-mortem examination of the animal disclosed both testes swollen and haemorrhagic and some turbid fluid in the sac of the tunica vaginalis. Numerous miliary nodules were observed in the spleen, in the omentum, on the peritoneal surface of the bowel, and in the lungs. There was a large amount of free turbid fluid in the peritoneal cavity. The organism was recovered in pure culture from the heart's blood and from the lesions in the spleen.

Penicillin-sensitivity Tests—The organism was found to be insensitive to penicillin in strengths of 5 and 10 units per ml and even to 100 units per ml, using the half-plate, gutter, and agar-plate cup methods.

We are indebted to the Director of Medical Services A L F S E A, for permission to publish this paper, and to Dr J C Cruickshank, of the London School of Hygiene and Tropical Medicine, for kindly confirming the organism as *Pfeifferella whitmorei*.

Medical Memoranda

A Case of Scurvy

At least three points about scurvy require more investigation (1) the part played by lack of vitamin P, (2) the minimum human requirements of vitamin C, and (3) the discrepancy between the anaemia found in severe scurvy and the lack of such anaemia in depleted volunteers. The following case throws some light upon these three points. Only essential details are presented.

CASE REPORT

The patient, a foundry worker aged 55, lived alone in a single room, with cooking appliances limited to a gas ring. He had eaten no potatoes for 30 years, and no green vegetables. He used to eat tinned tomatoes, till the entry of Italy into the war deprived him of his favourite brand. Every morning he had about a pound of oatmeal scalded in water, and with this he took what marmalade he could get (he estimated it as 2 lb (0.91 kg) a week). For the rest of the day he had bread and dripping, with which he consumed his meat ration. He worked hard and felt well until about four weeks before admission, he injured both shins at work. This resulted in extensive bruising of both legs, accompanied by a severe pain which prevented sleep.

On admission to the Royal Infirmary, Sheffield, he exhibited very striking scorbutic phenomena—viz, typical scorbutic gums, purpuric rash on legs and arms, with follicular keratosis and haemorrhage and very extensive bruising and swelling of both legs, worse in the left leg, where it extended from buttock to foot, with a knee joint which was hot and grossly swollen. On March 29, 1946, a blood count showed Hb 42%, R B C, 3,000,000 W B C, 4,800, and serum bilirubin, 2.1 mg per 100 ml. He was euphoric and slightly fatuous. There were, however, no signs of vitamin B deficiency. He was put on a sterilized milk diet, and care was taken to see that no unprescribed ascorbic acid reached him. He was given 20 mg of ascorbic acid daily. On April 3 a definite improvement in the gums was already noticeable and he made an uneventful recovery, apart from an attack of diarrhoea which began when his diet was increased after the fact of recovery was well ascertained. Before leaving hospital he was instructed in regard to his diet and was saturated with ascorbic acid. He was given 600 mg of ascorbic acid daily, and after two days the excretion of 100 mg daily was attained. His haemoglobin had reached 70% by May 20. No haematonic drugs of any kind were given.

CONCLUSIONS

A markedly haemorrhagic form of scurvy can occur in spite of the ingestion of apparently generous quantities of marmalade, and it can be cured without adding vitamin P.

If 20 mg of ascorbic acid daily will cure a very severe case of scurvy it is legitimate to assume that the minimum requirements for health are not more than this possibly less. Hence the prescription of ascorbic acid to people on ordinary diet is a waste of very precious material.

The swelling of the legs was probably largely due to haemorrhage which caused the anaemia. This view is supported by the high bilirubin content of the serum and by the satisfactory recovery without haematonic drugs, the blood being reabsorbed and refashioned.

This method of treatment was undertaken to test the reliability of the conclusions drawn from a recent M R C experiment. Undoubtedly the safest means of treating true scurvy is by immediate saturation with ascorbic acid.

My thanks are due to my clinical assistant Dr C E Davies, my house physician Dr Horne and Sister Taylor for the many observations and the care taken in what was a very responsible experiment.

A E BARNES M B, F R C P

Recurring Spontaneous Dislocation of the Shoulder-joint treated by an Appliance

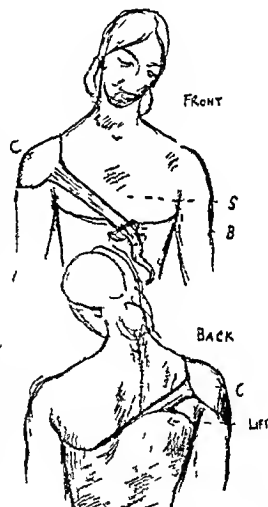
The patient, a frail old lady of 83 was first seen by me a year ago. She had been suffering from recurrent dislocations—these sometimes occurring twice a month. The dislocations had to be reduced under an anaesthetic, and the shock and pain were putting her on the down grade.

In view of her advanced age and poor health the drastic operation was considered too risky, so I had built the corset and shoulder 'cup' (C) here illustrated. My corset-maker tells me the style of make and material is broche. I had the corset lifted over the scapula on the affected side, the lift being well over an inch (2.5 cm), as shown in the back view. There is no lift in front. The 'cup' is fitted over the round of the shoulder and is made of a firm webbing. The front view shows the 'cup' attached by a webbing strap which passes across the chest and through a buckle (B), so that the pull on the shoulder can be varied. At the back the 'cup' is attached by a strap to the corset at the middle. It is not buckled. Both these webbings are elastic in nature. This appliance has been in use for 4½ months, during which time the patient has been free from the dislocations.

I am indebted to Mrs Dixon, of Stourport Road, Kidderminster, for her skill and whole-hearted co-operation in the making of this appliance.

ERIC COPLANS M R C S, L R C P
Hon Capt R A M C

Kidderminster



The Rt Hon R A Butler, MP, was elected first president of the newly formed National Association for Mental Health at its inaugural meeting in London on Feb 11. The Duchess of Kent has consented to be Patron, and the Earl of Feversham was elected chairman, Lady Norman, vice chairman, and Sir Otto Niemeyer, honorary treasurer. The Association results from the amalgamation of three leading voluntary mental health bodies: the Central Association for Mental Welfare, the Child Guidance Council, and the National Council for Mental Hygiene, as recommended by the Feversham Committee on Voluntary Mental Health Services. The work of the amalgamated bodies in providing medical, educational, and social services complementary to the Statutory Services will be carried on and greatly extended in close co-operation with the Government and local government authorities concerned. The new association has been entrusted with the organization of the International Congress on Mental Health to be held in London next year.

Reviews

GYNAECOLOGICAL DIAGNOSIS

Lehrbuch der gynäkologischen Diagnostik für Ärzte und Studierende By Prof. Dr. W. Neuweiler (Pp. 474, illustrated, Swiss francs 58.) Berne: Medizinischer Verlag Hans Huber.

Neuweiler's *Textbook of Gynaecological Diagnosis* must, without doubt, be regarded as one of the most important contributions to gynaecological literature in the last twenty years. Neuweiler has been able to condense into some four hundred and fifty pages a description of most of the modern methods of gynaecological investigation and diagnosis. The volume is well illustrated with some excellent photographs.

The modern methods of investigation are described in detail and great stress is placed on hysterosalpingography. The danger of insufflation is emphasized, and Neuweiler maintains that only carbon dioxide should be used. An excellent photograph of the space between the liver and diaphragm after successful insufflation is included. A good account is given of the different types of vaginitis, some of which are not well known in this country. The classification and description of irregular uterine haemorrhage follow the German system, with no mention of chronic subinvolution and little attention paid to chronic metritis. The sections on carcinoma of the uterus are extremely good, with some pertinent illustrations of the metastases. An illustration is given of the histology of psoriasis uteri. Dysmenorrhoea is considered in some detail and by an approach rather different from that in this country. The section on ovarian tumours is of very great value. The most disappointing section is that on sterility, which is too condensed. It is hoped that the book will receive attention from gynaecologists over here, for there is much to be said for being familiar with the Continental method of approach to the practice of gynaecology.

MEDICAL LECTURES FROM PARIS

Clinique et Investigations By Noël Fiessinger (Pp. 831, 192 figures, 750 francs.) Paris: Masson et Cie, 1946.

Hépatites Rares By Maurice Loeper (Pp. 216, 290 francs.) Paris: Masson et Cie, 1946.

The first of these two books is on the relation between clinical medicine and special investigations. The author is a professor of medicine in Paris and well known for his work on the liver and the blood. The subject matter consists of about fifty clinical lectures, grouped in six sections according to the importance of the special investigations in the management of the cases described. The lectures have been chosen to illustrate the varying role played by the laboratory in the management of patients. While diagnosis may often depend entirely on radiological or laboratory data, at other times investigations are merely an aid or a guide in the management of the case, and they may even be misleading. The last two sections of the book give instances where investigations gave no help, either because a purely clinical diagnosis was possible or because diagnostic mistakes occurred in spite of the full use of laboratory methods. The subdivision is, of course, artificial and the classification often arbitrary, and not all the lectures fit easily into the scheme of the book. Conceived in this way the book provides only an incomplete account of the interpretation of laboratory methods, and that not up to date, since many of the lectures were given in 1941.

The general theme is that though laboratory results may be obtained with scientific precision, their application to clinical problems is rarely simple and their value depends entirely on the clinical context. That this fact has not always been appreciated is shown by the changing fashions in application of particular tests and the author gives a good account of the long time it has taken for such tests as the estimation of the blood urea in nephritis or of the blood cholesterol in cholelithiasis to be given their proper significance. Every new discovery in diagnostic methods appears to suffer a period of unwarranted popularity before knowledge of its limitations becomes sufficient to make interpretation safe, and the author believes it takes twenty years to prove the value of a new test. The book is

long, and each lecture includes detailed case reports and often discussions on aetiology, pathology, and treatment. As is common in French writings, theoretical speculation, particularly on pathogenesis, is allowed more scope than seems justified by the evidence, but diagnosis is based on careful observation and logical deduction. The lectures cover a wide variety of diseases, and the selection of topics has depended on the available clinical material, so that rarities such as chloroma are dealt with as fully as gastric ulcer and myocardial infarct. Many common conditions receive no mention. Cirrhosis of the liver and gout are considered in full detail. Two lectures give interesting information on the medical aspects of famine in Paris during the German occupation—that on

Anémies Erythroplasmanques, which includes a study of oedema formation in relation to plasma-protein changes in these patients, and that on hypoglycaemic coma due to starvation. The informal style appropriate to the lecture theatre in which the book is written adds considerably to its length. There is no index, and references are few and mainly to the French literature.

The second book comprises a series of twenty-one clinical lectures by a professor in charge of a medical clinic in Paris. The first five lectures deal with sulphur metabolism, oxaluria, oedema, osteomalacia, and anaemia in disease of the liver. The remainder are entirely clinical, and deal with uncommon topics such as the changes in the liver in tuberculosis or death from haemorrhage into a carcinoma of the liver. The choice of subjects has been determined by the accidents of the clinic and there is no general theme or design. Statements appear to be based on a few cases, and there is no background of collected and analysed material. The few references are to French authors, and there is no index. It is difficult to imagine an English or American professor writing such a book, difficult too to imagine many English speaking people wishing to read it. Clinical medicine, like patriotism, is not enough, and the day of the elegant series of clinical lectures is gone. We may regret the passing of good showmanship in the out-patient department, the charm of eloquence in the lecture-room and the elegant phrase in writing, but as we learn more about disease in animals and man, and as the total number of scientific workers increases, it becomes essential to present our knowledge in a different form. To-day is the day of the monograph and the review.

TREATMENT OF FRACTURES

The Management of Fractures, Dislocations and Sprains By John Albert Key, B.S., M.D., and H. Earle Conwell, M.D. F.A.C.S. Fourth edition (Pp. 1,322, 1,316 illustrations, 63s.) London: Henry Kimpton, 1946.

The third edition of this book was favourably noticed in our columns in August, 1943 (p. 169), comment being made on the revision of the chapter on compound fractures necessitated by the introduction of the sulphonamides. Further revision of this section has now been carried out, and the present edition incorporates this along with what has been learnt from war experience in the treatment of skeletal injuries, vast numbers of all varieties of which were of course provided by the carnage which then took place. As might be expected the principal changes in the book are in sections on the spine and hip and those dealing with compound injuries. One chapter entitled 'First-aid in Fractures and Automobile Injuries' should serve a very useful purpose. Many of these injuries occur at some distance from a hospital, and as a result doctors who do not usually practise surgery may be called upon to render first aid. Unfortunately the Thomas arm and leg splints, so valuable in such accidents, are but rarely available in doctors' surgeries, and so first-aid measures have to be adapted to the available apparatus—usually boards, bandages, cloth and padding—and it is with the use of such materials that this chapter deals. Part II of the book, which covers the diagnosis and treatment of specific injuries, remains one of its most attractive features, and the article on fractures of the spine is particularly well written and illustrated.

This book should continue to be an authoritative and highly practical guide to students and practitioners, and we foresee that the new edition will be as popular as those preceding it. It can confidently be recommended as a comprehensive account of the commoner skeletal injuries and their modern treatment.

and we can write of this edition as we did of the third. We have the highest praise for it and we thoroughly recommend it to surgeons and practitioners everywhere.

OESTROGENS AND PROSTATIC HYPERTROPHY

The Internal Secretion of the Germinal Tissue of the Testes and Prostatic Hypertrophy By Nils Tornblom Uppsala Almqvist and Wiksells Boktryckeri—A—B (Pp 106 Price not stated)

The experimental work here described by Dr Tornblom was noticed in an annotation in the *Journal* (Dec 9, 1944 p 759). The author discusses the hormonal activity of the testes largely, though not solely, from the point of view of prostatic hypertrophy. It will be recalled that according to the earlier hypothesis of Lower a hormone other than testosterone is normally secreted by the testicles. The decrease in its secretion in later years causes an increased secretion of gonadotrophin, just as in the ovarian failure of elderly women. The gonadotrophin, acting on the still functional cells of the testicles, gives rise, according to this hypothesis, to an increased output of testosterone and thus to prostatic enlargement. A second hypothesis is almost the opposite of Lower's. It assumes that in old men the output of testosterone is diminished and that the prostatic enlargement is due to the unopposed action of the oestrogens normally present even in the male.

In an attempt to settle this controversy Tornblom planned and executed the experiments here described. They demonstrate that the germinal epithelium of the prostate produces an oestrogenic hormone which is probably oestradiol. Valuable as this information is, it leaves the original question unanswered. Dr Tornblom uses his experimental results as evidence in favour of Lower's hypothesis but it can easily be seen that they support equally well the contrary proposition. Nevertheless, the book is a clear exposition of a series of valuable experiments beautifully planned and executed.

STANDARDIZATION IN HAEMATOLOGY

Haematological Technique By Drs L. Everard Napier and C. R. Das Gupta. Third edition (Pp 128 Rs 8) Calcutta U. N. Dhur and Sons 1945

This little book contains an account of the routine methods for the investigation of anaemia used at the Calcutta School of Tropical Medicine. The authors stress the advantages of examining venous blood and of recording haemoglobin in grammes per 100 ml. The techniques are well selected and they are fully and clearly described. If they become standard practice throughout India, as the authors hope, haematology there will be accurate and up to date. Whatever the case in other fields of medicine, in haematology accuracy and standardization are preferable to personal choice and variety. The first two editions of this book were rapidly exhausted, and the same will probably be true of the third. In a fourth edition we suggest that something should be said about plasma jaundice and rather more about the Rh factor. Furthermore as the inexperienced are apt to lay too much stress on differences between successive counts or apparent departures from the normal, a chapter might be devoted to the simple statistics of blood counting, indicating the margin of error of the various techniques.

A second edition of Dr E. B. JAMIESON'S *Illustrations of Anatomy for Nurses* has now been published in a new form of binding, which can be opened out flat or folded over completely so as to show any particular plate as a single sheet. It consists of 64 coloured plates, the majority of which have been selected from the author's well known *Illustrations of Regional Anatomy*. Certain changes have been introduced in the way of improvements in the colour-blocks and by the addition of new distinctive coloration—e.g., purple to distinguish the portal from the systemic venous system, which is represented blue. Great pains have been taken also to render the indicating lines distinct, so that their course over a darkly coloured area can easily be followed, and an index of the names employed has been added, so that many of the abbreviations used in the plates can be easily recognized by beginners, and the particular plates in which the objects are named readily found. This new edition will no doubt achieve an even greater popularity than the first and be a great help to nurses who in their study of anatomy have little opportunity of seeing or handling dissected parts. It is published by E. and S. Livingstone of Edinburgh, at 8s. 6d.

BOOKS RECEIVED

[Review is not precluded by notice here of books recently received]

Pharmaco Therapeutic Notebook. By H. W. Tomski, M.P.S. (Pp 280 15s.) London: Baillière, Tindall and Cox 1946

A summary of pharmaceuticals intended for pharmacists, medical students and general practitioners.

Stedman's Practical Medical Dictionary By N. B. Taylor, M.D. F.R.S.(C), F.R.C.S.Ed., in collaboration with A. E. Taylor, D.S.O. M.A. Sixteenth edition revised (Pp 1,291 42s.) London: Baillière, Tindall and Cox 1946

The new edition of this well known dictionary contains an etymological section besides many other additions.

1946 Year Book of Eye, Ear, Nose and Throat By L. Bohman, M.D. (The Eye), S. J. Crowe, M.D. (The Ear, Nose, and Throat), with the collaboration of E. W. Hagens, M.D. (Pp 543 \$3.75 or 21s.) London and Chicago: H. K. Lewis and The Year Book Publishers 1947

Covers recent advances in ophthalmology and the ENT specialty.

The Doctor and Tomorrow By Arthur E. Brown, M.B., B.Ch., F.R.C.S. (Pp 136 3s.) Sydney: F. H. Johnston 1946

The author discusses the future of medical practice in Australia, with particular reference to giving the whole population an adequate medical service.

Recent Advances in Clinical Pathology By various authors. Editor S. C. Dyke, D.M., F.R.C.P. (Pp 468 25s.) London: Churchill 1947

This book covers recent additions to the practice of clinical pathology in Great Britain.

A Textbook of Midwifery By Wilfred Shaw, M.D., F.R.C.S., F.R.C.O.G. Second edition (Pp 649 21s.) London: Churchill 1947

To this edition has been added new work on the Rh factor and erythroblastosis and on chemotherapy.

The Psychoanalytic Theory of Neurosis By Otto Fenichel, M.D. (Pp 703 35s.) London: Kegan Paul, Trench, Trubner 1946

The author claims to present the psychoanalytic doctrines in a systematic and comprehensive manner. Part I includes an account of medical development, Part II that of the psychoanalytic theory of neurosis.

Mothercraft in the Tropics By K. Macpherson (Pp 205 6s.) London: Cassell 1947

Instruction on the problems of mothercraft and minor ailments in childhood for those living in the Tropics, for the hymen.

The Acute Infectious Fevers By A. Joe, D.S.C. M.D., F.R.C.P.Ed., D.P.H., D.T.M.&H. (Pp 276 18s.) London: Churchill 1947

An introduction to the subject for students and medical practitioners.

Die Hormonversorgung des Foetus By J. Samuels (Pp 320 No price.) Leiden: Brill 1947

An account of the ovarian and gonadotrophic hormones in pregnancy. Written in German with a summary in English.

Materia Medica for Nurses By W. Gordon Sears, M.D., M.R.C.P. 2nd ed. (Pp 246 5s.) London: Edward Arnold 1947

Includes besides materia medica accounts of toxic effects of drugs, the use of hormones, vaccines, and vitamins, and tables of doses.

Pellagra in the Oto Neurology and Rhino Laryngology By Otto L. E. De Raadt, M.D. (Pp 172 No price.) Leiden: University Press 1947

Based on experience acquired when a prisoner of war of the Japanese. In English.

Human Genetics Vols 1 and 2. By R. R. Gates, D.Sc., Ph.D., F.R.S. (Pp 742 and 1,518 £5 for 2 vols.) New York: Macmillan 1946

The author's previous work is gathered together in these volumes and much new material added. Intended as a source book for all concerned with the genetic aspects of medicine or anthropology.

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PRESSURE AT THE CERVICO-BRACHIAL
OUTLET

It is probably fair to say that the causes of backache with or without pain radiating along the course of the sciatic nerve can nowadays be determined with reasonable accuracy. This is not to say that the problem of deciding what in every case is the best remedy has by any means been solved, particularly when the lumbago-sciatica syndrome is due to a lesion of an intervertebral disk. Nevertheless a very great measure of agreement has been reached about the pathology and the treatment of this type of pain in the lower limb. There is still widespread controversy, however, about the causes and the methods of treatment of pain in the upper limb. At one time a cervical rib, or its equivalent, helped by aberrations in the derivation of the brachial plexus was the sole explanation. If no rib or enlarged seventh cervical transverse process was present few surgeons had sufficient courage or conviction to explore the posterior triangle of the neck in search of a fibrous band over which the brachial plexus and perhaps the subclavian artery might be stretched. The unfortunate patient had usually to resign himself to a vague and unsatisfactory diagnosis of neuritis, neurosis, malingering, or fibrositis. The diagnosis of "fibrositis" often had the most serious consequences for the patient. It initiated a regime of treatment beginning with the ruthless eradication of "septic foci," as often as not more imaginary than real, and proceeding through all the currently fashionable forms of physical treatment.

Pain in the upper limb has increasingly affected middle-aged and elderly women during and since the war. Cervical ribs could not be the only explanation if for no other reason than that the syndrome of pain in the shoulder radiating down to the hand is common while cervical ribs are rare. Attention has been concentrated on the possible causes of pressure on the brachial plexus or its roots other than from an accessory rib. Just as our knowledge about sciatica has been increased by anatomical and pathological studies of the lumbar intervertebral disks, so also has "brachial neuritis" been illuminated by similar studies of the cervical disks and the intervertebral foramina.¹⁻³ Diminution in the calibre of a foramen by a prolapsed disk, by osteophytes, or by recurrent subluxation of one vertebra on another, is quite often accompanied by pressure on the corresponding nerve root. Gross involvement of a root, usually the seventh or the sixth, is easily recognized, but minor degrees give rise to symptoms not so readily distinguishable from those caused by pressure on or stretching of the brachial plexus.

Once clear of the spinal column, the nerves have to run further hazards in their journey to the axilla. For most of the way they are accompanied closely if not intimately by the main vessels to the limb so that the clinical picture to which pressure gives rise may be a mixture of neurological and vascular signs and symptoms. The circulatory changes vary greatly in degree. Most commonly the whole hand tingles or goes to sleep, it feels numb or cold to the touch, and it appears blue or pale in colour. At the other end of the scale there is obliteration of the radial, ulnar, and part of the brachial pulse with gangrene of one or more fingers. The risks to which the neuro-vascular bundle is subjected are those of pressure, stretching, and friction. Complaints of tingling, burning pain, and numbness and coldness in the fingers are nowadays common among middle-aged and elderly women. There seems little doubt that fatigue, unaccustomed manual work, and the many hours spent in carrying shopping baskets result in atony of the shoulder girdle, drooping of the shoulder, and stretching of the plexus over the first rib or the anterior edge of the scalenus medius. It has been well known for years that rest followed by graduated exercises to restore the tone and power of the shoulder girdle muscles will often relieve symptoms even when a cervical rib is present.

Anatomical variations in the pathway of the vessels and nerves are an obvious source of pressure or stretching effects. This pathway—the cervico-brachial outlet or tunnel—can be altered in shape and in capacity by a number of factors. It is continually altering with movements of the shoulder and arm. Accessory ribs may be present—the classical cervical rib first noted by Galen and later by Vesalius and so admirably described in the present century by the anatomists Wingate Todd, Wood Jones, and Stopford, and by surgeons, notably Sargent and Telford.⁴ The floor of the cervico-brachial tunnel is formed by the upper thoracic outlet, which may be asymmetrical, tilted, and higher than normal because of lateral curvatures of the spine or because of maldevelopment of the first rib, varying from rudimentary forms to alterations in the shape and curve of the so-called normal. The potentialities for the exercise of a stretching effect are thus numerous. It is also claimed that these structural anomalies of the upper thoracic outlet cause narrowing of the space between the clavicle and the first rib so that the neuro-vascular bundle can be nipped between the two bones when the limb is in certain positions.⁸⁻¹⁰

The anterior and the medial scalene muscles play a part in the production of this syndrome. It may well be that more than these two are concerned. The firm and rather sharp anterior border of the scalenus medius is a ridge over which the plexus can be stretched, particularly if the muscle attachment is carried unusually far forward on the first rib. The scalenus anticus forms an angle with the first rib—the costo scalene triangle in which lie the subclavian artery and the lower components of the brachial plexus. Because of spasm and subsequent hypertrophy the spastic thickened anterior scalene narrows the costo-scalene

¹ *J Bone Jt Surg* 1932 14 877² *Sth med J* 1942 35 663³ *Ann Surg* 1937 106 428⁴ *J Amer med Ass* 1943 121 1209⁵ *Surg Gynec Obstet* 1944 78 350⁶ *Proc roy Soc Med (Clin Sect)* 1913 6 117 *Brain*, 1921, 44 95⁷ *Brit J Surg* 1919 7 168 1931, 18 557⁸ *Lancet* 1943 2, 539⁹ *Clin Sci* 1934 1 327¹⁰ *Brain* 1944 67, 141

gle and thus compresses its contents against the first rib¹¹⁻¹³. How spasm of a single muscle arises in patients in whom fatigue and general muscular atony are otherwise outstanding features is not very clear. The suggestion is made that any painful condition in the area supplied by the fourth, fifth, sixth, and seventh cervical nerves, which also supply the scalenus anticus, may initiate a reflex spasm. Walshe¹⁰ and his co-workers stress the importance of wear and tear of the soft tissues in the cervico-brachial tunnel. They point out that the unceasing respiratory movement of the thorax and the frequent arm and shoulder movements of everyday life cannot but aggravate existing maladjustments between arteries, nerves, and bones. This oft-repeated friction, stretching, and compression of soft tissues may lead to considerable reactionary tissue change. Thus the walls of the subclavian artery may become worn, and the artery may be bound to the first rib by scar tissue, which can also drag on the nearby stellate ganglion, already tethered to the artery by the annulus of Vieussens, thus perhaps explaining the sympathetic phenomena occasionally encountered.

These various conceptions of the hazards which determine stretching, pressure, or friction effects on the neuro-vascular bundle may be summarized briefly as physiological (muscle atony and drooping shoulder), anatomical (anomalies of bone and muscle attachments), and pathological (reactionary soft tissue changes). While it is not difficult to understand how the nerve trunks are usually involved the mechanism of involvement of the main vessel to the limb is by no means clear. At first it was thought that the circulatory disturbances were caused by stretching or kinking of the subclavian artery over the abnormal rib, or by thrombosis within the artery, or by a combination of these factors.¹⁴ Later Todd, Telford, and Stopford claimed that all the vascular changes could be explained by pressure or friction on the sympathetic fibres which enter the arm in the lowest trunk of the plexus and which are occasionally situated in that part of the trunk in contact with the rib. These fibres are distributed to the peripheral vessels at various levels. Irritation of them, as by friction on a rib, induces spasm of the arterial wall, obliteration of the vasa vasorum, and eventually such changes in the health of the vessel wall as to lead to thrombosis and occlusion. In support of this hypothesis is the clinical observation that thrombosis does not extend higher than the level of the pectoralis major tendon, the axillary and subclavian arteries being innervated by a periarterial plexus not subjected to friction and not, like the brachial, radial, and ulnar arteries, by branches from the cerebrospinal nerves.

These views have been severely criticized by Lewis and Pickering in 1934,⁹ by Falconer and Weddell in 1943,⁸ and more recently by Walshe¹⁰ on the grounds that the anatomy of the sympathetic supply to the upper extremity is not as described by Todd, Telford, and Stopford, that long-standing irritation of sympathetic fibres should, as happens in somatic nerves subjected to similar trauma, lead to structural impairment and paralysis with vasodilation, increased warmth and redness of the limb, and loss of

sweating, and that, even assuming a particular topographical arrangement of the sympathetic fibres, it is difficult to understand how recurrent pressure over long periods can disturb sympathetic fibres only in some cases and somatic fibres only in others. These writers suggest that momentary obliteration of the artery in certain movements of the shoulder would account for these so called vaso-motor symptoms and would explain also their momentary duration and their fluctuation. The artery is thought to be nipped between the clavicle and the abnormal rib. Constant repetition of this nipping damages the vessel wall and results in dilation, aneurysm, thrombosis, and periarterial fibrosis. Costoclavicular compression is thus held to account for many of the pressure effects associated with cervical, rudimentary, and even normal first ribs in relation to both nerves and vessels. It is considered the cause of obliteration of the pulse when traction is exerted on the dependent arm and when the arm is elevated. Evidence to support its occurrence has been adduced from venograms, and it has been seen to occur at operation.

The conception of costoclavicular compression as a common cause of either nervous or vascular pressure effects is powerfully challenged by Telford and Mottershead elsewhere in this issue in an article (p. 325) which is a model of careful, painstaking, and patient observation. They base their views on the findings at 120 operations for the relief of pressure on the neuro-vascular bundle of the arm, on the effects of posture of the arm and shoulder girdle on the radial pulse in 120 medical students, and on the evidence obtained by the dissection of 30 cadavers. The characteristic thoroughness of observation at this large series of operations (in only five of which no adequate cause was found) and the careful examination of controls both living and dead give great weight to their conclusions. Telford and Mottershead agree that in a small proportion of cases the clavicle can compress the neuro-vascular bundle against the scalenus medius or an accessory or abnormal rib, but only with the shoulder forcibly retracted backwards or the arm fully elevated. In other positions they regard the idea of costoclavicular compression as "pure supposition unsupported by any anatomical evidence." Depression of the shoulder by traction on the dependent arm may obliterate the radial artery, but it does not obliterate the first stage of the axillary artery. It is clear then that the clavicle is not the compressing agent. The point is further made that when the shoulder is depressed the clavicle moves downwards and forwards so that the costoclavicular space is widened, not narrowed. The compression occurs distal to the clavicle and is considered to be due to an anatomical disposition of the axillary artery in some individuals—perhaps a majority—which allows it to be squeezed between the lateral and medial heads of the median nerve when the shoulder is depressed. Symptoms referable to the plexus with the arm in this position are caused by stretching of the plexus over an accessory rib, an abnormal first rib, or the anterior edge of the scalenus medius. The lack of reference to the scalenus anticus is of interest in view of the fact that it has often been regarded as a causal agent in America and at one time in this country.

¹¹ *Ann Surg* 1927 85 839

¹² *Amer J Surg* 1935 28 669

¹³ *Folia Neuropathol Estoniana* 1931, 11 93

¹⁴ *Amer J med Sci* 1907 133, 173

This paper marks another welcome step forward in the elucidation of causes of pressure at the cervico-brachial outlet. The authors emphasize, as indeed do nearly all recent writers, that no one mechanical cause can explain all cases. It is possible moreover that there are a number of factors responsible in every case. Obviously, therefore, no one method of treatment, and particularly no one operation, is applicable to all patients. If the symptoms do not settle with rest and simple conservative measures and remain sufficiently disabling, operation is justifiable. There is much to be said for an exploration as thorough as Telford's so that the precise cause of the pressure on nerve or artery can be seen and dealt with appropriately. In this way disappointments from operations applied as a routine to all patients would be avoided. Division of the anterior scalene is a temptingly easy procedure. But the results of this operation are almost as uncertain as the aetiological role ascribed to this muscle. Furthermore, adequate exposure and careful demonstration of the site of the pressure might prove it often unnecessary to do more than divide part of the medial scalene, which is a formidable enough operation, rather than resect part of the first rib.

The briefest survey of the literature reveals the complexity of the problem and the variety of factors responsible for pain radiating down the arm from the neck and shoulder. Nowadays it should be possible to decide before treatment whether the site of nerve constriction is within or without the spinal column. It is perhaps wise to stress the need for careful clinical examination and for comprehensive radiography of the cervical spine and shoulder girdle. It may well be that venograms will prove an increasing help. Much remains to be solved, particularly about the aetiology of vascular thrombosis and the mode of involvement of the sympathetic nervous system, on neither of which points is much said in this paper. It is to be hoped that Prof. Telford and his co-workers will be able to throw further light on these still dark corners of a subject which he and his Manchester colleagues have done so much to illuminate now and in the past.

WATER AND SALT DEPLETION

Ninety years ago it seemed certain that Virchow's doctrines had driven the last nails into the coffin of humoral pathology. The cell was the unit, and in cellular changes, revealed by the microscope, all the secrets of disease were held to repose. Physiologists, led by Claude Bernard, were the first to appreciate again, and in a more precise sense, the importance of the fluids which bathe the cells. With the growth of biochemistry a new humoral pathology has arisen, in which water, the electrolytes, and the plasma proteins have replaced the four humours. In H. L. Marriott's Croonian Lectures, the third of which is published in this number of the *Journal*, this new humoral pathology is expounded with a welcome lucidity. It is remarkable that the metabolism of water, which constitutes 70% by weight of the human body, should have been so long neglected. It is only of recent years that its importance has come to be appreciated in clinical medicine, "dehydration" has now become a popular term, and its alleviation is pursued with

an enthusiasm not always illuminated by a knowledge of the subject's complexities.

The body's water is distributed between two great compartments—the intracellular and the extracellular. The last includes both that within the vessels and that in the tissue interstices. Between these two compartments osmotic equilibrium is maintained chiefly by the electrolytes. Within the cells, potassium and phosphate are the most important ions, without, sodium and chlorine. Although water can diffuse freely through the cell membrane, it is impermeable to the electrolyte ions. Dehydration may be either cellular or extracellular. The first arises when the body is depleted of water without loss of electrolytes: the osmotic pressure of the extracellular fluid rises and water passes out from the cells until equilibrium is restored. In the second, loss of extracellular electrolytes diminishes the tonicity of the fluid in this compartment, renal excretion of water proceeds until osmotic balance is again approached, reducing in consequence the total volume of extracellular fluid. Marriott prefers to speak of the first as "pure water depletion," and the second as "pure salt depletion"; he has stressed the immense importance to the clinician of the distinction between the two. Cellular dehydration follows deprivation of water, either because it is not available, or because it cannot be swallowed, or because physical weakness is so extreme that the patient is incapable of slaking his thirst. Its development may be accelerated by defective renal function necessitating the excretion of a dilute urine. Extracellular dehydration is the consequence of the increased loss of sodium chloride in a patient whose intake of water is sufficient to compensate for that transporting the lost salt. Such losses are the result of the removal or expulsion of what Burton called "excrementitious humours of the third concoction"—sweat, saliva, gastric juice, bile, and pancreatic and intestinal juices. Sweating, vomiting, and diarrhoea account for most cases, but "removal" is added advisedly, for the gastric suction so frequently employed after abdominal surgery can lead to rapid depletion. For pure extracellular dehydration to occur the lost water must be replaced. In cellular dehydration thirst and oliguria are the clinical features; the urine contains normal or increased quantities of sodium chloride. In extracellular dehydration the clinical picture is more complex. There is no thirst, the urinary volume is normal, but, except in Addison's disease, sodium chloride is absent, cramps are common, and such accompaniments of a reduced plasma volume as syncopal attacks, hypotension, and haemoconcentration make their appearance early and progress until peripheral circulatory failure closes the scene. Cellular and extracellular dehydration may occur separately, but it is by no means rare for them to be combined in the same patient.

There is substance in Marriott's criticism of the term dehydration, and good reason for using, as he suggests, labels denoting the underlying causes. But in these new terms there is some danger, perhaps, of these states acquiring the dignified status of "syndromes." It cannot be too greatly stressed that they are dynamic perturbations of the body's chemistry which may arise not only in the simple conditions cited but in circumstances of far greater complexity. The appreciation of the events which may lead to

It and water depletion is as important as the ability to recognize the developed disturbances, because in many instances preventive treatment can and should eliminate their occurrence. In this country the problems are more difficult than in the Tropics, where profuse sweating and choleraic diarrhoea are such obvious causes. In temperate climates water and salt depletion appear frequently during the course of disease-processes which may themselves seem to offer sufficient reason for the patient's deterioration. Their detection in these circumstances will tax the most careful clinician. The fundamentals of treatment are simple: to replace water where water is needed, and salt, where salt. The quantitative aspects are more difficult but none the less important, on this subject, and on the routes by which fluid may be administered, Marriott gives much sound and practical advice. It is to be hoped that his admirable lectures will help to convince those physicians and surgeons who still require convincing that the day-to-day problems of water and salt metabolism are of such importance to their patients that their management should not be left in the hands of house officers and nurses.

MELIOIDOSIS

Melioidosis is a disease which is almost always fatal and is seldom correctly diagnosed during life. Two cases in Allied soldiers in the Far East are described in this issue by Paton, Peck, and Van de Schaaf (p. 336) and by Peck and Zwanenburg (p. 337). Melioidosis,¹ which was first described in 1912 by Whitmore and Krishnaswami² in Rangoon, was later recognized in Kuala Lumpur as an epizootic disease of small laboratory animals by Stanton. The occurrence of human cases in the Federated Malay States, the isolation and further description of Whitmore's bacillus, and the reproduction of the disease in laboratory animals were detailed in the classical monograph by Stanton and Fletcher in 1917.

As its name indicates, the manifestations of melioidosis frequently resemble those of glanders, which is caused by a closely related organism. The disease, observed most often in adult males, may take an acute, subacute, or chronic form and may closely simulate other conditions. The acute form, in which vomiting, collapse, and purging may be followed by death within seventy-two hours, may be mistaken for cholera. The subacute and chronic types take the form of a more or less prolonged febrile illness associated with the formation of multiple abscesses which may be found in almost every organ except the brain, but particularly in the lungs, spleen, and liver. These forms may be mistaken for plague, malaria, enteric fever, pneumonia, amoebic abscess, bacterial endocarditis, or military tuberculosis. A diagnosis of smallpox has been made in cases showing cutaneous vesicles and pustules. Death is likely to ensue in a few weeks or months, but some recoveries are reported, usually in cases with solitary or accessible abscesses.

The essential lesion of melioidosis is a small area of focal necrosis which develops into an abscess, subsequently tending to coalesce with its neighbours to form a honey-combed lesion containing tenacious creamy or, in the liver, glairy greenish pus. Diagnosis is made bacteriologically, by culture of the causative organism from the blood in the early stages, from the pus of abscesses or pustules, from material obtained by splenic puncture, and occasionally from urine, sputum, or cerebrospinal fluid. *Pfeifferella whitmori*, a small Gram-negative bacillus with marked

bipolar staining grows readily on ordinary culture media in a characteristic mucoid or rugose form—so readily that it has probably sometimes been regarded as a contaminant. It produces a brownish honey-like growth on potato and ferments a number of carbohydrates with the formation of acid only. It differs from the glanders bacillus in being motile and in liquefying gelatin rapidly. Final identification may be made by inoculation of the organism into the guinea-pig which dies rapidly with abscesses in the spleen, liver, and lungs. Intraperitoneal inoculation in the male guinea-pig produces the Straus reaction—acute suppurative inflammation of the tunica vaginalis.

Although melioidosis is usually regarded as a rare disease, Stanton and Fletcher³ estimated that it was responsible for at least 200 deaths annually in the Federated Malay States. It also appears in Burma, China, Indo-China, the Netherlands Indies, and Siam. Cases have been reported from Ceylon, Celebes, South Africa, and recently, by Mirick and his co-workers,⁴ from Guam. Melioidosis occurs naturally in rats and more rarely in other animals, and, although Blanc and Baltazard^{5, 7} have suggested that the rat flea or the mosquito might transmit the disease, it seems likely that man acquires the infection by the ingestion of food contaminated by rats. *Pfeifferella whitmori* is not sensitive to penicillin *in vitro* but Mirick and his colleagues found their strains susceptible to sulphadiazine and consider that this or some related sulphonamide is worthy of clinical trial.

NURSING CAMPAIGN

Although more nurses are being employed now than before the war, there is a shortage. The Gloucestershire scheme of part-time service planned by Mr W. A. Shee, public assistance officer to the county council, has been successful in meeting this difficulty. Part-time schemes have been tried before without success, but there is evidence that the chief deterrent is not so much the work itself as the conditions under which it is performed, as Miss Armstrong suggests in an article on page 345 of this issue. The campaign for part-time nurses and midwives in Greater London launched in the Press and on the wireless by the Ministry of Health on Feb. 15 emphasizes the need for providing good welfare facilities, free meals on duty, and free facilities for laundering of uniform and, in certain circumstances, for travelling.

The Ministry has opened reception centres at the Paddington Hospital, St. Mary's (Islington) Hospital, Hackney Hospital, Dulwich Hospital, St. James's Hospital (Balham), and the L.C.C. Recruitment Centre (County Hall). In addition volunteers may apply to their nearest resettlement advice office. Voluntary hospitals are invited to participate. A clearing-house at the Nursing Appointments Office, 23, Portman Square, W.1 (Tel. Welbeck 4486), co-ordinates with vacancies applicants who cannot immediately be placed.

Over 1,400 applicants in London have now volunteered to serve, and doubtless there would have been more if the severe weather had not restricted many people's activities to maintaining a coherent daily existence. If the response that has solved Gloucestershire's nursing problems can be induced in the rest of the country the closed wards and hospitals will be reopened and adequate nursing be provided at last for the chronic and aged sick. Further, the partially trained nurse, or the nurse who has completed her training but given up her career in favour of marriage, so far from being dismissed as "wastage," as at present, will be welcomed as a valuable ally.

² *Studies Inst. med. Res. Federated Malay States* 1932 No. 21

³ *J. Amer. med. Ass.* 1946 130 1063

⁴ *Pres. Med.* 1941 49 1293

⁵ *Ibid.* 1942 50 33

⁷ *C. r. Acad. Sci. Paris*, 1941 213 670

¹ *Brit. med. Journal* 1912 2 1306

² *Indian med. Gaz.* 1912 47 262

THE PART-TIME NURSE

BY

KATHARINE F ARMSTRONG, SRN, SCM
DN (Lond)*Editor of the Nursing Times*

The Gloucestershire scheme of part time nurses, organized by Mr W A Shee, public assistance officer to the county, has completely altered the position of the Gloucestershire public assistance institutions as regards nursing staff. Begun about a year ago, when the shortage of nurses to care for long term patients was so acute that it seemed that wards and even whole institutions would have to close, the county now has 301 part-time "nurses" and a waiting list of those willing to help in this important work at some institutions. It has even been able to staff completely a similar infirmary for a neighbouring county at short notice. At a time when the whole system of caring for the aged and infirm seemed in danger of breaking down these results deserve close study by all authorities faced with similar problems.

Actually the Gloucestershire "part time nurses" are not all nurses in the present sense of the term, as defined by the Nurses Act, 1943. They are graded into State-registered nurses who serve as ward sisters or staff nurses, enrolled assistant nurses, nursing attendants, and nursing orderlies. All are engaged in nursing duties, the nursing orderlies being untrained women who are taught elementary nursing at the bed side and after at least six months' satisfactory work are promoted to the rank of nursing attendants. This training is of the type that many members of the nursing profession envisaged for the assistant nurse when the Nurses Act 1943, was passed.

Success of Scheme

The most interesting point about the plan is that the matrons, although dubious at first of its success and fearful lest the part-time workers should fail to arrive, find that it has, in fact, brought a fine type of woman into their nursing service, it has provided a much better standard of nursing care than they could obtain by the employment of full-time nurses supplemented by temporary help from nursing co-operations, which was some times of a very inferior quality. The patients are happy and obviously well nursed. The scheme has produced one particularly interesting result. Out of the 301 "nurses" 72, or 24%, are State-registered nurses who have come forward to help in this emergency and are enjoying the opportunity of practising their art. What hospitals, acute or long stay, can boast a 24% ratio of fully trained personnel in their nursing staff? Further, the nurses are happy looking after these long term cases—many of them heavy cases and not a few incontinent. The authorities have always thrown the blame on trained nurses for their failure to help in this important branch of nursing work which often requires all the ingenuity and skill of the qualified woman. Of course this experiment is young as yet, though it has successfully weathered a full year so that the effect of novelty may be expected to have worn thin. Does it not, therefore, appear that the fault was rather in the conditions under which nurses were expected to carry out the work, and that perhaps the accommodation provided for them was the deterrent rather than the nature of the nursing work?

The answer may lie in the hours worked, as Dr T B H Haslett consultant physician and pathologist to the Gloucestershire County Council suggested at the conference held in Cheltenham in February to make the scheme more widely known. The part-time workers give what time they can spare, and many work only for a four hour shift daily. The hours are 8 a.m. to 12 noon, 12 noon to 4 p.m. and 4 p.m. to 8 p.m. during the day with a 12 hour night duty from 8 p.m. to 8 a.m. Dr Haslett remarked that this meant that the individual part-time nurse probably had to change each incontinent patient once only a day whereas the full-time staff would have had to do it several times and this tended to be demoralizing. This ought not to be the case, for it is the patient's misfortune and not his fault, and, to the best nurses, sympathy for his plight

and the need to help him to overcome his own distaste for life under these conditions completely oust all feeling of the disagreeable aspect of the work. It is queer how little the average doctor appears to understand this, though he must approach mental and other less pleasant forms of disease in the same spirit if he is to be a first-class surgeon or physician.

Benefits of Rearrangement

The implementation of the scheme has meant a certain amount of reorganization, which also has its advantages. The greatest of these is that the patients are now not disturbed till 7 a.m.—a fact which they greatly appreciate. This is presumably, the result of the fact that the part-time worker who has to travel to her work does not arrive until 8 a.m., and therefore the bulk of the morning routine ward work—washing, bed-making and giving breakfasts—begins at a later hour. Every nurse realizes that her patients would appreciate being awakened less early. For those older patients, who may spend the rest of their lives in an infirmary ward, possibly a period of ten to twenty years, it is particularly beneficial. Dr Haslett asserted that the rearrangement has not "interfered with the work of that non celestial being" the doctor. This is interesting in view of the fact that a surgical ward for carcinomatous cases had been opened at the Cheltenham Infirmary to relieve the waiting list at the general hospital. The problem of waiting for the dust to settle after bed making and sweeping before beginning purifications and dressings has been satisfactorily solved. If the general hospital of the future is to depend at all on part-time nursing this emphasizes the desirability of building new hospitals with a surgical dressing-room, into which beds and trolleys can be wheeled, as a part of every surgical ward unit. Certainly all patients would benefit from any scheme in which the ward day began at a later hour.

The scheme can succeed only if the part-time staff proves reliable. Very naturally matrons always fear this experiment, lest they be left without the essential staff to nurse the patients. There is greater risk of absenteeism, but the extent of it will be lessened if the part time worker is made to feel that she is welcome, is an integral part of the staff and has definite responsibilities. There are divided loyalties, of course. 86.5% of the Gloucestershire part-time nurses are married women with family responsibilities or women living at home with family ties. If there is illness of children or husband the part-time nurse can not carry out her obligations to the hospital, and a sufficient floating staff is essential to meet such occasions without disruption of the nursing service. Any hospital short of full-time nurses will still be better off with part-time assistance and adequate relief arrangements, than it was before. In illness too, it may well be longer before the part-time nurse can return to her work if it means a journey, perhaps in bad weather, in addition to the hours on duty. Suitable allowances must be made for these factors. In Gloucestershire the matrons have found the part-time staff reliable. They have not found that they expected the full-time workers to take all the less desirable periods of nursing service—at week-ends and holiday periods. In one infirmary in fact, the part-time workers volunteered to come in on Boxing Day and relieve the full-time staff entirely, in spite of their outside ties.

Salary Scales

One difficulty with regard to the part time scheme lies in the question of payment and it must be squarely faced. The Gloucestershire scheme began before the Rushcliffe Committee considered the matter and the scales offered were 2s 6d per hour for a State-registered nurse, 2s per hour for an enrolled assistant nurse, 1s 9d per hour for a nursing attendant and 1s 6d per hour for a nursing orderly for those who worked for less than 24 hours per week. Those working longer hours received a proportion of the Rushcliffe scales. The scale for the State-registered nurse is very low for a skilled woman with a three- or four year training behind her. It is however definitely higher proportionately than the salaries of the full time worker in the case of the staff nurse though lower in the case of the ward sister. Nevertheless it has elicited a satisfactory response, and neither the full time nor the part-time workers appear discontented. The Rushcliffe Committee has, however, now issued

a salary scale for the nursing ranks, and it is as follows: 2s 10d per hour for the ward sister, 2s 1d for the State-registered nurse and 2s for the enrolled assistant nurse. These figures the committee reached by taking the average salary for the rank—i.e., the salary after five years' service—and allowing an additional 12½% loading because the part-time worker had no pension rights and no security of tenure. The figures serve to reveal how low the basic salary scales still are, though they show nursing salaries in an unfortunate light to the layman because of the under-valuation of the nurses' emoluments. For these calculations the nurses' board, lodging, laundry, service, and medical care are valued at £100 per year for the staff nurse and £120 a year for a ward sister. Most part-time nurses will probably be in the staff nurse category. It is quite impossible, certainly in London, to obtain bed and breakfast for less than £2 per week, excluding other meals, personal laundry, and service. The part-time worker lives out in a world where prices are greatly increased. She may have to obtain reliable domestic help to enable her to leave home at all, it will probably cost her at least 2s per hour and be difficult to find.

The full-time worker should not therefore grudge the part-time worker a higher salary scale than that which the Rushcliffe Committee suggests. She has the benefit of her pension rights, her security of employment, her holidays with pay, and opportunities for promotion. She may not appreciate these advantages fully to day, but she will later. She should do all in her power to attract the part-time nurse and work for improvement in her salary scale as well as in the scale for the full-time workers in the nursing services. Part-time nurses have already volunteered to help in London, and in other counties where similar appeals are being made, in quite good numbers. So long as there is a shortage of full-time workers—and this may well be permanent—they will be needed, unless beds are to be limited. In London the total is about 1,000 helpers within three weeks, and 173 of them are State-registered nurses. In Gloucester the part-time nurses have themselves proved the best advertisement for the scheme and brought in many others. There is no reason why this should not be so elsewhere and prove a permanent factor in meeting the nursing shortage.

WELFARE OF DISABLED IN SCOTLAND

In November, 1946, the number on the Disabled Persons Register in Scotland was 61,840, said Sir Andrew Davidson, speaking at the Council of Social Service Conference at Perth on Feb. 14. Of these the surgical group (amputations, injuries, and diseases affecting the bones and joints) accounted for nearly 29,000, the medical group (rheumatic conditions, diseases of the heart, lungs, nervous and digestive systems, and the skin) nearly 19,000, the psychiatric group nearly 3,000, and the remainder (congenital malformations, deafness and other ear troubles, blindness and other eye diseases) over 11,000.

The preventive aspect was being tackled from social, nutritional, and industrial health angles. A striking example was the improving figures for pulmonary tuberculosis, largely attributable to the higher standard of milk production. In 1937 there were 769 herds producing certified and tuberculin tested milk, now there were no fewer than 3,729. Blind persons in Scotland numbered roughly 9,000. Blindness in the young was decreasing, mainly due to the advent of new drugs and to better maternal and infant welfare. Schools for the deaf provided for 661 children, but the waiting list numbered 122 and included children over 9 years of age who had never been to school. Inadequate school accommodation and the lack of trained teachers were the main factors against progress.

Since the war a good start had been made in Scotland towards a scheme for the treatment of orthopaedic cases. Orthopaedic centres had been developed at seven hospitals in the E.H.S. of the Department of Health, where over 2,000 beds had been provided. That number was now less owing to diminished requirements and the shortage of nursing staff. Each hospital had a specialist staff, each unit had been supplied with the necessary equipment for physiotherapy and handicraft workshops for occupational therapy had been provided. After-care clinics were being set up in connexion with the main

centres and in collaboration with voluntary organizations and local authorities. A further welcome development had been the association of the universities and medical teaching schools with regional orthopaedic schemes. Lectureships had been created in Glasgow and Dundee, and similar appointments were being made in Edinburgh and Aberdeen. Of educable mental defectives Sir Andrew said all larger authorities and some smaller ones had provided special schools or classes but there were still many areas, particularly rural, where facilities were few and no institutional provision had been made. Some such areas had contracts with existing certified institutions but at present these were often not available on account of lack of accommodation, and children had to remain at home and in some cases attend the local school. Many who were interested in these matters considered that more adequate ascertainment was needed by specially qualified medical officers.

Defects of temperament and behaviour had only comparatively recently been recognized as worthy of special study and treatment. Now that we know, he said, to what extent the temperament of a child and the trend of character development are determined in the first five years of life, it is easy to see how important it is for maladjustment in young children to be detected and given skilled treatment at as early a stage as possible to prevent juvenile delinquency and neurosis developing at a later date.

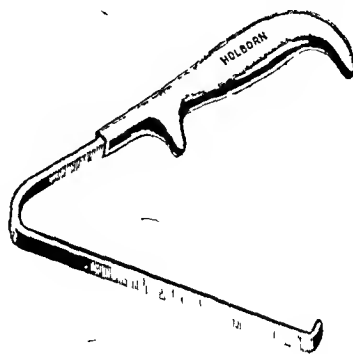
Sir Andrew concluded by saying that the Department of Health was making a survey of existing rehabilitation facilities to determine at which hospitals they might best be developed in the future. The Disabled Persons (Employment) Act, 1944 constituted the most comprehensive piece of legislation in the history of the welfare of the disabled. Success in resettlement depended largely on the attitude of employers, especially foremen, and on the person's own determination and keenness to succeed.

Preparations and Appliances

A THORACOPLASTY RETRACTOR

Dr R. LAMBERT HURT, surgical registrar, Chest Unit, Hill End Hospital, St Albans, writes:

The instrument shown below, the design of which was first suggested to me by Mr O. S. Tubbs, F.R.C.S., has been devised in order that an improved exposure may be obtained during resection of the anterior ends of the 2nd and 3rd ribs during upper thoracoplasty. At this stage of the operation the periosteal separation is of necessity done "in the dark" with



the consequent risk of damage to the pleura or internal mammary vessels. By the use of this retractor the pectoral muscles are readily held away from the ribs, allowing all the periosteal separation to be done under direct vision.

Although originally designed for use during a thoracoplasty the instrument is of use during abdominal operations—its long blade allows of deep retraction, the handle being well away from the operation field.

The instrument, in stainless steel, may be obtained from the Holborn Surgical Instrument Co., Ltd, London, E.C.1

Reports of Societies

AETIOLOGY OF CHRONIC RHEUMATISM

A discussion on the aetiology of chronic rheumatism took place at a combined meeting of the Medicine and Physical Medicine Sections of the Royal Society of Medicine on Jan 28. Dr MAURICE DAVIDSON presided.

Historical Introduction

Dr W S C COPEMAN said that the word "arthritis" was of great antiquity, it was used by Galen and his successors for infections of the joints of the body. As a generic term it included gout. Rheumatism and arthritis were explained in terms of the humoral theory until well on in the eighteenth century. Rheumatism was considered as the discharge of a catarrhal humour into the blood. Osteoarthritis was first described as a disease distinct from gout by William Heberden in his *Commentaries on Disease* published in 1802, the year after his death. The chemical view of rheumatism started about the middle of the nineteenth century and enjoyed a brief popularity. The name "rheumatoid arthritis" was coined by Sir Archibald Garrod. The term "rheumatic gout" was given to a disease in no way related to gout and not necessarily to rheumatism, and sometimes called "rheumatic arthritis". Charcot put forward his views in 1868, and the neurotrophic hypothesis associated with the name of Weir Mitchell lingered on until the end of the last century. Later came the view that rheumatoid arthritis might be primary or secondary. In 1909 A E Garrod suggested a metabolic factor, and this theory was taken further a few years later. The hypothesis of infection apparently first came into history in 1803, when an American physician, Benjamin Rush, cured a case of what appeared to be rheumatoid arthritis of the hip by the removal of an aching tooth. In modern times the theory of focal sepsis had been popularized by the late Sir William Willcox and others and had perhaps been too much exploited. Although osteoarthritis was a very ancient disease, it was not clinically differentiated from other forms of arthritis until 1829.

The Concern of the General Physician

Dr PHILIP ELLMAN, in a lengthy and comprehensive paper, declared the term "chronic rheumatism" to be ambiguous and unscientific. Before discussing the aetiology an attempt should be made, he said, to define and classify the conditions which were described as "chronic rheumatism". This description covered a group of diseases of the locomotor system, and constitutional disturbance might or might not be present. His own preference was for a return, with slight modifications, to the classification originally propounded by Sir Archibald Garrod in 1890. The classification suggested by a committee of the Royal College of Physicians in 1934, however, was probably the most comprehensive and scientific to date.

Chronic rheumatism was a disease of unknown aetiology, associated with morbidity rather than mortality, and treated in the main almost with indifference by the profession. The prevailing general attitude of defeatism in relation to rheumatic diseases as a whole and to chronic arthritis in particular was not justified. It was his firm conviction that rheumatic diseases were primarily the concern of the general physician working closely with the general practitioner rather than of the ultra-specialist. He had no wish to disparage the contribution which specialization had made and could make to this subject. Co-ordinated teamwork by the physician, the specialist in physical medicine, the orthopaedic surgeon, the physiotherapist, and others was essential, but the final assessment of the patient as a whole rested with the general physician who must interpret the local manifestations in relation to the general background.

Dr Ellman mentioned the effect of pregnancy. He had no record of arthritis developing during pregnancy, and cases had been described in which pregnancy had been a therapeutic measure. The potential significance of the pituitary in relation to chronic rheumatism had received considerable attention, and hopes had been raised with regard to irradiation of the pituitary. Among other aetiological aspects he touched upon the geographical distribution of rheumatism, a disease of temperate climates but he felt that faulty domestic heating and ventila-

tion was more potent than climate as a causative condition. He emphasized the need for taking a complete history of the patient. In how many cases was any real investigation made of habits and environment? He gave particulars of a survey of 100 cases of the rheumatoid type of arthritis, and mentioned incidentally, the large preponderance of women over men (in this survey 3/1), the age incidence (nearer 40 than 20), and other factors. He described some biographical studies which he and his colleagues had made on cases of fibrositis in civilian and Service patients during the war.

A Sensitization Factor

Dr G D KERSLEY discussed the phenomena of sensitization in relation to this problem. He first separated off cases of the osteoarthritic type. Generally speaking, these were characteristic in that they were joint affections only, and their aetiology was referable to two things—a predisposition in the joints which were generally of a poor type, and trauma most frequently repeated small strains, possibly arising from bad posture. With regard to the rest of the rheumatic group the more cases one saw the less sure one became. Each syndrome was completely clear in itself so far as the more typical cases were concerned but there were many intermediate cases and many common factors. Attacks might be started by a number of aetiological factors common to all the groups. In none of these syndromes had any specific infection been proved, yet in all of them it was not uncommon for any infection to bring on the condition or exacerbate it.

Was there any theory which could connect all these various factors? The only one he could suggest was an altered reaction to a foreign protein. Experimentally it had been shown that the local tissue reaction in sensitized animals was mesodermal only, and it did resemble in many ways the granulomata found in rheumatic fever and rheumatoid arthritis. It could be shown experimentally that that particular reaction might be confined to one area by producing a localized hyperaemia or by trauma or fatigue and these were exactly the factors which localized the phenomena in rheumatic conditions particularly in gout and in fibrositis. Another point in favour of the theory was the rheumatic pains and often the swelling of the joints which were not uncommonly found in the course of immunization for example, against scarlet fever. Again, when rheumatism in any form arose as a result of infection there was almost invariably a lag between the infection and the onset of the rheumatic stage, and the commonest time-lag was ten or fourteen days, which was also the common period for sensitization. Another argument for the theory of sensitization allergy was the reaction of many rheumatic conditions to salicylates and the complete absence of reaction of all rheumatic conditions to penicillin or the sulphonamides.

Accepting the possibility of sensitization as underlying the rheumatic state, the factors which might contribute to produce susceptibility to sensitization included hereditary predisposition, depression of antibody in the blood stream by reason of chronic infection, fatigue, exposure to climatic conditions, and upset of the autonomic nervous system occasioned by worry or shock, all these were common factors in the various rheumatic syndromes. He suggested as a possibility that an endogenous type of allergen was formed in certain cases in addition to the various exogenous allergens, and he thought that this opened up a certain field for research.

Perhaps because the openers had covered the subject so completely there was almost no general discussion, and the openers had nothing to which to reply.

VIRUS AND LABORATORY

Delivering the Chadwick Lecture, "Laboratory Investigations in the Diagnosis of Virus Infections of Man" on Feb 18 at the Royal Society of Tropical Medicine and Hygiene, Prof S P BEDSON said that although it was understandable that there should be some delay in the findings of research passing into everyday knowledge, in the case of virus work this delay was unduly long. Much of the work of the past fifteen years had gone unnoticed and insufficient use was made of the diagnostic procedures which virus research had made available. It was still widely believed that all viruses were too small to be seen with the microscope, yet in quite a number of virus diseases

microscopic demonstration of the causal agent was of diagnostic value. This was true of trachoma and of those conditions caused by the nearly related virus of inclusion conjunctivitis. The virus of lymphogranuloma venereum could at times be demonstrated in smears made from the inguinal buboes which occurred in many cases of infection with this virus and recent work had demonstrated the diagnostic value of the microscopic examination of smears made from the skin lesions of smallpox. Even where demonstration of the virus by the microscope could not be achieved, histological changes, such as inclusion bodies, could be looked for, their occurrence was always suggestive of a virus infection, and in certain instances, such as the Negri body in rabies, it was diagnostic.

Valuable though microscopy might be in the laboratory investigation of virus disease as in any infection the aim of the laboratory should be the isolation and identification of the causal agent. In the case of viruses this entailed the injection of experimental animals or eggs and establishing the viruses preparatory to their study. Unfortunately quite a number of viruses affecting man were so specifically adapted to man as to make it impossible to grow them apart from human tissues and even where animals or the egg were suitable the time consumed in identifying the virus made the procedure of little or no use for immediate diagnosis. None the less whenever the diagnosis was in doubt attempts to isolate and identify the causal virus should be made. It was still far from being generally appreciated that the serological reactions employed in bacteriology were equally applicable to the identification of viruses or the diagnosis of virus disease. Of these reactions the complement fixation test was probably the most valuable for virus work. It could be used either for the demonstration of the presence of the causal virus as was the case when it was applied to the diagnosis of smallpox, or it might be employed for the detection of antibody produced in response to infection, as in influenza, psittacosis, lymphocytic choriomeningitis, lymphogranuloma venereum, or mumps.

A REGIONAL MIDWIFERY SERVICE

At a meeting of the Manchester Medical Society on Feb 5 Prof DUGALD BAIRD said that the focal point of a regional maternity scheme should, if possible, be a university teaching hospital alongside the general hospital, the children's hospital, and the medical school. Placed conveniently in the district round the hospital there should be health centres which would be the headquarters of the family doctors and midwives engaged in domiciliary midwifery. An obstetrician on the staff of the maternity hospital should visit each centre each week to see women booked to come into hospital for confinement and to see in consultation with the family doctor any case about which he wanted an opinion. In the same way a member of the staff of the children's hospital would supervise and direct the child welfare work in conjunction with the family doctor. This would leave the out-patient department at the hospital free for the investigation of special cases.

The family doctors, midwives and health visitors based on the health centre would take part in the teaching of medical students and nurses. Such a scheme was well under way in Aberdeen except for the fact that the family practitioners worked from their own homes and not from health centres, and played less part in the scheme than they would if they were working from a well-equipped centre. Each doctor must be made to feel that he or she was an essential member of the team supplying a first-class service for the area. To promote this frequent clinical meetings should be held at the hospital, when problems of organization, results of treatment and recent advances in the subject could be discussed. There should be a good records department where the details of every confinement not only in hospital but in the whole area could be analysed. In this way problems could be investigated on a much wider basis and attacked from the laboratory, statistical and social aspects. Very many problems in medicine as well as in midwifery were urgently in need of study by some such organization. In this way too, the efficiency of the service in one area could be compared with that of another.

During the last ten years in Aberdeen maternal deaths, stillbirths, and neonatal deaths had been analysed for the whole

area by the obstetrical staff of the hospital in conjunction with the medical officer of health. Analysis of the figures had led to clear conclusions being reached as to the deficiencies in the present service. It had shown that the use of sulphonamides and penicillin had practically wiped out deaths from puerperal sepsis. The death rate from eclampsia had been halved in the last ten years. Under the Maternity Services Scotland, Act it was calculated for the purpose of assessing fees that the doctor would make three antenatal visits. This was quite inadequate. The death rate from shock and haemorrhage had diminished least so that there was still room for improvement in the management of abnormal labour.

Wife experience had shown conclusively that in the prevention of deaths of mothers and infants much attention had to be given to the health and diet of the mother. The problem of a good obstetric service was a very much wider one than that of keeping up the standard of medical and nursing skill. The measures taken to lower mortality would also help to lower morbidity. There was still a lot to be done to make a first-class service available to every mother at a reasonable cost.

CATERING FOR THE AGED AND INFIRM

A conference on "Special Forms of Catering for the Aged, Invalid, and Infirm" was held by the London Council of Social Service on Jan 18 under the chairmanship of LORD AMULREE. Representatives of many statutory and voluntary bodies attended.

Dr F. AVERY JONES pointed out that with the limited supply of home helps and domestic servants many people were unable to get proper meals while they were ill, so that recovery was retarded. Old people and convalescents, unable to cope with shopping and cooking were similarly affected. At least 10% of the admissions to hospitals were not for specific treatment but for rest food and medical supervision which given proper facilities, could be provided at home. A food delivery service providing cooked meals for such people should be established in every borough and feeding centres for those in need of special diets (a preliminary survey in London factories showed that over 5% of the men had, or had had a gastric or duodenal ulcer) he referred to the advisory service provided by the Invalid Kitchens of London to assist works canteens in catering for employees with special medical needs. Such facilities as these, and a campaign against obesity—an extra stone (6.3 kg) in weight at middle age lessened a man's expectation of life by 10%—could also do much to keep people out of hospitals.

Dr MAGNUS PYKE showed that while the calorific needs of the aged were rather less than for younger people their nutritive needs were as great. Research recently carried out in Vienna—where there had been severe food shortages—showed that loss of weight through malnutrition occurred more severely among old people. Surveys must be carried out to discover what kind of a diet old people were eating.

Mr FRED MESSER M.P., advocated the provision of more "home helps" to assist old people in preparing the right kind of meals and to help keep them out of institutions. A common dining room would help old people living in specially built groups of houses or flats. In other cases mobile services should take the meals in containers. In the past such services had been left to voluntary agencies and he did not want to dispense with the valuable personal service which they rendered but while they should retain their function the expense should be borne by the community and the responsibility for this and other aspects of old people's work should be assumed by the local authority. Good food and good cooking in hospitals were often spoilt between kitchen and patient, and each hospital should be provided with a catering manager to see that the right kind of food was provided in a palatable condition.

For the last session Miss ROSE SIMMONDS and Miss KATHLEEN PROUD opened a discussion on luncheon clubs and mobile meals services. It was not generally realized by catering officers in factories, convalescent homes and restaurants that special diets could often be prepared from the same food as that served to ordinary customers—the meat needed to be minced, the vegetables sieved and the steamed pudding served without fruit but with a sauce. Simple adjustments could also serve the obese, diabetics and old

people Mobile meals services should serve maternity cases, convalescents, and the chronic sick, especially the aged Vans equipped with thermostatic containers should operate from communal meals centres, leaving the meals at people's homes and collecting the containers left on the previous day The Invalid Kitchens of London was a voluntary organization serving mobile meals in six London boroughs, in only one receiving assistance from the local authority In eight other boroughs mobile services were provided by the local Council of Social Service, Old People's Welfare Committee, Red Cross or Women's Voluntary Services

In summing up LORD AMULREE emphasized that there was a great shortage of hospital beds and any special feeding arrangements that would help to keep people out of the hospitals would be a valuable service to the community He advocated the appointment of meals supervisors in hospitals and institutions The present arrangements for the care of old people were inadequate and local authorities must take their part in this work Old people should be allowed to take their own furniture when they went to a special home or institution

Mr GEORGE MITCHELL, Chairman of the London Council of Social Service, in thanking Lord Amulree and the speakers said that his Council had been responsible for a good deal of pioneering and research in connexion with communal feeding

"THE SHORT ANAESTHETIC"

At a meeting of the Devon and Exeter Medico Chirurgical Society on Feb 20, Dr W A WALTER discussed those anaesthetics commonly used in general practice

It should be borne in mind, said Dr Walter, that gas anaesthesia was achieved solely by producing a state of partial asphyxia For dental extractions it was intended to be short but occasionally became a protracted affair After such an experience the patient might be none the worse but in one long series reported in the United States there had been eleven cases of sudden death, one case of prolonged decerebrate rigidity ending fatally and a case of marked and apparently permanent mental deterioration in an unusually intelligent child The anaesthetist had to decide whether to call a halt or to risk damage to the patient's cortical cells

Domiciliary anaesthetics were required for minor operations but there was no such thing as a minor anaesthetic Intravenous thiopentone (pentothal) had much to commend it provided that certain precautions were observed There should be no premedication there must be an unobstructed airway, and the patient should not have taken food for three to four hours beforehand There was danger of asphyxia in the recovery stage, especially after premedication or after a large dose of thiopentone There was also a risk of laryngeal spasm with this drug When administering thiopentone in a patient's home, the anaesthetist should have with him at least twice the amount that he expected to use, tongue forceps, nikethamide and if possible a cylinder of oxygen He should not leave the house until the patient was able sleepily but sensibly to answer questions and he must instruct some relative or the nurse not to leave the patient unattended until he was fully "round" and talking rationally

For the senile, the anaemic and the septicaemic thiopentone was undoubtedly preferable to gas Senile patients required far less than younger subjects The dose given should be the smallest required to produce the desired effect and the rate of administration could be controlled conveniently by using a fine needle say a No 17 The patient usually became unconscious with a contented sigh This degree of anaesthesia should give two or three minutes of relaxation If a longer period was needed as much again of the drug should be given slowly keeping careful watch of abdominal respiration If the breathing stopped the administration should be stopped at once until breathing started again If it did not start again soon artificial respiration should be begun before the patient lost his pink colour Oxygen was better than fresh air, but the latter was to be preferred if there was any delay with the oxygen To produce local ring analgesia for a whitlow by repeated injections was a painful process While it was being done the patient should be given gas and air, by a self-administering machine or trilecne, through an inhaler

Correspondence

The Pemmican G M J

SIR—May I congratulate the *BMJ* on having, almost alone among periodicals (suspended by an 'illegal ukase'), defied successfully the latest effort to establish totalitarian methods by our egregious Minister of Fuel These two pemmican substitutes should find an honoured place in the archives of the *BMJ*

The position was clarified by two debates in Parliament—in the Commons on Feb 25 and 26, and the Lords on Feb 27 Two explanations of the suspension were presented conflicting with one another and with the facts In both Houses the pretence of any statutory sanction was immediately abandoned On Feb 25 in the Commons the Prime Minister, challenged at question time for the statutory authority upon which suspension had been made, declared twice over that it was 'done by agreement between the Periodical Proprietors' Association (PPA) and the Government Lord Chorley, replying for the Government in the Lords (Feb 27), repudiated the 'agreement' argument 'Suspension of publication was secured,' he said, 'by an instruction issued after consultation with bodies representing major interests in the newspaper and periodical Press Speaking with all the authority of a Professor of Law in the University of London, he declared categorically that instruction is the word which I think most accurately describes' the procedure adopted

The ascertained facts are that Mr Shinwell had issued the 'instruction' three days before any consultation with the PPA was attempted The instruction had, and was intended to have, all the appearance of an imperial rescript The PPA, taking that view of it, and confronted with an accomplished fact, had no alternative but to 'agree' Your information conveyed in the pemmican issue and in the current *Journal* that you were officially scolded, not for using electricity which you had not done, but for coming out at all, is another illustration of effrontery in high quarters

But there is yet a further consideration of major importance It was well known that during this momentous fortnight the Minister of Health was to be engaged in critical negotiations with the medical profession, upon which he had very reluctantly embarked and only when faced with the wholesale revolt by the profession against his Act It is obvious that it might have been extremely convenient for the Minister to prevent during these negotiations publication of the medical journals whose duty and whose function it is to keep the profession fully informed on matters of such vital importance to it The possibility of such back stage ministerial intrigues lends a sinister significance to this new encroachment on our liberties—I am etc

House of Commons

E GRAHAM-LITTLE

SIR—Reading the *BMJ* No 4494 prompts me to send congratulations to you and your staff on account of the way in which you manage to carry on in the teeth of appalling conditions! The spirit behind that copy certainly deserves our admiration Just at present we too, in Denmark, are shivering and talking about fuel but spring cannot be far behind—I am, etc

Randers Denmark

OLE BANG

SIR—Congratulations to yourselves and your 'printer' on this week's *Journal* It raises our confidence in the Association's perseverance in other spheres—I am, etc,

Ross Herefordshire

G M LLOYD

SIR—I write to express my appreciation and admiration for the last two issues of the *Journal* It is gratifying that even in these sad times there are still people who show initiative—I am, etc,

Liverpool

ISABELLA FORSHALL

SIR—Enormous congratulations on maintaining the freedom to print *Prosit omen! Floreat libertas!*—I am, etc,

London NW 3

L W

SIR—"Peace hath her victories no less renowned than war" could hardly be better illustrated than by the abbreviated *Journal* of the last fortnight, upon which, Sir, the profession must most warmly congratulate you

May I plead that some of this excellent editorial précis writing is continued? Without it how many of us would have learnt that "outfitters won't give long trousers to son aged 7 without doctor's certificate", "certificates must be renewed that leg still off each time applying for extra soap allowed", or the story of the night porters and the hansom cabs *Floreat brevior BMJ*!—I am, etc.,

London W 1

HENRY WILSON

SIR—I feel I must write and congratulate you on your two fine efforts. You and your staff deserve the highest praise for a grand show. If our rulers had half the guts you people have our country would not be in its present condition—I am, etc.,

Hemel Hempstead

E S PHILLIPS

SIR,—While not particularly anxious to dim the glow of complacency which I presume, appears on the faces of all at BMA House, I must protest against your efforts in producing the *BMJ* during the fuel crisis

In my opinion only two courses were open to you either (a) fall in line with good grace like the other periodicals, or (b) defy the 'ban' and produce the *Journal* as usual, since no legal proceedings could have been taken against you. Sixty-two thousand sheets of paper and sixty-two thousand envelopes—what a waste of paper and effort!

The first issue I scanned with startled amazement, the second I put at the back of the fire unread. Am I alone in my feelings in this matter?—I am, etc.,

Nelson Lancs

A J P DALY

Statistics Retrodisplacement and Fertility

SIR,—The burdens of the research worker in medicine have been added to in recent years by the vociferous advent of criticism from the statisticians. Conscious of the immense amount of labour that has gone into the preparation of even a short paper he is apt to resent what he considers are the facile criticisms of the man who wields a slide rule in an arm chair. It is indeed much to be regretted that so often the statistician's summing-up ends in the words "Your data are insufficient on which to base any conclusion". Of course such a picture of the statistician as a sort of kill-joy is extremely one-sided. On the contrary, statisticians have repeatedly pointed out that ignorance of statistical method may lead to a conclusion *not* being drawn, that significant answers to questions may be missed.

In the hope that this preliminary apology will avert wrath, I would like to discuss the article by Mr H H Fouracre Barns, "Retrodisplaced Gravid Uterus" (Feb 1, p 169). It is not my intention to deal with the logical errors in his conclusions, for they do not make much difference in the end, and in any case they are no worse than is to be found in many other articles. His general conclusion, that his figures do not disprove the hypothesis that retrodisplacement (without incarceration) does not significantly predispose towards abortion (I hope he will accept my re-wording) is quite correct. It would have been easier for his readers to see if he had arranged his figures (p 170, col 1) in a table

TABLE I—Incidence of Abortion up to Twelfth Week of Pregnancy

	Aborted	Not Aborted	Total
Retrodisplaced uterus	2	25	27
Not displaced	54	393	447
Total	56	418	474

It is scarcely necessary to do a χ^2 test to demonstrate that there is no significant difference in the number of abortions in the two types of uterine position

Hidden in the mass of figures in his article are some which are of profound significance. Mr Barns quotes the figures of Polak 1926, who found "18% of congenital retroversions in nulliparous women and 35% in post-partum women". Mr Barns found, at University College Hospital the following

figures 381 primigravidae of whom 21 had a retrodisplaced uterus, and 93 multiparae, of whom 6 had malposition. If we take a comparable number from Polak's figures (the conclusion is even stronger if we take his total number) we can arrange them as follows

TABLE II—Incidence of Retrodisplacement of the Uterus in Nulliparous Women

	Displaced	Not Displaced	Total
UCH pregnant	21	360	381
Polak not pregnant	69	312	381
Total	90	672	762

$$\chi^2 = \frac{(69 \times 360 - 21 \times 312)^2 \times 762}{90 \times 672 \times 381 \times 381} = 29.1 \quad P = \text{less than } 0.001$$

The test means that if there were no difference in the incidence of pregnancy between the women with displaced uterus and with normal uterus, the chances of getting such figures are less than one in a thousand. The discrepancy is due to the small number of pregnant women with displaced uterus. The figures clearly disprove the hypothesis that displacement has no deleterious effect on the incidence of pregnancy, and they disprove it as conclusively as could be desired. I would hasten to add that this does not invalidate Mr Barns's statement "that any woman complaining of sterility in whom the only abnormality to be found is a retrodisplaced uterus should be investigated and treated along the same lines as would be a woman with an anteverted uterus". Retrodisplacement is only one factor in the causation of infertility, and careful investigation is the common-sense procedure of the careful surgeon who does not rush to operate without sufficient reason.

A measure of the association between retrodisplacement and infertility may be obtained from the above figures. Since the variables fall each into two definite categories, the best coefficient would be the ϕ coefficient, which is the correlation for point distributions. This comes to just below 0.2 which explains why although the association has been observed, there has been much uncertainty over it.

A similar table could be constructed comparing the UCH multiparae with Polak's post partum women, but on turning to the original statement of Polak I find that he declares that post partum retroversion is not a fixed condition but may return to normal in the course of several months. The two sets of figures (UCH and Polak) are therefore not comparable, and conclusions drawn from them may be fallacious. This point reinforces the oft repeated statements of my teachers: statistical techniques are only the numerical form of the logic of scientific method: the right time to consider statistics is before an investigation is begun, not when it is over.—I am, etc.,

London WC 1

M HAMILTON

Intestinal Myiasis

SIR,—Dr Alan M Easton has been kind enough to send me an article with the above headline published in this *Journal* by Dr D S Sharpe on Jan 11 (p 54). As my name is mentioned in that report it may easily be inferred that I concur with the views expressed in it. I am therefore compelled shortly to discuss the matter in this *Journal*. When returning the larvae and stating their scientific name as *Pinus tectus*, Boield, I added "It is hardly possible that the specimens should have passed the stomach of the patient, and I suggest that they have got into a vessel used for receiving or transmitting the excrements." Unfortunately the author did not mention this warning in his report and it appears therefore desirable to elaborate my statement in the following lines

The evidence for an actual passing of the larvae in the stool of the patient does not hold good to scientific scrutiny. The account does not mention in what type of vessel the stool was examined by the patient nor where this vessel was kept before use. It has obviously not been a water-filled lavatory basin, and there is a great possibility of the larvae having fallen into the vessel from some infested material, such as a mattress, cushion, blanket, or the like. As the larvae are of a more or less creamy colour they would be all intents and purposes be invisible to a layman if lying in the usual type of vessel.

On the other hand there are very serious reasons for disbelieving any possibility of these creatures having passed the intestine. The chemical objections have to some extent been considered by Dr Sharpe, and he himself discounts the possibility of the soft-kinned larva resisting the protein-digesting secretions of the stomach. He therefore assumes that the eggs with their "resistant chitinous coating" can pass the stomach unharmed and that the larva can hatch from the egg in the more alkaline portion of the bowel. In actual fact the egg membrane of the *ptinids* is very fine and thin, and in the absence of experiments does not justify the assumption of its being much more impervious to pepsin and hydrochloric acid than the chitinous integument of the larva. In order to obtain conclusive evidence on this subject I have treated eggs, newly hatched larvae, and almost full grown larvae of *Plinus tectus*, which were kindly placed at my disposal by the Director and Mr R Howe of the Pest Infestation Laboratory, Department of Scientific and Industrial Research, with artificial gastric juice. The specimens were first admixed to chewed bread and the experiment was kept at 36-38° C for three hours. The material was then washed in distilled water and scrutinized under a dissecting microscope. Full grown and newly hatched larvae were dead but not disintegrated, and larvae more or less ready for hatching had been killed inside the eggs. There is no evidence so far (after ten days) that any of the less developed eggs have hatched. The fact that young larvae have definitely been killed inside the intact egg-shell seems to prove at any rate that the egg shell does not afford a considerable protection against the influences prevailing in the human intestine.

Dr Sharpe has also stressed the mechanical difficulties for the larvae of remaining in the intestine for a period of a week or more in view of the action of the peristalsis. According to him the larva holds itself in position by its claws and jaws. In actual fact the rather thin claws would probably be of little avail, while the jaws would be wanted for the ingestion of the food so that they could not possibly keep their grip. On the other hand this point is of minor consequence, as an insect larva of this type developing in the intestine would find a nook at the base of the villi or somewhere else where it would be relatively safe, and it would soon create a small excavation round its body in which it could rest securely.

Plinus tectus lives in dried animal or vegetable matter, such as dried crayfish (e.g. of collections or of food for aquarium fish) and casein (in which latter it is a regular pest) on the one hand, and in rye, maize, cayenne pepper, cocoa, ship's biscuit on the other hand. It is therefore very well adapted to a life in a medium containing between 5 and 15% humidity. The larvae would however, be quite unsuited to a habitat in a stiff semi-liquid material with a moisture content of more than 90%, as is found in the human intestine, and they would very quickly be clogged up and asphyxiated. While experimenting with artificial gastric juice I kept another batch of eggs and newly hatched and almost full-grown larvae in chewed bread in a moderate quantity of saliva without gastric juice for 31 hours at about 20° C. This treatment, too, killed the larvae but it is too early yet to decide whether all the eggs have been killed in this experiment. Mr Howe has informed me of some tests with much lower degrees of humidity in hygroscopic foods with an estimated water content of up to 40%. As only a small percentage survived in these materials it is obvious that a further increase of the water content would soon prove lethal, as shown in my own experiment.

The gravest reason, however, for scepticism is afforded by the question of temperature. It is known from experiments with eggs of the flour moth (*Ephestia kuehniella* Zell.) an insect which lives under very similar ecological conditions, that they cannot hatch but will perish at a prolonged exposure to a temperature of 34.4° C or more. Even in a moist cell it has not been possible to raise this temperature (Häse, A., 1927 *Arb. biol. Reichsanst. Land u. Forstwirtschaft* 15: 116). As to *Plinus tectus* itself Mr R Howe informs me from his experience gained at the Pest Infestation Laboratory, that only large larvae survive for long at 28° C or above, and that only few first stage larvae reach the second stage at all at moderate temperature as 29° C. The most conclusive point against Dr Sharpe's view, however, is the fact that according to Mr Howe's experiments eggs do not hatch above 28° C so they would hardly remain alive for a day and certainly never hatch at the temperatures prevailing in the human intestine.

Lastly a point of terminology should not pass without comment. The term myiasis derived from *μυζ*, a fly, designates the infestation of any part of the body of living animals by the larvae of diptera or two winged flies (Smart J 1943, *A Handbook for the Identification of Insects of Medical Importance* p 810 London British Museum). A similar infestation by beetles or their larvae is called canthariasis. Entomologists have for some time been aware of the fact that many reports of myiasis and similar ailments collapse on closer examination and modern textbooks like that of Smart duly stress the necessity

for a thoroughly critical examination of each reported case. My personal impression is that in temperate European countries the larva of the lesser house-fly is most likely to produce genuine cases of myiasis, and that certain tyroglyphid mites can probably produce similar and sometimes rather serious symptoms.

I would like to express my thanks to the Director and Mr R Howe, Pest Infestation Laboratory, Department of Scientific and Industrial Research, Slough, Bucks., for breeding material of *Plinus tectus* and for the information cited above, to Mr N D Riley, Keeper of the Department of Entomology, British Museum (Natural History), and Mr F Barnett of the same Department for their, unfortunately unsuccessful, efforts at obtaining a quantity of pepsin for me and, lastly, to the John Innes Horticultural Institution for providing me with this substance.

—I am, etc.,

Imperial Institute of Entomology

F I VAN EMDEN

SIR,—I was most interested to read Dr D S Sharpe's account of a case of intestinal myiasis caused by the larva of *Plinus tectus* (Jan 11 p 54). I am, however, startled by his implication that the larva of *Plinus tectus* is insectivorous and I should be glad to know which insects normally form the food for this larva.

I feel also that Dr Sharpe may be adding to the anxieties of parents by his lurid threat of intestinal myiasis to those children who eat fallen fruits. The only dipterous families which are likely to infest fruits attractive to even the most omnivorous (or insectivorous?) child are the Trypetidae or the Drosophilidae, and so far as I am aware no member of these families has so far been incriminated with causing myiasis. The adults of the Muscidae and the Calliphoridae—the myiasis-causing species *par excellence*—certainly feed on fermenting fruit, but I think they prefer a rather more decayed pabulum for breeding purposes.—I am, etc.,

Lagos, Nigeria

P J L ROCHE

Control of Measles

SIR—After a depressing week-end of Arctic weather snow shifting, and fuel crises (national and domestic) it was a welcome relief to open the *British Medical Journal* and read the three leading articles (Feb 8, p 225). The first of these ably reviewed the present position with regard to the control of measles, a very topical subject, the second set out clearly the reasons why a severe outbreak of influenza is unlikely this winter, while the third had the significant title "The Minister Accepts".

I found myself in general agreement with the opinions expressed in the article on the control of measles but would like to make one or two comments with regard to the availability and use of convalescent measles serum, normal adult serum, and gamma-globulin. The last is at present unobtainable, while convalescent measles serum is in my experience a very rare product indeed, but adult normal serum could and should be readily available for the use of any doctor requiring it.

From the beginning of this year Leeds doctors have been able to obtain adult measles serum through the Public Health Department. The supply is obtained by arrangement with the Regional Blood Transfusion Service, who kindly carry out the necessary bottling and undertake the essential tests. The few weeks that have elapsed since the inauguration of this scheme have already proved its value, and in addition to numerous inquiries from doctors within the city there have been several requests for serum from areas outside the city and two from as far afield as Newcastle so that it would appear that as far as the north-east of England is concerned the facilities for obtaining this product either do not exist or are not sufficiently well known. In this latter respect the statement in the leading article that normal adult serum is available from most of the constituent laboratories of the Public Health Laboratory Service was news to me and I am sure it would be helpful if further publicity could be given to this source of supply.

I have found that some confusion exists as to the use of adult serum for attenuation. In one or two instances the serum has been given to the case rather than to the contact. Claims have been made as to the value of convalescent and adult serum in the treatment of a case of measles but these have not been substantiated. When using adult serum for prevention the usual dose recommended is 10 ml, and this should be given

contact not later than the day of the appearance of the rash in the infecting case. If used for attenuation the same dose of 10 ml should be given to the contact on the 4th, 5th, or 6th day after the appearance of the rash in the infecting case—I am, etc.,

Leeds

J F WARIN

National Health Service Act

SIR—It is with diffidence that I enter the controversy on the National Health Service Act. It would appear that everything has already been said many times over on either side. However, it seems to me that the minority who voted "Yes"—a minority that was nearly 50%—should be more often represented in your columns. I particularly disagree with the claim made by so many of your contributors that opposition to the Act is not based on politics, or, at any rate, on party politics. Personally I am not a Socialist and have never voted for any party, and, considering the complete political unreality of so much of the argument, it is obvious that most medical men are not actively engaged in political life. Nevertheless, how many are there of those opposing the Act who do not cast their vote for a Conservative at an election? Professionally and socially we are predominantly Conservative and are naturally suspicious of a Labour Government and antagonistic towards its efforts. The people of this country, however, elected that Government with an overwhelming majority in Parliament. It is idle to pretend there was not a widespread determination to obtain social security, and votes were given to a party that could be trusted sincerely to support it. That was the working of democracy. Is it democratic for a section of the community to oppose the wishes of the majority as expressed in an Act of Parliament? Is it not dangerous to suggest that an organized professional body should try to make an Act unworkable in order to change it? Are we going to support miners or transport workers who might try to do likewise?

The Act sets out to effect a revolution—that no longer will poverty and lack of means be a bar to obtaining the best medical facilities and treatment available. Revolutions always disturb established customs. Such a great social advance cannot be made without some risks and disadvantages. Let us remember the advantages it will gain for our patients and potential patients, and be particularly careful that we are sincere when we claim to oppose the Act on behalf of our patients. When we complain because in time of scarcity extra amounts of rationed tit-bits are refused to a dying man who can afford them, it is well also to remember those who have been condemned to death or persistent ill-health through inability to afford necessary medical treatment.

It is for the individual doctor eventually to decide whether to enter the Service or not, but the recent plebiscite has finally destroyed the claim for unity within the profession. A large proportion of doctors, especially the younger ones, are willing to build up the best possible medical service on the present Act. Alterations in medical practice are part of wider social and economic changes hastened on by the war and are inevitable. The inherent danger of bureaucracy can be defeated by the efforts of those determined to make the Service successful. It is therefore to be hoped that in the coming negotiations the profession's representatives will display the utmost statesmanship and realism. Could the Minister be blamed for having failed to discuss previously the Act with a body so out of step with the times that it opposed a medical service covering 100% of the population? The Act is now on the Statute Book and we have our last chance to offer expert advice in clothing its bare bones—I am, etc.

Tunbridge Wells Kent

D G ff EDWARD

Freedom of Choice

SIR—We are most of us concerned with the imminent prospect of State control and of course hold freedom of choice of doctor by patient to be essential. Just how much freedom of choice the patient will have may be surmised from the following recent example. Mr A is a non-industrial Civil Servant. He is an insured person and is under treatment by me for severe thrombo phlebitis of leg. A few days ago he received from his department—namely the Assistance Board—a letter stating

that his case had been referred by them to the Treasury medical adviser—the object of this being to enable remedial action to be taken.

The Treasury medical adviser directs the Assistance Board to obtain an independent medical report from Dr B who is a general practitioner in the same area as myself. Since Mr A did not chance to select Dr B for his own doctor however, he is treated with scant courtesy by Dr B who when informed of the complaint refuses to visit him and insists upon his turning out and walking to the surgery with a thrombosed leg on dangerously ice-bound and snow covered roads. Mr A is then informed that he will probably have to attend again for a further report. All this happens without any notification to me as Mr A's doctor or any report on his condition being requested.

To comment on this it may be summarized by saying that Mr A, while under treatment by a doctor he wishes to attend him, is suddenly directed by the State as his employer to visit Dr B, whom he does not wish to attend, so that the Treasury medical adviser, who has never seen him may decide what treatment should be given. All this takes place in a most underhand way completely behind the back of his own doctor who is neither consulted nor informed of what is going on. Now Mr A cannot be simultaneously treated by two persons so pursuing this to its logical conclusion either the State removes him from his own doctor or if he elects to continue treatment from his own doctor it may threaten him with withdrawal of his salary. The most disturbing feature is that this is apparently standard procedure, the letter to Mr A being a cyclostyled copy bearing the form number G46/200/779—I am, etc.,

Greenfield Lancs

R S HOLGATE

Administrators of the Act

SIR—There is one seldom mentioned side of the National Health Service which I hope our negotiators will not overlook: the method of appointing the whole-time medical administrators. Whatever the final form of the Service it is clear that considerable executive authority will be vested in the statutory councils, boards, and committees envisaged in the Act. They however, will consist for the most part of part-time members and therefore considerable discretion and authority must devolve on their senior permanent officials, who will include medical men. It is our concern to see that from the start the method of appointing these key officials avoids the worst features of bureaucracy.

In my view at least two conditions must be fulfilled: (1) All senior appointments must be advertised and so thrown open to the widest possible "field". (2) Selection to medical appointments must be made by bodies on which there are representative medical members. This could be done peripherally by the body for whom the candidate is going to work or centrally by the Central Health Services Council. Any system which makes these appointments plums with which to reward long and faithful service in the existing medical administrative departments will I am certain prejudice fatally the prospect of getting a smoothly running service. Moreover I fear that unless we take steps to ensure the contrary this is the method of appointment that is likely to be applied—I am, etc.

Plymouth

T A A HUNTER

Remuneration under the Act

SIR—Now that discussions have begun between the Negotiating Committee and the Minister may I draw attention to a fundamental point hitherto overlooked? It is the method of remuneration by capitation fee—surely one of the worst evils of the N.H.I. scheme and now alas, threatening to be an even bigger evil in the future comprehensive Health Service. I think I am right in saying that the majority of doctors like other members of the community, prefer to be remunerated in accordance with the amount of work they do. Conversely they do not wish to be paid for anything they have not done. Nor is this feeling confined to the doctors, it is shared by patients: many of whom feel when they need attention that they have to apologize to their panel doctor for bothering him. How different many patients would feel if they knew their doctors were being paid on a *pro rata* basis for their time and trouble. As an example with the best intentions in the world human

weaknesses being what they are, there can be little doubt that a night call several miles into the country is done less grudgingly and more efficiently if there is a commensurate reward. It is the all-important incentive that counts.

For the future Health Service I strongly advocate a system of *pro rata* remuneration by the State on the lines of the familiar Form 1667 payment of civilian medical practitioners by the Service departments. The additional clerical work involved would in my opinion be more than worth it and no doubt the Minister could devise some method of ensuring that all claims were *bona fide*—I am, etc.,

Launceston Cornwall

R J HEALEY

Negotiating Committee and Consultants

SIR—When a specialist who has been on the staff of a hospital reaches the age limit for that particular hospital—usually 65 years, sometimes less—he is generally ‘promoted’ to being a consultant, and while he ceases to carry out any routine work at the hospital he by no means always ceases to carry on his private consulting work. So far as it is possible to judge the State Medical Service will deprive such consultants of most if not all, of these patients.

There appears to be no provision in the Act for any compensation to these men for the loss of their practices—often increased, owing to having more time to give to them, and carried on for a number of years after their retirement from the hospital staff. There must be a very large number of such specialists in many branches of the profession in practice to day, and I suggest the Negotiating Committee should insist that one of the numerous Regulations which undoubtedly will be made shall ensure a pension or compensation of some sort for these men, unless of course the State is willing to take them into its service—unlikely on account of age—I am, etc.

Norwich

ARTHUR GREENE

Medical Certification

SIR—The incursions of the bureaucrat into our professional freedom increase apace, and I am gratified that you have found space in the *Journal* of Feb 15 (p 268) to give vent to the protestations of Dr Basil S Kent against the personal data required by the Board of Trade before it issues a permit for the acquisition of a ‘thermos’ flask. While I agree wholeheartedly with the stand taken by Dr Kent I regret that he did concede the diagnosis in the case of his particular patient.

A few months ago I had a similar, if more protracted, correspondence with the Board of Trade which, for the sake of brevity I summarize.

May 4, 1946. Myself to Board of Trade. Point out that a medical diagnosis is a matter of strict confidence between patient and doctor and request text or content of any Regulation requiring a doctor, after he has certified that in his opinion a patient requires a ‘thermos’ flask, to submit his diagnosis for the approval of a lay official before such flask can be obtained. May 6, 1946. Reply from B of T. Agreed that medical diagnosis is a matter of confidence but require certification that flask required for health reasons. May 7, 1946. Myself to B of T. Point out that no doctor is going to act merely in the capacity of a rubber stamp automatically endorsing applications for flasks, say for picnic purposes, and that a medical certificate is for nothing but health reasons. May 10, 1946. Reply from B of T. Permit for flask granted to patient, as it is gathered from my last letter that it is required for health reasons. Would be appreciated if, on future certificates this additional information could be given. May 17, 1946. Myself to B of T after a certificate to another patient had been turned down because of omission of the vital words ‘for health reasons’. Reiterate that medical certificates are only issued for reasons of *ill health* and not for flippant reasons. Suggest that a little less red tape would save paper postage, and manpower hours for the B of T as well as spare a busy practitioner a lengthy correspondence. Stated that I expected my original certificate to be honoured. May 21 1946. Reply from B of T. Permit granted. Stated that it would save the man hours which I mentioned if on future certificates I included the necessary words ‘for health reasons’.

What can one do Sir in the face of such obduracy? Incidentally I believe that ‘thermos’ flasks were on sale indiscriminately at a local ironmongers at the same time—I am etc.

Huddersfield

LESLIE BALLOX

The Spens Committee

SIR,—It is to be hoped when the Spens Committee issues its report that it will be couched in terms which can be understood by any trade unionist. The more obvious details such as wages, hours of work, and holidays are not likely to be overlooked, but there are more recondite matters which will require the exercise of the most precise judgment and discretion if discontent within the profession, leading to ‘ca’ canny’ ‘working to rule’ and strikes is to be avoided. The possibility of claims for ‘bending money’ from the obstetricians, ‘stretching money’ from the orthopaedists, ‘danger-money’ from the syphilologists, ‘dirty money’ and ‘wet-money’ from other departments which I shall not specify are only a few of the examples which could be given.

Remuneration on a sessional basis presents peculiar difficulties of its own. Is the pace to be that of the slowest? If so, production per man hour will suffer. ‘Time-studies’ would have to be introduced to avoid unfairness and consequent bad feeling. The good sense and dignity of the profession would be adequate to prevent cries of ‘No stop-watches here!’

Then there are degrees of skill and length of experience which will require their own assessment and reward. Surgical operations will have to be priced individually otherwise the craftsmen who do lengthy operations will be able to take more home in their pay packet each week than, say the ophthalmic surgeons. A careful delimitation of the various regions of the body will have to be carried out in order to avoid the unseemly disputes with regard to spheres of influence which are already arising. Rewards in kind, such as extra food and nylon stockings may have to be provided in order to maintain the supply of men in the more tedious and unpleasant specialties such as post mortem work.

The cost of production of a doctor is a point which may have escaped the notice of the committee, and I only touch upon it briefly in order to point out that it has been calculated by Socialist writers that the expense of training a doctor would be amortized over his working life by an increase of 5% above the wage of an unskilled labourer. This of course leaves out the question of ability, but it should be remembered that in a Socialist State there would be little ‘rent of ability’ allowed, the principle being ‘From each according to his ability, to each according to his needs’—I am, etc.,

Bournemouth

T R AINSLEY

Behcet's Syndrome and Vitamin K

SIR,—Dr E W Prosser Thomas's very interesting article (Jan 4, p 14) on this very serious and intractable complaint and Dr G Whitwell's letter (Feb 1, p 197), in which he states, ‘In view of the utter uselessness of all treatment up till now, any therapeutic measure would be welcome. The peculiar sensitivity of the skin would suggest a trial of ‘benadryl’’. I have prompted me to send a brief account of a very severe skin condition occurring in a friend of mine who had been treated over a period of 3½ years by a competent G P and three consulting dermatologists without any amelioration of his symptoms.

It was a case of seborrhoeic dermatitis of scalp, forehead, face, neck, limbs, and hands in which pin-point pustules as described by Dr Prosser Thomas developed like emboli the inflammation of one closing the left eye. There were in addition indigestion and intense sensitivity of the skin to light, heat and cold, and also to drugs such as sulphur and salicylic acid. Beyond some deterioration of sight there was no sign of gross eye lesions nor ulcer of the scrotum or aphthae of the mouth, so I do not know whether this was a case of Behcet's syndrome or not but in view of Dr Whitwell's remarks quoted above I should like to draw attention to the fact that after the failure of penicillin, injections of colloidal manganese desensitization by mag sulph colloidal sulphur vitamins A B C D nicotinic acid, thyroid, and ephedrine there was a dramatic cessation and disappearance of the pin-point pustules and consequent easing of the intolerable itching when I gave him a course of ‘acetomenaphthone’ (vitamin K analogue) 10 mg once a day by mouth. But this drug had no appreciable effect on the dry scaly seborrhoea, which, however yielded to shampoos and weak concentrations of ung hyd nit dil and olei cadmi.

In the *Practitioner* 1946, 157, 391 Dr D M Evans commented in a very valuable article on the benefits he has observed in skin and other diseases from the use of vitamin K analogue, and recently in "Any Questions" in the *Journal* (Jan 11, p 77) your expert stated that vitamin K seemed 'to exercise a beneficial effect in some cases of pernirosis—and this was borne out in the case I am recording where the patient said his cold feet were warmer after taking the drug. May I therefore suggest that vitamin K analogue should be given a trial in Behcet's syndrome and the result of such treatment recorded—I am, etc,

Paignton

A J AMBROSE

Vitamin H

SIR—In a recent paper some preliminary observations were reported about the relationship of premature alopecia and biotin by Chavarria *et al*¹. In Costa Rica a nutritional deficiency syndrome was studied by them during the last three years which appeared only in children and never in adults. Similar changes were described in Africa under the name of kwashiorkor² or infantile pellagra,^{3,4} but they were apparently considered manifestations of other deficiencies. The hair changes in Costa Rican children consisted of dryness, fragility, and loss of colour, the hair became loose and easily and painlessly pulled out, leading to calvities. Concurrently depigmentation of the hair varying from slight greying to intense whiteness occurred. The children often presented other deficiency symptoms such as follicular keratosis, seborrhoeic-like dermatitis, occasionally diarrhoea, generalized oedema with normal content of blood proteins and hepatic cirrhosis, glossitis, and angular stomatitis. The diet of the affected children consisted chiefly of bananas and molasses.

Unless the patient died shortly after admission the ordinary hospital diet effected a cure. An addition of 0.25 mg of biotin to the diet twice or three times a day appeared to accelerate the return of both pigment and growth of hair more quickly than the addition of thiamine, nicotinamide, and other vitamins—I am, etc,

London W 1

Z A LEITNER

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- ¹ *J Amer med Ass* 1946 132 570
- ² *Arch Dis Child* 1933 8 423
- ³ *Ibid* 1937 12 193
- ⁴ *Trans roy Soc trop Med Hyg* 1940 33, 389
- ⁵ *S Afr J med Sci*, 1943 8 106
- ⁶ *Nature* 1944 154 148
- ⁷ *Arch Intern Med* 1945 76 63
- ⁸ *J Amer med Ass* 1945, 129 12

Pellagrous Encephalopathy

SIR—I was interested in Dr P R Graves's account (Feb 15, p 253) of pellagrous encephalopathy occurring among prisoners of war in Singapore. In our camp at Palembang Sumatra, we had a similar syndrome, but had many more acute coma cases. These occurred mainly in the last three months of captivity, when the basic rice ration was 200 grammes per diem with very little vegetable and practically no protein foodstuffs. Most of the acute cases had previously shown well marked signs of pellagra and were all greatly emaciated. Some went from the ambulant stage into coma in the space of hours and on occasion a man failed to report at the morning roll call as he had in fact gone into a coma overnight in his billet. All showed quadriplegic rigidity but I cannot remember any case which had convulsions. We were able to perform only one or two necropsies and these very much *sub rosa*. It was possible to examine the brain *in situ* only. The hemispheres showed generalized oedema but apart from that little else was noted, and it was not practicable to open the abdomen—I am, etc,

Devonport

J P CORCORAN

Intravenous Procaine (Novocain)

SIR—More is known about the effects of intravenous procaine (novocain) than is suggested in the reply to a question in the *Journal* of Feb 15 (p 282). Procaine has indeed quinidine-like actions on the heart which can prevent the development of auricular or ventricular fibrillation in experimental animals. Since however this action can only be produced on intravenous injection and probably only by doses that cause central nervous side effects, it is not likely to be of much therapeutic value.

Procaine has also been given by intravenous infusion for the relief of pain due to burns (Gordon R A *Canad med Ass J* 1943 49, 478), for the relief of the pain of labour (Allen, F M *Amer J Surg*, 1945 70 283) and for sundry other types of pain and in the relief of pruritus (Lundy, J S *Clinical Anaesthesia*, Philadelphia 1942). It has been suggested that this analgesic effect is due partly to a local action on a traumatized area where increased capillary permeability would allow greater amounts than normal to escape from the blood, and partly to an action on the central nervous system. For this purpose procaine has been given intravenously in doses of up to 5 g in 1½ hours.

It is important to realize that the toxicity of intravenous procaine is very closely related to the speed of injection since the compound is rapidly detoxicated, partly by an enzyme in the blood (called "procaine esterase" by Kisch, Koster, and Strauss) and partly by a similar enzyme in the liver. The procaine is hydrolysed to para-aminobenzoic acid and diethyl amino-ethanol, neither of which has the typical peripheral or central actions of procaine. If the rate of infusion exceeds the rate of breakdown the blood level of procaine will rise steadily, and toxic effects such as convulsions and respiratory failure will finally occur. Tachycardia usually appears when procaine is injected at rates exceeding 2 ml per minute of a 1% solution (20 mg per minute) and becomes marked when rates of over 5 ml per minute (50 mg per minute) are given. It is claimed that the convulsive action of procaine is prevented by pre-medication with barbiturates—e.g., pentobarbitone (1 gr (65 mg) by mouth).

The safety and value of intravenous procaine as an analgesic have not yet been adequately assessed. Studies on this subject are in progress in my laboratory at the present time—I am, etc.

Department of Pharmacology
Middlesex Hospital Medical School London W 1

C A KEELF

SIR—With regard to the question (Feb 15 p 282) on intravenous novocain (procaine) dosage it may be of interest to mention some unpublished facts on this subject. The writer has now administered procaine by vein in 48 cases mainly for post-operative pain in place of morphine. The routine dosage has been 1 g in 0.2% solution given over a period of 60–70 minutes. No deleterious effects have been noted and in general satisfactory analgesia has been obtained without the dangers of post-operative respiratory depression. This analgesia persists for as long as four days in some cases and its action is by no means clearly understood. Further investigations are at present being undertaken to determine effective blood levels consistent with safety and the mechanism of action of generalized procaine effects.

In addition to its analgesic effect intravenous procaine has a mild cerebral excitatory action which is beneficial in many post-operative cases. This effect may be very easily controlled by barbiturates, which have the further advantage of increasing the minimum lethal dose of procaine fourfold (Goodman and Gilman)—I am, etc,

London W 12

E J DELORME

Endocrine Receptors

SIR—We have to be grateful to Dr S L Simpson (Feb 15 p 270) for standing up in defence of endocrinologists who paid attention to the 'endocrine receptors' discussed by Mr Aleck Bourne (Jan 18 p 79) in view of your statement in the editorial review in the same number (p 96).

Due tribute should be paid however on this occasion to Prof Julius Bauer of Los Angeles California, formerly of the University of Vienna, who based his teaching of endocrinology on this assumption as long ago as 1917¹. The piquancy of the situation is the fact that in the summary of his works *Constitution and Disease* (Wm Heinemann London, 1942) he devoted a whole chapter to the discussion of this question (p 53). The book was extensively reviewed in your leading article of April 24 1943 (p 510) from which I quote 'Like H H Dale, he [Bauer] emphasizes the importance of the receptivity of the organ to hormonal stimulus, which explains cases where the endocrine lack is expressed in only one organ.' In a previous paper² Bauer explains the manifold activities of the pituitary hormones in this way.

Rediscovery of thoughts, teachings, and facts is by necessity more frequent as medicine and biology become more complex. It is to be hoped that the *World Abstracts* will be effective to cut down such occurrences to a minimum—I am, etc.,

V C MEDVEI

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- ¹ Bauer J (1917) *Konstitutionelle Disposition zu Inneren Krankheit* Berlin
² — (1936) *Wien klin Wschr* 49 504

Gynaecomastia

SIR—I was very interested to see that Dr Stephen D Sturton (Feb 15 p 269) calls attention to the enlargement of the breasts so often seen in male lepers. The condition was described in a book on tropical fevers by Dr Kauntze C M G and myself published in 1931 by Balliere, Tindall and Cox, and a photograph of a leper in Kenya Colony with this condition can be seen in the text—I am, etc.

Pinner Middx

N P JEWELL

Trilene in Labour

SIR,—Mr D M Stern (Feb 1, p 199) has stressed the dangers of using trilene for caesarean section. Many hospitals and clinics are unfortunately still not equipped with machines available for use with cyclopropane partly because there are not sufficient fully trained anaesthetists to administer it and partly because old established methods die hard, by which I mean the gas oxygen ether sequence. As there is often a cardiac or pulmonary indication for the use of cyclopropane in this operation I consider that authorities should make it their duty to install such an apparatus and a suitable anaesthetist to administer it.

Preliminary narcosis with morphine and hyoscine is admittedly inadvisable and therefore where cyclopropane is unavailable I suggest that the following technique should be adopted. Atropine is the only premedicant. A "sleep" dose of pentothal is administered with the patient on the table and the needle left in the vein. Gas oxygen and trilene is then induced, and only minimal doses of pentothal administered intermittently until the baby is born. Tachypnoea and cyanosis are avoided and more pentothal can be given after the baby is born to reduce respiratory excursion and allow the operation to proceed unhurried and unhindered.

Should tachypnoea prove troublesome or the dose of pentothal seem excessive resort can be gently made to vinesthene or even ether. Cyclopropane is undoubtedly the method of choice, but in its absence the above technique in my experience has proved safe and reliable in a large series of successful caesarean sections. The secret of success would appear to be the judicious and controlled use of a combination of pentothal with gas oxygen and trilene—I am, etc.,

Bristol

W M MAIDLOW

SIR—Having seen Mr D M Stern's letter (Feb 1, p 199) dealing with trilene anaesthesia for caesarean section, I have tabulated some of Dr F F Waddy's anaesthetics the notes of which cover all such cases performed at the General Hospital, Northampton which were anaesthetized by him and operated upon by Mr R Watson between Nov 30 1942 and Dec 16, 1943—about thirteen months. From these figures it is not possible to agree with Mr Stern's assertion that trilene with nitrous-oxide anaesthesia is harmful—let alone dangerous—to either the mother or to the infant in this type of case.

Maternal age range 19 to 47 average maternal age 32, maternal mortality 0 infant mortality 3 (5.3%) one stillbirth one asphyxia one unknown. In this series 57 caesarean sections were performed. There was one twin pregnancy and one stillbirth in which the foetal heart could not be heard prior to the operation. The state of infant at birth was good in 26 (44.8%) satisfactory in 10 (17.2%) fair in 3 (5.2%) white asphyxia in 10 (17.2%) blue asphyxia in 4 (6.9%), still-born in 1 (1.7%) and unclassified in 4 (6.9%) cases. The classification of the infants has been left to that one of the three sisters in-charge present at the operation. However it is worthy to note that of the above 58 infants 54 were stated to be normal within ten minutes of delivery. Further about 40% of these patients were suffering from conditions that were prejudicial to anaesthesia. These were divided as follows: Poxaemia 6 (10.5%) (of the total) A.P.H. 9 (15.8%), heart

conditions 5 (8.8%), chronic bronchitis 2 (3.5%), bronchiectasis 1 (1.7%), and spinal tuberculosis 1 (1.7%).

The state of the infant at birth in these cases was

Mother	Infant						
	Good	Satis	Fair	White	Blue	Died	Unknown
Toxaemias	2	2	0	1	1	0	0
A.P.H.	3	1	1	3	0	1	0
Heart	2	2	0	0	0	0	1
Others	1	0	1	0	0	1	0

It can be said that not one of the mothers showed any symptom that would point to trilene with nitrous-oxide being a dangerous anaesthetic for caesarean section. Their condition was recorded as good in 48, fair in 7, and unrecorded in 2 cases. Thirty-two mothers had some anaesthetic sequelae with headache in 3, nausea in 18, excess nausea in 1, vomiting once in 23 (none vomited more than once), and restlessness in 12 cases. One mother had post-operative bleeding—and she had had an A.P.H.—and she made a perfect recovery after a blood transfusion the amount of which is not unfortunately stated in the records. The premedication given to these patients was nearly always atropine 1/100 gr (0.65 mg) and strophanthin 1/200 gr (0.32 mg).

In direct answer to Mr Stern's assertions I can say that in this small number of cases there was no maternal death, no evidence of damage to either the nervous system or to the liver, and that not only was there no sign of damage to the conduction system of the heart, but that in the five heart cases operated upon not one was made any worse by the anaesthetic or the operation. Since the above dates, the majority of cases at this hospital have been dealt with in the same manner with similar results, but the records are not so readily available—I am, etc.,

Northampton

J STRUAN-MARSHALL

Ruptured Aneurysm of Right Auricle

SIR—The following condition is as far as I know, extremely rare. I am reporting it so that it will go into record.

A healthy man suddenly dropped dead in the middle of a minor fight with another man. The body was brought for post-mortem examination. On opening the chest the pericardium was found to be full of blood. This came from a ruptured aneurysm of the right auricle. The whole heart was removed and examined. In addition to the aneurysm of the right auricle there was dilatation of an already thinned ventricular myocardium. The valves and aorta showed no sign of atheroma, syphilis, or rheumatism. There was no fibrosis in the myocardium. The auricular myocardium had atrophied and in the thin aneurysm area there were only shreds of muscle over endocardium with abundant spaces of the latter not covered by muscle. The liver was enlarged to about three times its normal size. The man was about 30 years old.

I am not sure if ruptured aneurysm of the right auricle has ever been reported before. The specimen is now in the museum of the Kitchener School of Medicine, Khartoum—I am, etc.,

Juba Sudan

H ABDALLA

Shortage of Nurses

SIR—Your review of Dr James Barclay's book *Why No Nurses?* prompts me to write this letter. I have for many years looked after our nurses when sick, lectured to nurses served on hospital nursing committees and have been for some ten years an examiner in anatomy and physiology to the General Nursing Council. The position as regards nursing is very serious already and unless something revolutionary is done, is bound to get much worse.

It seems supremely unlikely that any of those at present organizing the nursing profession have the vision to do anything revolutionary. They still have the vocational complex plus plus plus. Now I am not going to suggest that matron's discipline should be relaxed. A nurse's work is very arduous, she is exposed to extra risks of ill health and she cannot be allowed to go racketing about half the night. However there are still some obvious means of improving things: (1) Nurses on the whole are not getting the 48 hour week or 96-hour fortnight. (2) It is mortifying for a qualified staff nurse

to find she is being paid at the same rate as a ward maid (3) The care of nurses is left far too much to matrons. The hospital committee should supervise the matrons' work by appointing at least one member of the medical staff and a lay member of the board and governors, who should meet the representatives of the nurses at least quarterly and hear their complaints and suggestions (4) Matrons should never be allowed to remain in one hospital more than five years.

These measures should lead to a gradual improvement, but drastic steps must be taken to rapidly increase recruitment. It is universally admitted that the hiatus between the school leaving age and the age that a girl can start nursing loses thousands of recruits yearly. A girl who is earning a good wage and has regular hours and freedom after work is not likely to take up nursing and its restrictions. Only the very keen and the relatively unemployable will become recruits. Apropos of the latter it would be incredible, if one had not suffered it for years, how large a percentage of the candidates for the Preliminary Examination ought never to have been accepted as probationers. Their chances of ever qualifying are nil, and they are only fit for the most menial jobs. One cannot blame the matrons who accept them, it is that or nothing. One cannot blame their tutors, they are unteachable.

Now there is an obvious remedy. It is an expensive one, but nurses are essential. I would insist that from the earliest school-days girls are interested in nursing, one or two hours a week they dress up in nursing uniform with a red cross, and are given bandaging lessons with dolls and lessons in bed-making, etc. As they get older they would have lectures explaining to them how being nurses would teach them personal hygiene cooking for the sick, preventive medicine, the care of their children, etc. In their pre-leaving years they would be examined. Successful candidates leaving school at 15 would become paid pupils of the State and attend special schools. They would pass examinations each year and be eliminated and passed on for another year.

Before they reached their eighteenth year they would have passed their Preliminary Examination and would enter on their hospital duties proper completely untrammelled by the subjects of anatomy, physiology and hygiene and would be able to concentrate at once on real nursing. I submit that on these lines the nursing profession would be reborn and over subscribed—I am, etc.,

Great Yarmouth Norfolk

LEONARD LEY

Sarcoma in Intra-abdominal Testis with Torsion of Pedicle

SIR—I was interested to read the report of Drs A H Bennett and W G Shaw (Feb 15, p 256) of a case of ectopia testis with seminomatous change and torsion. The coincidence of the triple pathology must be very rare. I am therefore prompted to record an almost exactly similar case that I encountered in 1931 in Singapore. Unfortunately my notes of the case were lost owing to the Japanese occupation of the country, but the facts briefly were these.

A young adult male was admitted with abdominal pain of sudden onset and no testis was present in the right side of the scrotum. Laparotomy showed a haemorrhagic peritoneal exudate and a dark plum coloured globular tumour the size of a fist with tightly twisted narrow pedicle arising from the right side of the pelvis. It looked exactly like a twisted ovarian cyst. Excision. Recovery. Later history unknown.

The pathologist's report in this case stated that the tumour was a sarcoma in an intra abdominal testis with torsion of the pedicle—I am, etc.,

London S.W.1

E C CHITTY

Persistent Anaemia in a Breast-fed Infant with Erythroblastosis Foetalis

SIR—It is worth while underlining Dr Rosemary Davies's case report published in your issue of Jan 25 (p 138). I will be absolutely brief in deference to your inevitable shortage of space but the point in question is by no means well known. Eighteen months ago I also saw a child born jaundiced with erythroblastosis foetalis. Transfusions had to be continued owing to persistent fall in the red cell count until at the age of two months the breast milk was tested and found to contain anti-Rh agglutinins. Cessation of breast-feeding brought the haemolysis and the need for further transfusions seven having been given to an abrupt end—I am, etc.

Edgware Middx

F HARWOOD STEVENSON

Obituary

G O LAMBERT, M.D., F.R.C.P.

Dr Gordon Ormsby Lambert, of Reading died at the age of 69 at Bucklebury, Berks, on Jan 26 after a short illness. He had had an active and distinguished career and had only recently retired from practice. Educated at Lancing and at St John's College, Cambridge, where he took his B.A. degree in 1898 he completed his medical training at Charing Cross Hospital, qualifying M.B., B.Ch. in 1901. After holding various house appointments at his own and at other hospitals he came to Reading early in the present century, and proceeded M.D. in 1906. He was appointed medical registrar to the Royal Berkshire Hospital in 1913, assistant physician in 1914, and physician in 1923. In 1942, after being senior physician for many years, he was elected F.R.C.P. The same year he retired from the active staff of the hospital though still holding the post of cardiologist and was made a consulting physician. His private practice however he continued until his recent retirement. Dr Lambert's services were much in demand in the district as a consultant in medicine of which he had a very wide knowledge. He was a good diagnostician and most conscientious over his work, which he took very seriously, no one could have surpassed him in the thoroughness of his examinations. He rarely missed anything. Some may have thought that occasionally his treatment was rather overabundant in its many details, but it was based on scientific reasoning and he was in no wise biased against surgical assistance, if he thought it necessary or even remotely helpful. He had a most unselfish character and was always kind and considerate. Dr Lambert contributed a number of articles to the medical press chiefly on cardiac conditions in which he was particularly interested. He was at one time joint editor of the Royal Berkshire Hospital Reports. Philosophy also attracted him, he was the author of a booklet recently published entitled *Happiness in a Modern World*. He was twice president of the Reading Pathological Society and had been a member of the British Medical Association since 1912. He was president of the Reading Division in 1931-2. In addition to his professional work he at one time took some part in local politics and was for four years a member of the town council. It is sad to think that after so long a time spent in the service of others Dr Lambert should not have been spared to enjoy the quiet country life that he had looked forward to and had only just begun to taste.—W.B.S.

JOHN WALLACE OBE, M.B., C.M.

By the death of Dr John Wallace on Feb 13 Weston super Mare has lost its oldest medical practitioner. Dr Wallace was born in Fife in December, 1856 and although in his ninety first year he was such an exceptionally vigorous man that he was able to continue his practice and other interests until a few days before his death. While he was a first year student at Edinburgh University his father died suddenly and young Wallace had to return home to manage the family farms. He remained engaged in farming and stock breeding and raising until 1885 and to learn business methods he served a year in the office of a chartered accountant in Edinburgh. In 1886 he married and with his wife spent two years in Italy, Germany and France studying forestry and dairy farming.

It was not until he was 30 that he decided to take up again the study of medicine. He was probably influenced in this decision by his younger brother—afterwards Sir David Wallace and a well known surgeon in Edinburgh—who had already qualified. He returned to Edinburgh University graduated M.B., C.M. in 1892 and obtained the B.Sc. (Public Health) in the following year. After a period as assistant to Sir Henry Littlejohn the medical officer of health for Edinburgh further study at Berne and some mental hospital experience Dr Wallace settled in medical practice in Weston super Mare in 1896 over fifty years ago. Here he quickly became a trusted family physician but so great was his tireless energy and versatility that he successfully developed many other interests.

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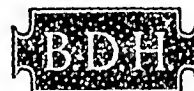


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He had an eminently legal mind and much financial ability—probably family traits, for one of his brothers established a well known law firm in Edinburgh and became a director of the Bank of Scotland. For several years he was deputy to the coroner for North Somerset, and because of his extensive knowledge of medico-legal problems he was often consulted by his medical colleagues. He was a past president of the Bath and Bristol Branch of the British Medical Association, of which he had been a member for over fifty years. He opposed the medical provisions of the National Health Insurance Act of 1911, and was one of those medical men who interviewed Mr Lloyd George on the subject. In 1911 he became medical officer of health for the urban district, and held this part-time office until 1929, when he was 73 years old. He did valuable work in connexion with the water supply, a new infectious diseases hospital, the erection in 1916 of the first public abattoir in the county, and the formation of the Tuberculosis Care Committee, of which he was chairman.

Dr Wallace took an early and active part in Somerset's pioneer campaign for the control of mental defectives and the provision of a farm colony in the county, when the Somerset Committee was formed in 1914 he was co-opted as an expert member and remained a member for the rest of his life. His mental hospital and business experience led to his help being sought on the management committees of the various institutions as they were developed. From 1924 to 1946 he acted as medical visitor to the visiting justices for the private mental hospitals and institutions in the north of the county. When a voluntary war hospital was opened here during the first world war, it was placed under his direction, and he was deservedly awarded the OBE for his distinguished services. During the recent war, when well over 80 years of age, he acted most efficiently as war emergency hospital officer for the area. As a business man he took a practical interest in the Moorland Sanitary Steam Laundry and was chairman of the directors at the time of his death.

He was a great sportsman and his many hobbies included fishing, shooting, archery, beekeeping and golf. In his earlier years he was a scratch golfer and one of the founders and a past president of the Weston-super-Mare golf club. It was only comparatively recently that he gave up playing regularly there. He was truly a hardy Scot, and although he started work early and kept up to date by reading till the small hours, he was never known to be tired. Dr Wallace had a forceful and colourful personality, and though some thought him a little austere he was really the kindest of men, a much sought-after adviser, and in secret very generous to the needy and deserving.

JOHN B H HOLROYD MRCS

Dr John Brook Henderson Holroyd, who died in Sheffield on Feb 8 at the age of 68, was a well known figure in the medical life of the city. He entered the Sheffield Medical School in 1905, and qualified MRCS, LRCP in 1910. He held a number of house appointments before settling in general practice in the Pitsmoor district of Sheffield.

He served in India and elsewhere as a captain, R A M C, during the 1914-18 war. Dr Holroyd had always been attracted to the administration of anaesthetics, and early in his career became one of the visiting anaesthetists to the Royal Hospital in Sheffield and was later attached to the Royal Infirmary in the same capacity.

In order to arouse the interest of the medical students in the study of anaesthesia his offer of an annual prize in the form of a gold medal was accepted by the faculty of medicine. The medal was awarded on the results of a competitive examination in the theory and practice of anaesthesia. Dr Holroyd was one of the original members of the council of the Society of Anaesthetists at its inception in 1935 and was given the diploma. In 1942 he resigned from general practice and devoted himself solely to anaesthesia.

During the recent war he gave valuable service to the E M S as an anaesthetist and from October, 1939, to September, 1945, he acted as temporary lecturer in anaesthesia in the University of Sheffield. He devoted his energies unstintingly to the instruction of students in this important branch of their work. He also instituted the arrangement whereby every new resident at

the Royal Sheffield Infirmary and Hospital had to give anaesthetics under the supervision of one of the honorary anaesthetists before being allowed to take a case entirely on his own. This arrangement has always been welcomed by new residents whatever their school.

With Jack Holroyd in charge of the anaesthetic, the surgeon's anxiety on that score was eliminated. He always gave due warning as to what might be attempted with safety and always carried on quietly and efficiently, starting all anti-shock therapy without bothering to wait until it was suggested to him. He visited each patient for a day or two subsequently and treated any complication due to the anaesthetic so far as he could. The relationship between him and the surgeon with whom he had worked for twenty-five years was a happy one. Each had the full confidence of the other. He was keenly interested in the development of anaesthesia and was always well abreast of the recent advances. He will be sadly missed by his colleagues.

The attendance at the service held in the chapel of the Royal Infirmary on Feb 12 testified to his popularity as an anaesthetist and a man. For the last few months he had been ailing, but it was not until three weeks before his death that he gave up his work, quoting his favourite aphorism to one who had worked with him for many years: "It's a wise man who knows his own limitations."

W H DE B HUBERT, MRCP

The premature death of Dr William Henry de Barge Hubert has robbed psychiatry of an unusual personality and one of its most astute clinicians. Hubert received his training in the specialty at the Maudsley Hospital under the late Prof Mapother, who made no secret of his high opinion of Hubert's abilities and his belief that he possessed 'a touch of genius'. In 1934 he was appointed chief assistant to the department of psychological medicine at St Thomas's Hospital, and after four years of outstandingly good work there was promoted to assistant physician in the department. About the same time he published, with Dr Norwood East, a report upon the "Psychological Treatment of Crime," embodying the results of four years' investigation of this subject at Wormwood Scrubs.

On the outbreak of war he at once joined the R A M C and very shortly succeeded in joining his chief, Dr Henry Yellowlees, who was already in France as consulting psychiatrist to the B E F. After the fall of France Hubert went to North Africa, where he spent more than three years, first as medical officer in charge of a division of the 41st General Hospital, and finally as adviser in psychiatry with the rank of lieutenant colonel. His health suffered grievously under the stress and strain of those years and the rest of his life from his return to civilian work in 1945 until his premature and tragic death on March 5, was a struggle against illness the extent of which few of his friends realized. In addition to all the difficulties and anxieties of taking up the threads of civil life and work again and rebuilding a consulting practice he had much insomnia, repeated bouts of malaria, and in the autumn of 1945 an attack of coronary thrombosis. He remained cheerful and optimistic to the end, he was never heard to grumble or complain, and even when his state of health forced him to resign his post on the staff of St Thomas's, only a few weeks before his death he still looked forward to an active and busy life as a consultant.

In his early days Hubert had leanings to the Freudian school, but he forsook it because he thought it lacked practical relationship to the clinical work to which he was devoted. Child psychiatry became one of his special interests. As a shrewd diagnostician after a first interview with any psychiatric patient he had few equals. He had, perhaps unfortunately, a very large share of the artistic temperament. Anything humdrum or mechanical was an abomination to him and he found the routine and business side of a consultant's life something of a weariness. As an assistant and a junior colleague he was unsurpassed, by reason of his splendid loyalty, his unflinching good humour, and his astonishing readiness and resource. In more independent positions he tended to become the somewhat impractical dreamer, but remained always a most charming companion with something intelligent well informed and thought-provoking to say on almost any subject. He had many interests outside medicine. He was well up in astronomy.

played a good game of chess, and was a water colour artist above the average. He had a most disarming quiet friendliness of manner, and though he was not afraid of giving his opinions on controversial points, did so with such tact that he made very few, if any, enemies. But it was with individual patients that he was at his best by far, and it is as a loyal, cheerful colleague with a remarkable clinical flair that his friends will remember him.

Dr DUNCAN MACDONALD died in Oban on Feb 16 at the age of 74. Dr MacDonald was the sole survivor of a family of ten. On his father's side he belonged to the MacDonalds of Dunnyveg and the Antrim Glens, while on his mother's side he was a great-great-grandson of James MacDonald of Skye, who was a brother of Allan MacDonald of Kingsburgh, the husband of Flora MacDonald. Duncan MacDonald qualified M.B., C.M. in 1893 at Glasgow and proceeded M.D. in 1905. After two years in the County of Durham he was appointed medical officer for Torosay, Mull, where he remained for six and a half years. Dr MacDonald went to Oban in 1901 in succession to Dr MacKellvie and was largely instrumental in the founding of the county sanatorium there. He resigned his office as medical superintendent of the sanatorium early in 1943 after thirty four years of devoted service to his patients. He also served on the staff of the West Highland Cottage Hospital, and during the first world war he was the honorary medical officer of Dungallon Red Cross Hospital at Oban. In 1943 his fifty years of practice was celebrated by a public presentation and a dinner. He retired a year later. Dr MacDonald is survived by his wife and two sons.

Lieut-Col JOHN DU PLESSIS LANGRISHE died in Edinburgh on Feb 28, at the age of 63. A grandson of the Rev Sir Hercules R. Langrishe, of Knocktopher, Co. Kilkenny, he graduated in Dublin in 1906. He was awarded the D.S.O. in 1918, by which time he had had 12 years' service with the regular R.A.M.C. He commanded a field ambulance during the last two years of the war and was mentioned in dispatches. He took the D.P.H. in 1920 and thereafter served as D.A.D.H. in the Bermuda Command for three years, and at Catterick for a further three years. Leaving the Army in 1928 he became lecturer in the public health department of Edinburgh University. In his time a "rugger blue" and a very fine oar, he always actively supported the university team and crews.

The Services

The Queen of the Netherlands has bestowed the decoration of Officer in the Order of Orange Nassau upon Surg. Lieut. Cmdr. C. G. Roworth, R.N.V.R., for outstanding services as senior medical officer, Anglo Dutch Sick Quarters, Holyhead.

The following decorations have been bestowed by the King of Norway: King Haakon VII Liberty Cross, Surg. Capt. J. C. Souter, R.N., for services rendered to Norway during the war; King Haakon VII Liberty Medal, Surg. Cmdr. J. A. Kerr, R.N.V.R., for outstanding services in connexion with the liberation of Norway; Surg. Cmdr. W. Flynn, R.N., for services rendered to Norway during the war.

Major (now Temp. Lieut.-Col.) J. B. Bishop, R.A.M.C., has been awarded the Efficiency Medal (Territorial), 1st Class.

Major (Hon. Lieut. Col.) R. G. Evans, M.B.E., Capt. (now Temp. Lieut.-Col.) J. B. Bishop, and Lieut. (Hon. Capt.) I. R. Rosekilly, R.A.M.C., have been awarded the Efficiency Medal (Territorial).

DEATHS IN THE SERVICES

Col. HARRY MALCOLM MACKENZIE, C.I.E., Indian Medical Service, retired, died on Feb. 25, aged 69. He was educated at Larchfield School, Helensburgh, at the Royal High School, Edinburgh, and at Edinburgh University, where he obtained honours in the M.B., Ch.B. examination in 1899. He entered the Indian Medical Service in 1900 and took the D.P.H., Cambridge, in 1903. Most of his service was in the North-West Frontier Province and in the Punjab. He saw active service throughout the War of 1914-18 and was awarded a star and two medals. In 1914-15 he went to Egypt on the hospital ship *Hardinge*. He was promoted to full colonel in 1929. In 1931-2 he held the important post of surgeon to the Viceroy and in the latter year was awarded the C.I.E. for his long and distinguished service. He published articles of medical and scientific interest in the *British Medical Journal* and had been a member of the British Medical Association since 1901. His recreations included golf, fishing and shooting. He married Elfreda, daughter of A. A. Hudson, K.C. and had a son and a daughter.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

The honorary degree of D.Sc. was conferred on Sir Edward Mellanby, B.C.B., M.D., F.R.S., Secretary of the Medical Research Council, in Congregation on March 15.

The following medical degrees were conferred during February and March:

M.D.—G. F. Barran, E. D. H. Cowen, J. F. Stokes, D. M. Baker, J. S. A. Doran, P. H. Willcox, G. H. Wooler, J. C. Waterlow, M. A. Rugg, Gunn, J. Aspin, A. P. Dick, C. C. Thomas.

M.B., B.Chir.—R. H. B. Mills, *M. E. E. White, *A. P. Baker, *D. O'Brien, *J. A. S. Forman, *T. C. L. Parry, *R. Marshall, *D. J. Watt, *A. Pines, A. G. Norman, *G. T. F. Braddock.

* By proxy.

Joseph Marks, M.B., B.S., and Edward Derek Huxley, Cowen, M.B., B.Chir., have been elected to Frank Edward Elmore Fund studentships from March 1.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

A series of lectures in anaesthesia will be delivered at the College (Lincoln's Inn Fields, W.C.) from April 14 to 18 and April 21 to 25 at 6.15 p.m., and on April 28 and 29, at 5 p.m. The fee for the whole course is £5 5s., Fellows and Members of the College and Licentates in Dental Surgery will be admitted for £3 3s. Applications and cheques should be sent to the assistant secretary of the College. Details of the lectures will be published in the diary column of the *Supplement* week by week.

At an ordinary meeting of the Council, held on Feb. 13, with Sir Alfred Webb Johnson, Bt., President, in the chair, Prof. Louis Bazy, of Paris, attended and was enrolled as an Honorary Member of the College.

The Hallett Prize for Anatomy, Applied Physiology and Pathology was awarded to H. J. Richards (University of Sydney).

Prof. F. Wood Jones was appointed Arms and Gale Lecturer and Dr. R. J. Last and Mr. H. F. Lunn, Amott Demonstrators.

Sir Cecil Wakeley was appointed chairman of the editorial committee appointed to control the publication of the forthcoming *Annals of the Royal College of Surgeons of England*.

Diplomas of membership were granted, jointly with the Royal College of Physicians of London, to P. J. Horsley, F. S. Huxley, and to the 96 successful candidates whose names were printed in the report of the meeting of the Royal College of Physicians of London in the *Journal* of Feb. 15 (p. 276).

Diplomas in Public Health were granted, jointly with the Royal College of Physicians of London, to the 32 successful candidates whose names were printed in the report of the meeting of the Royal College of Physicians of London in the *Journal* of Feb. 15 (p. 276).

Diplomas in Laryngology and Otolaryngology were granted, jointly with the Royal College of Physicians of London, to W. F. Dickie Clark and R. T. Raymond Jones.

The Council of the College invite applications for annual examinations for the Fellowship for the Licence in Dental Surgery, and under the Examining Board in England. Particulars and forms of application, which must be returned completed by March 31, can be obtained from the assistant secretary.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH

At a quarterly meeting of the College, held on Feb. 4, with the President, Dr. D. M. Lyon, in the chair, Drs. Henry James Parish (Pettis Wood, Kent), Robert Carmichael Wood (Edinburgh), and John Alexander Malloch (Edinburgh) were introduced and took their seats as Fellows of the College. Dr. William Alexander Liston (Edinburgh) was elected a Fellow of the College.

Drs. John Morton Henderson (Edinburgh), Nawab Ali (Beneal), Sujata Chaudhuri (Calcutta), Isidore Schrire (London), James Parlange Baird (Glenbuck), Charles Groves (Edinburgh), William Hunter (Edinburgh), Jacob Du Toit (Pretoria), Ralph Lulu Tobias (Cape Town), Andrew Campbell Watt (Edinburgh), Hamidali Mahbubali Khan (Poona), Roland William Riddell (London), Vera Sarah Emanuel (Johannesburg), Cecil Harris (Troon), Harland Cornelius Hastings (Edinburgh), and Alastair Robert Currie (Glasgow) were elected Members of the College.

ROYAL COLLEGE OF SURGEONS IN IRELAND

A postgraduate course in surgery will be held at various hospitals in Dublin on Mondays to Fridays during the eight weeks April 14 to June 6 beginning at 12 noon each day. Attendance at the

course, the fee for which is £21, will be strictly limited to 30 Registration may be made for either half of the course, at a fee of £10 10s, on application to Prof N Rae, D Sc, registrar of the College, St Stephen's Green, Dublin

ROYAL COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS

At a meeting of the Council, held in the College House on Jan. 25, with the President, Mr William Gilliatt, in the chair, I B Ewart and G J St C Fisher were admitted *in absentia* to Membership of the College

The following candidates were elected to the Membership of the College: D Ballantine, Margaret R Biggs, W S Campbell, H V Corbett, J B Cochrane, S J Cohen, G L Daly, A Davis, J R Dickinson, Bessie Dodd, Morag Dods, I Donald, R C Gill, Jean L Hallum, A J Hardy, R F Lawrence, T H Lawton, J M McBride, R A E Magee, Eileen C Miller, J D Murdoch, M K O'Driscoll, S S F Pooley, L J Quinn, Kathleen M F Worrall, J L Wright

Medico-Legal

AN OVERDOSE OF NEPENTHE

The East Surrey coroner, Dr F J Baron, recently inquired* into the death at Wimbledon of a girl child of 13 months. She had been suffering from severe mastoiditis and had died in hospital on the day she was admitted. Dr D Haler, the pathologist examining for the coroner, said that death was due to the mastoiditis, but a suggestion was made by the relatives that it had been accelerated by nepenthe, which they alleged had been prescribed in excessive dosage by Dr Loiza Elwell-Johnston.

Dr Haler at first stated that he did not think the drug had accelerated the death, but later admitted that he could not exclude the possibility. The mother said that the child had sickened on Dec 31, 1946, and that Dr Johnston had attended and brought in Dr J G Lessey as a consultant. He had prescribed 'M and B' tablets, and as he was about to leave he had remarked, 'You might give her a little nepenthe. It will help her to sleep.' When the drug arrived the mother administered some in water in a teaspoon but the child vomited. She also gave half a tablet of 'M and B'. As the baby continued to be restless she gave it a teaspoonful of the nepenthe in water. The baby then became very drowsy and seemed somewhat peculiar, so she telephoned to Dr Johnston who ordered the child to be placed in a hot bath. The infant collapsed and was later removed to hospital where she died.

Dr Johnston said in evidence that she had written two prescriptions. One, produced in evidence, stated the dose as a teaspoonful and was inscribed as for 'Janice Shelley'. The other, which she supposed she had torn up or put in her pocket, had been made out for 'Query half a teaspoonful in water. She had not known the exact official dose. Dr Lessey had said the dose was small, and she had expected the chemist would know and would check it. The prescription for 'M and B' had been inscribed 'Mrs Shelley for Baby Shelley'. Dr Haler agreed with counsel for the relatives that a teaspoonful for a child of 13 months was a gross overdose, the correct dose being two or three drops, but said that children went rapidly downhill with mastoid infection and the baby could not have been saved.

Mr R J Cann, who examined the body for the relatives and gave evidence at an adjourned hearing, said he would have thought the overdose of nepenthe was the cause rather than the toxic absorption from the ears. He had only examined the ears, however, and made no claim to be a pathologist. The coroner found that the overdose was at least an element in the causation of death in some degree and the prescribing of it must be regarded as evidence of negligence but not criminal negligence. His verdict was that the child died of bilateral mastoiditis accelerated by the overdose of nepenthe.

Readers will recall that Lord Hewart, the Lord Chief Justice, said in *R v Bateman* (1925) that between civil and criminal negligence there is a difference both in degree and in kind, it is negligence which shows such disregard for the life and safety of others as to deserve punishment.

* Wimbledon Borough News Jan 17, 1947

Medical Notes in Parliament

SCOTTISH HEALTH SERVICE BILL

The Standing Committee on Scottish Bills considered on March 4 Clause 32 of the National Health Service (Scotland) Bill.

Mr J S REID said the Clause was merely a skeleton of the general medical services which must be filled out by regulations. He asked Mr Westwood to tell the Committee the date on which he expected these regulations to be introduced. The doctors must see the regulations in good time if they were to have a fair chance of deciding whether to come into the scheme.

Mr WESTWOOD said many regulations would be made under this Clause and it was right that the doctors and the House should know them at the earliest moment. He hoped to issue the regulations six months before the scheme came into operation. There would have to be discussions with the medical profession and the Government also expected the House to consider the regulations. The Clause was ordered to stand part of the Bill.

Doctors Entering the Scheme

On Clause 33 Mr REID moved to leave out in subsection 1 which deals with applications by medical practitioners to be included in the list of practitioners undertaking to provide general medical services, the words 'before the appointed day'. Mr Reid said the committee had not been told why a doctor was not allowed to come into the scheme beyond the appointed day without permission. He could see no practical reason for this restriction. On the other hand there was a good political reason. The Government would hold a pistol at the head of a doctor and would tell him 'you have either to come in at once or you may risk the loss of your livelihood'. That was not a fair way to address the medical profession. What possible reason could there be for saying this to a doctor in an under-doctored area? Was any area in Scotland so over-doctored that the Government wanted to eliminate some of the existing practitioners?

Mr WESTWOOD said the Clause clearly restricted the right of doctors to apply to come into the scheme after the appointed day. If any doctor could at any time come into the scheme after the appointed day, he would have the right to secure automatic participation in the medical service wherever he decided to serve. Mr Westwood said he understood the amendment was to enable a doctor to choose an area in which he wanted to serve. That would defeat the Government's object of controlling the distribution of doctors.

Mr REID said the amendment would only give the doctor the right to come in where he already was.

Mr SCOLLAN raised the case of a village which received medical services from an adjoining county town. If a doctor opted to come into the scheme for his patients in the village, could he carry on his private practice in the burgh?

Mr WESTWOOD replying to further remarks by Mr Reid, said that he could not promise consideration to any amendment which was intended to allow an individual to remain out of the Service as long as he liked. It would be impossible for the Secretary of State to know whether an area was under-doctored or over-doctored if certain doctors did not come into the Service on the appointed day. The difficulty envisaged by Mr Scollan would not arise, because the Executive Council would deal with the whole of the county.

Col ELLIOT continued the discussion of Clause 33 by moving a new subsection to ensure that regulations under the Clause should provide for requiring the Scottish Medical Practices Committee to determine the number of medical practitioners to provide an adequate service in each area or part of an area and for publication of the number of medical practitioners so determined for each area or part of an area. He said that to leave in the discretion of a committee of five as the Bill did a power to refuse one person and select another on the ground of adequacy for which no definition existed except in the minds of that committee was not in the public interest. There was a much more even distribution of doctors in Scotland than in England. It should therefore be possible to make some list by which the doctor desiring to move from one part to another or the medical student taking up practice would have an indication where an application was likely to be favourably regarded by the Medical Practices Committee.

Mr WESTWOOD could not accept the amendment. It would make the scheme too rigid.

Mr REID observed that if Mr Westwood said the adequacy of the doctors in an area could not be determined by counting their heads then the Bill was wrongly drafted.

Mr BUCHANAN said he did not wish to be bound by a list of doctors in areas for five years. He instanced Fife Mining where there must be considerably extended in the next few years with a population of many thousands more and the number of doctors must be increased accordingly. It was no use publishing a document unless it could convey something to the public, but he promised that he and Mr Westwood would look into the matter again. Col Elliot withdrew his amendment.

Freedom of Movement Restricted

On the motion that the Clause stand part, Mr REID said that, if it went through, medical men would be practically the only persons in the country whose freedom of movement was restricted. Where was the overwhelming necessity to act toward doctors in a way which Parliament had given up with regard to everybody else? On the English Bill it had been contended that the discrepancy between the number of doctors in different areas was such that the interests of the public could be safeguarded only by restricting the movement of doctors. The Opposition had not accepted that in England, but there was an infinitely stronger case for it there than in Scotland. In England the House had found a number of cases where there were more than 3,000 per general practitioner. That was not found in Scotland. There were only thirty-odd areas in the Scottish list which seemed under-doctored. Greenock was the only one where the number of persons per doctor was over 3,000. In that town there were twenty-three general practitioners, and another half dozen would bring Greenock well up to average. Was Parliament to impose this restriction on the whole of the medical profession to attract half a dozen doctors into Greenock? The thing could be done by differential salaries. The county of Angus was not too well doctored, but probably because a number of doctors in Dundee practised outside the city boundaries. Half a dozen more practitioners in that county would get it nearly up to the average. In West Lothian there were about twenty-seven practitioners, and the average figure for a practice was about 3,000. Very probably another ten doctors were required there, but was that a reason for setting up an enormous administrative machine? Avonshire, Lanarkshire, Glasgow, Renfrew were all round about the average of 2,500 per practitioner and required some more practitioners, but could not be called grossly under-doctored. Under the Clause conundrums would crop up continually.

Position of Assistants

Mr WILLIS asked for a statement on the position of the paid medical assistant under the Clause. Would he be free to make application to be included in the list of medical practitioners?

Sir WILLIAM DARLING said that if there was an undesirable area which could not acquire doctors in the ordinary way, a press gang the Scottish Medical Practices Committee, would get hold of eight or ten unwilling doctors male or female, black or white and drag this herd of conscripts into an area where they did not want to go. What would be the effect upon the sick and ill in that particular area?

Mr WESTWOOD said the paid assistant would have no title to be included in any particular list but would be free to set up practice on his own in any particular area. He could ask to be put on the list in the area in which he was an assistant, but if it was already fully doctored he could not set up in that area. If he remained an assistant his participation in the Service would be covered by the regulations which were to be made.

Mr RANKIN asked whether an assistant who, before the passing of the Act was under covenant with his doctor not to enter into professional service in the area in which he acted as an assistant would be freed from that covenant by the Act.

Mr WESTWOOD said full details would be worked out before the regulations were issued and there would be consultation with all the interests affected. If the Bill abolished the sale of practices machinery had to be found for determining how vacancies could be filled and Clause 33 provided that machinery. It was true that the variations in the "amount of personnel" in Scotland were not so great as in England. The highest ratio of general practitioners per head of the population just over 1,000 per doctor was found in Argyllshire and was due to the scattered nature of the countryside. The only area before the war in which it was suggested that there was a substantial degree of over-doctoring was Edinburgh where the 312 general practitioners represented one for every 1,500 of the population. The idea in the Clause was contained in the White Paper issued by the Coalition Government in 1944. This had stated that an unrestricted right to any doctor to enter into new practice and

there to claim public remuneration would make it impossible to fulfil the new undertaking to ensure a service for all.

The question that the Clause stand part of the Bill was then put and carried by 26 to 9.

Sale of Doctors' Premises

Mr REID moved to leave out subsection 3 of Clause 34. This subsection deals with the sale or letting by a medical practitioner or his personal representatives to another medical practitioner of premises previously used by the first practitioner for the purpose of his practice and for a similar use by the second practitioner where the consideration for the transfer is substantially in excess of that which would be expected if the premises had not previously been used for medical practice. Mr Reid said Clause 34 raised extremely technical points. He suggested that in the subsection the word "knowingly" had been put in the wrong place and did not read as it should that the vendor "knowingly accepts a price above what was reasonable." Therefore an offence could be committed by a person who in good faith sold his house to a new doctor at a price which was later determined to be substantially in excess of what might reasonably be expected. The determination of a reasonable price would not be made by the seller or by the purchaser, or by any individual the seller could consult, but by some judicial authority six months or a year later. Land valuers often differed in their estimate of prices and a man's freedom would be imperilled because six months earlier a land valuer had said that a certain price was reasonable. How did the Government propose to draw an indictment in such a case? Was it prepared to put into the indictment the price which might reasonably have been expected? If not, a fair notice would not be given to the accused of the case against him. The last part of the subsection said that where there had been a composite transaction a court was to sort that out. Did that mean the judge or the jury?

When the Committee resumed on March 5 Mr Reid concluded his speech and the Lord Advocate (Mr G. R. THOMSON) replied.

The Lord Advocate said the general idea of Clause 34 was to prohibit the sale of goodwill by any medical practitioner who fell in with the scheme. In subsection 3 an attempt was made to prevent a black market in the sale of goodwill. One of the most obvious ways in which the sale of goodwill could be got round was by giving an inflated price for medical premises. The substantial danger arose from the sale of premises that had been used by the doctor, and it was essential to have a subsection of this kind in the Bill. The subsection said that if a medical practitioner was going to dispose of his premises for the purpose of a practice—this meant he had to know to whom he was selling and to know the purpose of the sale—and it turned out that the price was substantially in excess of what might have been expected for the premises, then that was a sale of goodwill. He saw no difficulty in putting this into an indictment. If the vendor knew the sale was to a doctor to enable the other practitioner to use the premises for the purpose of a practice then the vendor was bound to be on his guard and after that the question of price was entirely a matter of evidence. It would be intolerable if the Crown had to prove that a seller knew the price was substantially in excess of what the premises were reasonably worth, or if a man could go to his solicitor instruct him to carry out the sale and then say, when challenged, "I never knew what the position was. I left it in the hands of my solicitor." If the vendor was apprehended he could not complain because there were ample safeguards in the Clause. The vendor could go to the appropriate authority and get a certificate that the thing was in order. The last sentence of the subsection which provided for an apportionment by the court of the consideration paid was necessary. If premises and a motor car were sold the court would be able to say that a fair price for the car would be £500. He saw no difficulty in working this out so far as the court was concerned. The judge might say there was not sufficient evidence but on the question of guilt the final decision must be with the jury.

Mr SPENCE asked who was to lay the information of an alleged fraud. Was that to be done by an informer, or by the Executive Council in the area, or by a new army of "snoopers"?

The LORD ADVOCATE said anyone to whom knowledge of an offence came was entitled to go to the Procurator Fiscal and tell him about it. No special machinery was intended.

Mr MCKINLAY asked what precluded the employment of ordinary valuation machinery in the transfer of property.

The LORD ADVOCATE said Mr MCKINLAY's idea was that it would be sufficient to constitute an offence if the sum paid was substantially in excess of the valuation by the district valuer. The Lord Advocate saw the force of that, but thought it better

to leave the matter to a jury. The district valuer could be a Crown witness. The mere submission of a figure to the registrar might not reveal the whole facts. There were all kinds of methods of getting information and the whole thing was left to the ordinary law. What the Government had to get at was the case of a man who set out to sell his premises at a price which was substantially in excess of what those premises were worth in the open market and did so with the idea of getting money for the goodwill. That would be contrary to the law, and it would not be desirable to insert the words 'known by him to be in front of the word substantial'. That would put a premium on the ignorance of a man who deliberately kept away and left it to somebody else to know about the figure. In drawing an indictment his inclination would be not to put in the figure.

Mr WESTWOOD hoped the Committee would come to a decision. The purpose of the Clause was to prohibit the sale of practices and the Government was not retreating from that. He had not the slightest intention of allowing any subterfuge to be used. The Opposition were more interested in the price to be got for the property of a doctor who was going out of business than in looking after the doctor who was to come into the business. Mr Westwood did not wish the incoming doctor to be overburdened with debt. In the past because of the sale of practices many doctors had been more worried about the loans by which they purchased their practices than concerned with their work. Mr Westwood moved that the question be put. This was carried by 25 to 15 and Mr Reid's amendment was defeated by 27 to 15.

"Irrespective of Goodwill"

Mr WESTWOOD then moved to vary subsection 3 in respect of the definition of an excessive consideration for the sale, letting, or other disposition. In place of the reference in the subsection to a price which could reasonably have been expected if the premises had not been previously used for the purposes of a medical practice, he moved to insert a reference to the price which might reasonably have been expected "to be paid by a medical practitioner for the premises as such irrespective of goodwill". He said the amendment would make it more clear that in any transaction between one doctor and another it would be quite legitimate for the price to cover adaptations in the premises which would be of no value to a purchaser other than a doctor. Any adaptations to the inside of a house were to be allowed to be paid for.

The amendment was agreed to, but an amendment by Col Elliot to omit the provision authorizing the court to apportion the consideration was defeated by 26 to 15.

In subsection 5, dealing with services performed as an assistant to another medical practitioner for a remuneration substantially less than those services might reasonably have been expected to be worth and followed by a succession to the practice, Mr REID moved to amend the proviso that an offence should not be deemed to have been committed if it were shown that the remuneration of the assistant was not fixed in contemplation of his succeeding to the practice. Mr Reid moved to make this fixed by the second practitioner. He said he really did not understand what the Clause meant. He wanted to know what was the position if one practitioner had in mind a succession to the practice and the other had not. There might be a case of a new man who deliberately accepted too small a remuneration without there being any intention on the part of the older man of letting the new man buy the goodwill in this roundabout way. Medical men on the Committee would agree that that was a possible situation. On the other hand an older man might deliberately get a new man to come into the practice too cheaply intending later to offer it to him whereas the new man did not realize he was being made use of in this way.

Col ELLIOT suggested that an assistant might take a post at a small remuneration in a district where there was a rapid increase in the practice. It could then be said that this young man succeeded to the practice in consideration of a totally inadequate remuneration. The older practitioner might have thought that this development was not coming so quickly.

The LORD ADVOCATE said that under the subsection regard must be had to the situation at the time when the bargain was made. If the parties could show that the remuneration was fixed on its merits and not in respect of any question of goodwill there was no offence.

Mr HASTINGS said it was true that the subsection contained a serious danger of the professional man coming into collision with the courts but the professional man still had the right to plead that he did not understand and Mr Hastings thought he would be in a good position. The proposed amendment was rejected by 28 to 12.

In subsection 6, which ends with a proviso that it shall not apply to anything done in relation to the acquisition of premises for the purposes of a medical practice, Mr REID moved to insert after 'premises' the words 'or other property'. He said the proviso guarded against the possibility that the subsection as at present drafted would make it an offence for the incoming man to buy the house. But the new man might buy from the old practitioner other things than a house. He might buy surgery equipment of different types. Under the subsection if the incoming man gave a price for any of these movable articles and thereafter succeeded to the premises, then that payment would land him in jail because the transaction was deemed to be a sale of the goodwill.

The LORD ADVOCATE replied that the point made by Mr Reid was met in the closing lines of subsection 6 (b) 'unless it is shown that no part of the consideration was given in respect of the said goodwill or part thereof'. After further discussion Mr Reid's amendment was rejected by 25 to 12 and the Committee adjourned.

Sale of Medical Practices

When the Committee resumed on March 6 Mr J S C REID moved to amend Clause 34. In subsection 9 he asked the Committee to delete proposed from the provision that any medical practitioner or a personal representative of a practitioner might apply to the Scottish Medical Practices Committee for their opinion on whether a proposed transaction involved the sale of the goodwill or part of the goodwill which it was unlawful to sell under the section. Mr Reid said that this only allowed proposed transactions to be put before the Committee for their approval or otherwise. The purpose of his amendment was to give a certificate that the bargain was all right and that those who had entered into it would not be harassed by the complicated provisions in the earlier part of the Clause. If Mr Buchanan would undertake to put in during the Report Stage some time limit within which the Medical Practices Committee would give its decision, that would meet the case nearly as well as acceptance of his amendment. In the absence of such a concession he did not think it safe to assume that these decisions would be given promptly.

Mr BUCHANAN said he did not think that acceptance of a proposal to insist on decisions within three weeks would be an improvement. Time limits to answers from committees were not always good. He liked Mr Reid's other proposal even less. It would allow the doctor to carry out a transaction and leave the Committee to decide afterwards. He agreed with Mr Reid that practically 99% of the cases would be innocent.

Mr REID withdrew his amendment and moved to insert that the Medical Practices Committee should grant the certificate requested unless they found reason to believe that there was something wrong in the transaction. His form of words was intended to replace the words in the Bill if they are satisfied that the transaction or series of transactions does not involve the giving of valuable consideration. Mr Reid pointed out that under the words of the Clause the Committee would give a certificate only if satisfied that the negative had been proved. He said it was surely sufficient to direct the Committee to give a certificate unless they had reason to believe that something was wrong.

The LORD ADVOCATE said he could not accept this amendment.

Mr SCOLLAN asked whether the Lord Advocate and Mr Buchanan were prepared to reconsider the matter. He suggested that the Committee could at least insert unless they find reason to believe. He said that immediately the National Health Service came into operation there was bound to be a reshuffle of practices. Older men would say that they would retire because they could not be bothered any more about it.

Mr BUCHANAN said he did not propose to reconsider the matter. The closure was carried by 21 to 12 and the amendment was defeated by 22 to 12.

Mr REID moved to amend the passage in subsection 1 making a proviso that if it appeared to the court that the applicant had failed to disclose all the material circumstances the court might disregard the certificate. He proposed to insert the word wilfully. He said that as the Clause stood if the man omitted from his letter to the Committee something which he thought irrelevant then there was a risk that an innocent person might be prosecuted ten years afterwards even if there was no element of fraud.

Mr BUCHANAN said that the facts would have to be reported to the Procurator Fiscal. The Medical Practices Committee would not report cases to the Scottish Office and cases would not come to the Lord Advocate directly. The proposed amendment was defeated by 22 to 16.

Black Marketing in Goodwill

On the motion that Clause 34 as amended stand part of the Bill Col ELLIOT said the complexities of the discussion on this Clause showed the difficulty into which the Government had put itself. It had got itself into almost inextricable legal and administrative tangles. Four pages of type were required to set down the considerations which should be brought in to enforce this decision, and these pages might not comprise all the considerations which would be brought in. The whole Committee agreed that it was creating a new kind of offence hitherto unknown in Scottish medical practice—what the Lord Advocate had described as black marketing in goodwill. That phrase showed to what depths Parliament was sinking in this particular Bill.

Mr SCOLLAN said there were parts of the Clause which the Government might well reconsider before bringing the Bill back to the House of Commons. He had a son who was a doctor. Nothing in the Bill would prevent him buying a house, paying a black market price for it, and handing it over to his son.

Mr BUCHANAN said objections came from some members on his side who had a fundamental objection to the sale of practices. He asked the Committee to remember that the medical profession were getting £66 million of public money and the Government had a right to see that the profession did not get that money twice over. He admitted that the practices against which the Clause was aimed were the most difficult things in the world to stop.

Major LLOYD said the Clause was based on an unsound principle which deprived British people of the normal right of freedom in property. If a doctor had bought a house why should he not sell it if he so desired?

The Clause was approved as amended by 24 to 16. Discussion then opened on Clause 35 just before the Committee adjourned.

EPIDEMIOLOGICAL NOTES**Smallpox at Grimsby and Stepney**

In the outbreak of smallpox at Grimsby which we recorded last week (p. 320) there had been 15 cases with 6 deaths, all in the direct line of contact, by March 10. The situation at Grimsby is now believed to be fairly satisfactory.

One case of smallpox was diagnosed in Stepney on March 9. The patient was a member of the staff of a seamen's hospital. He fell sick on Monday March 3 and was admitted to the Mile End Hospital during the week. A diagnosis of smallpox was made on Sunday, March 9, and he was transferred to the hospital at Clandon, Surrey.

Acute Gastro enteritis in Ammanford

There were recently about 300 cases of acute gastro enteritis in the Ammanford area of Carmarthenshire. The first cases appeared on Nov 15 1946, and varied in severity. Some had mild diarrhoea others severe vomiting and diarrhoea with blood in the stools. Profuse growths of organisms of the *Salmonella* group were obtained from several specimens of faeces. On further investigation it was found that in nearly every case prepared meats, especially pressed beef and sausages, had been eaten.

The staff at the local butcher's shop consisted of the butcher, his wife his son and two female assistants. One of the assistants was taken ill with gastro enteritis two days before the outbreak began and was away from the shop from the first day of her illness. Specimens of faeces were collected from the rest of the staff. Three were negative but that of the remaining female assistant produced a growth of *Salmonella* organisms. She was suspended from work immediately as a probable carrier and remained off work until three consecutive negative specimens of faeces had been obtained.

Specimens of gelatin used in the preparation of the meats were taken but were all negative. It seemed that the cause must be a foodstuff which had been eaten by both the female assistants producing symptoms of gastro enteritis in one but not in the other. The latter becoming a carrier. After much questioning it was found that three days before the start of the outbreak both assistants had eaten some bananas.

An interesting point was that the father of the suspected carrier was taken ill with gastro enteritis although he had not eaten any of the meats. His food however had been prepared by his daughter. The outbreak cleared up quickly once the suspected carrier was suspended from work. There were no fatal cases.

Discussion of Tables

In *England and Wales* an increase was recorded in the notifications of whooping cough in both weeks, 122 and 263. A

fall in both weeks was reported for measles and acute pneumonia, the notifications being 1,493 and 444, respectively, fewer than in the previous fortnight.

Only small variations in the trend of scarlet fever occurred throughout the country. The incidence of pneumonia declined in all areas. The only notable changes in the local trends of whooping cough during the fortnight were increases in Yorkshire West Riding 100 and Middlesex 47.

Changes in the incidence of measles have been dominated by the experience of Lancashire with a decrease of 1,185 in the notifications during the fortnight. Other large decreases in the incidence of measles were in Yorkshire North Riding 204, Durham 203, Kent 150, Devonshire 140, and Nottinghamshire 104. The largest increases were Yorkshire West Riding 262, Surrey 125, and Berkshire 100.

The returns for dysentery during the week ending Feb 15 were the lowest for six years. During the week ending Feb 22 dysentery reappeared after an interval of a fortnight in Hertfordshire, St Albans R.D., and 29 persons were affected.

During the first eight weeks of this year 81,080 births have been registered in the great towns, which is 139% of the total registered in the same period last year. The stillbirth rate has fallen to 27 per 1,000 of the total births during this year compared with 31 per 1,000 during the same period of 1946.

In *Scotland* the chief feature of the returns for the past fortnight was an increase in dysentery of 32 in the week ending Feb 22. This rise was due to an outbreak in Banff County involving 38 persons.

In *Eire* a fall in the incidence of measles and a rise in the notifications of whooping cough were the only changes in trend during the fortnight. Cases of measles fell from 66 to 33, but cases of whooping cough rose from 66 to 108, of which 100 were recorded in Dublin C.B.

In *Northern Ireland* the epidemic of measles in Belfast C.B. continued to decline and 287 cases were notified during the week ending Feb 22 as compared with 739 a fortnight earlier.

Tuberculosis Mortality

The death rate from respiratory tuberculosis rose during the first year of the war from 522 per million in 1939 to 588 and 602 in 1940 and 1941. In 1942 the death rate fell to 542. The mortality for the first half of 1946 compared with pre-war experience is shown in the following table.

Death Rates from Respiratory Tuberculosis per 1,000,000

Ages	Males			Females		
	Average of 1931-35	1939	1st half of 1946	Average of 1931-35	1939	1st half of 1946
0+	85	54	71	74	38	64
5-	42	15	31	43	20	26
10-	64	31	26	143	86	78
15-	489	368	236	842	601	507
20-	967	682	517	1,144	955	859
25-	966	723	658	914	707	658
35-	1,135	859	739	644	469	410
45-	1,369	1,158	1,101	474	352	270
55-	1,175	1,171	1,227	392	300	265
65+	610	559	712	265	209	177
Crude death rate	768	638	613	543	410	355

The death rate for both sexes at ages under 10 still remains above the immediate pre-war level. The only other age group with an excess is that of males aged 55 and over. The only age group with a rate higher than in 1931-5 is that of males aged 65 and over.

The death rate for tuberculous meningitis fell in 1946 but at ages 5-14 the mortality is still in excess of the 1939 level.

**Tuberculosis of Meninges and Nervous System
(Death rate per 1,000,000)**

Ages	Boys				Girls			
	1939	January-June			1939	January-June		
		1944	1945	1946		1944	1945	1946
0+	284	313	310	269	252	257	262	210
5-	97	118	130	110	77	105	120	104
14-	52	70	68	89	66	86	81	81

Week Ending March 1

The notifications of infectious diseases during the week in *England and Wales* included scarlet fever 1,167, whooping cough 2,290, diphtheria 186, measles 13,337, acute pneumonia 981, cerebrospinal fever 74, dysentery 92, acute poliomyelitis 8, smallpox 5, typhoid 5. Deaths from influenza in the 126 great towns numbered 121.

INFECTIOUS DISEASES AND VITAL STATISTICS

No 7

No 8

We print below, a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Feb 15

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year for (a) England and Wales (London included) (b) London (administrative county) (c) Scotland (d) Eire (e) Northern Ireland
Figures of Births and Deaths and of Deaths recorded under each infectious disease are for (a) The 126 great towns in England and Wales (including London) (b) London (administrative county) (c) The 16 principal towns in Scotland (d) The 13 principal towns in Eire (e) The 10 principal towns in Northern Ireland
A dash — denotes no cases a blank space denotes disease not notifiable or no return available

Disease	1947					1946 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever Deaths	78	2	22	4	—	73	5	26	—	3
Diphtheria Deaths	211	23	58	23	6	489	23	115	58	17
Dysentery Deaths	41	6	19	—	—	25	14	41	—	1
Encephalitis lethargica acute Deaths	5	—	3	1	—	2	—	—	—	—
Erysipelas Deaths	—	1	47	6	1	—	—	38	8	3
Infective enteritis or diarrhoea under 2 years Deaths	80	4	26	26	—	50	6	10	23	2
Measles* Deaths	16,749	597	303	62	48	1489	353	192	58	4
Ophthalmia neonatorum Deaths	59	2	17	—	1	74	5	16	1	—
Paratyphoid fever Deaths	—	1	—	—	—	—	—	—	—	—
Pneumonia influenzal Deaths (from influenza)	1404	80	27	25	7	1387	79	68	37	6
Pneumonia primary Deaths	163	19	6	—	8	220	34	22	9	10
Polio-encephalitis acute Deaths	—	106	296	46	2	—	72	424	28	22
Poliomyelitis acute Deaths	8	—	—	5	—	9	—	—	—	—
Puerperal fever Deaths	—	2	6	—	—	—	2	18	—	—
Puerperal pyrexia† Deaths	160	9	13	1	—	147	10	18	—	1
Relapsing fever Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever Deaths	1051	67	240	9	41	1303	90	204	25	40
Smallpox Deaths	—	—	—	—	—	4	2	—	—	—
Typhoid fever Deaths	5	—	—	5	1	5	1	2	9	—
Typhus fever Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough* Deaths	1964	180	381	81	32	1329	112	91	26	5
Deaths (0-1 year) Infant mortality rate (per 1000 live births)	579	70	113	—	24	408	58	82	32	19
Deaths (excluding still births) Annual death rate (per 1000 persons living)	8091	1359	880	—	237	5961	940	744	247	200
Live births Annual rate per 1000 persons living	10195	1620	1233	—	278	7579	1095	949	462	267
Stillbirths Rate per 1000 total births (including stillborn)	285	41	41	—	—	251	39	37	—	—

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only

† Includes primary form for England and Wales London (administrative county) and Northern Ireland

‡ Includes puerperal fever for England and Wales and Eire

It is still not possible to publish the returns of births and deaths for Eire for the weeks ended Oct 26 Nov 2 9 16 23 30 Dec 7 14 21 28, 1946 Jan 4 11 18, 25 Feb 1 8 15 and 22, 1947

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Feb 22

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year for (a) England and Wales (London included) (b) London (administrative county) (c) Scotland (d) Eire (e) Northern Ireland
Figures of Births and Deaths and of Deaths recorded under each infectious disease are for (a) The 126 great towns in England and Wales (including London) (b) London (administrative county) (c) The 16 principal towns in Scotland (d) The 13 principal towns in Eire (e) The 10 principal towns in Northern Ireland
A dash — denotes no cases a blank space denotes disease not notifiable or no return available

Disease	1947					1946 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever Deaths	90	11	21	3	4	71	8	24	—	—
Diphtheria Deaths	217	16	51	19	6	510	33	136	51	19
Dysentery Deaths	92	10	53	—	—	406	29	62	—	2
Encephalitis lethargica acute Deaths	3	—	—	—	—	2	—	—	—	—
Erysipelas Deaths	—	—	59	7	4	—	—	41	12	4
Infective enteritis or diarrhoea under 2 years Deaths	69	5	18	21	2	52	7	10	40	4
Measles* Deaths	15765	644	300	33	28	1587	389	393	69	1
Ophthalmia neonatorum Deaths	59	4	12	—	—	64	4	15	1	1
Paratyphoid fever Deaths	—	—	1(B)	—	—	—	—	—	—	—
Pneumonia influenzal Deaths (from influenza)	1139	84	20	38	10	1125	57	66	25	15
Pneumonia primary Deaths	135	21	7	—	6	141	17	13	9	4
Polio-encephalitis acute Deaths	—	115	282	25	23	—	34	333	87	14
Poliomyelitis, acute Deaths	14	—	1	5	—	4	1	—	1	—
Puerperal fever Deaths	—	3	12	—	1	—	5	24	—	—
Puerperal pyrexia† Deaths	142	11	13	—	—	171	12	17	—	1
Relapsing fever Deaths	1	—	—	—	—	—	—	—	—	—
Scarlet fever Deaths	1081	70	218	20	33	1307	116	162	18	33
Smallpox Deaths	2	—	—	—	—	1	—	—	—	—
Typhoid fever Deaths	3	—	—	3	—	7	—	1	8	—
Typhus fever Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough* Deaths	2227	212	387	108	32	1632	133	98	43	6
Deaths (0-1 year) Infant mortality rate (per 1000 live births)	572	67	103	—	21	414	57	64	38	17
Deaths (excluding still births) Annual death rate (per 1000 persons living)	7896	1313	931	—	22	5195	820	687	259	167
Live births Annual rate per 1000 persons living	10194	1596	1231	—	297	7263	1035	910	416	251
Stillbirths Rate per 1000 total births (including stillborn)	260	33	40	—	—	256	37	39	—	—

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only

† Includes primary form for England and Wales London (administrative county) and Northern Ireland

‡ Includes puerperal fever for England and Wales and Eire

It is still not possible to publish the returns of births and deaths for Eire for the weeks ended Oct 26 Nov 2 9 16 23 30 Dec 7, 14 21 28, 1946 Jan 4 11 18, 25 Feb 1 8 15 and 22, 1947

Medical News

We announce with regret the death of Prof Bryan Austin McSwiney, FRS, Dean of St Thomas's Hospital and Professor of Physiology in the Sherrington School of Physiology

A conference arranged by the Electron Microscope Group of the Institute of Physics and the Royal Microscopical Society will be held at B M A House, Tavistock Square, W C 1, on Thursday and Friday, March 20 and 21, at 7.30 p.m. each day, when the following public lectures will be delivered: March 20 Mr J. Smiles, "Survey of the Inter-relationship of Microscopical Techniques"; March 21, Prof W. T. Astbury, FRS, "The Electron Microscope"

A meeting of the London Jewish Hospital Medical Society will be held at Woburn House, Upper Woburn Place, London, W C, on Thursday, March 20, at 8.30 p.m., when an address will be delivered by Miss Muriel Landau, FRCS, on "Recent Advances in Gynaecology"

The following radiological meetings will be held in London this month: Friday, March 21, 2.30 p.m., at Royal College of Surgeons of England (Lincoln's Inn Fields, W C), Diagnostic Section of Faculty of Radiologists: Dr S. Cochrane Shanks, "Hiatus Hernia"; Friday, March 21, 8 p.m., Section of Radiology of Royal Society of Medicine, 1, Wimpole Street, W: Dr J. F. Brailsford, "Some Experiences with Bone Tumours"; Friday and Saturday, March 21 and 22, meetings of British Institute of Radiology at French Institute, Queensbury Place, S W: March 21, 5 p.m., Dr F. Baclesse, "Cancer of the Larynx"; March 22, 10.15 a.m., presidential address by Prof D. W. Smithers, 11.20 a.m., papers on treatment of carcinoma of the cervix: 2 p.m., demonstrations at Royal Cancer Hospital

The seventh annual general meeting of the Colour Group of the Physical Society will be held at the Royal Photographic Society's rooms (16, Prince's Gate, South Kensington, S W) on Wednesday, March 26, at 3.15 p.m. A science meeting of the Group will follow at 3.30 p.m., when a paper by Mr M. E. Clarkson and Drs O. L. Davies and T. Vickerstaff on "A Statistical Investigation of Some Aspects of Colour Harmony" will be read

The seventh Clarke Hall Lecture on "Mental Health and the Offender" will be delivered by Dr J. R. Rees in the New Hall of Lincoln's Inn, W C, on Wednesday, March 26, at 4.30 p.m.

A meeting of the Middlesex County Medical Society will be held at Glaxo Laboratories, Greenford Road, Greenford, on Thursday, March 27, at 2.30 p.m., when Dr H. M. Walker will speak on "Laboratory Investigation of Drugs" and Dr E. Lester Smith on "Biological Substances (Liver Extract and Folic Acid)"

A meeting of the Scottish Group of the Association of Industrial Medical Officers will be held at the Western Infirmary, Glasgow, on Friday, March 28, at 2.30 p.m., when Mr Roland Barnes will speak on "Back Injuries in Industry". A clinical demonstration will follow.

The annual clinical meeting of Guy's Hospital Dental School will be held in the dental department of the hospital on Saturday, March 29. Morning and afternoon sessions will be held and demonstrations of modern dental procedures given by members of the staff: cases of clinical interest will be shown.

The Ministry of Fuel and Power will exhibit structural insulation, domestic heat services, and district heating, at the Scottish Fuel Efficiency Exhibition, to be held at the Kelvin Hall, Glasgow, from March 19 to April 5.

The International Committee of the Red Cross is holding a conference at Geneva in March to study the question of reviving the Geneva and The Hague Conventions. The Comité International de Médecine et de Pharmacie Militaires has prepared a report for their consideration.

A reunion dinner for ex CMF-MEF physicians, including neurologists, dermatologists, psychiatrists, and radiologists, will be held at Grosvenor House, Park Lane, London, W 1, on Saturday, April 26, at 7 p.m. for 7.30 p.m. The cost of the dinner will be 25s exclusive of wines. Those interested are asked to communicate before March 31 with either Dr W. MacLeod, 3, Drumsheugh Gardens, Edinburgh, or Dr A. Willcox, 66, Harley Street, London, W 1. As numbers have to be limited owing to catering difficulties, early applications are invited.

The Lord President of the Council has appointed the following to serve on the Advisory Council on Scientific Policy: Sir Henry Tizard, chairman, Sir Edward Appleton, Sir Alan Barlow, Sir Howard Florey, Sir John Fryer, Sir Claude Gibb, Sir Edward Mellanby, Sir Edward Salisbury, Sir Ewart Smith, Sir Reginald Stradling, Prof A. R. Todd, Dr A. E. Trueman, Prof S. Zuckerman.

The Medical Society of London held its Anniversary Dinner on March 6, Sir Philip Manson-Bahr, the President, being in the chair. The toast of the Society was proposed by Lord Oaksey, who as Lord Justice Lawrence was the British President of the International Tribunal at Nuremberg. Lord Oaksey gave an interesting talk on the implications of the Nuremberg trial, pointing out that the existence of international law carried with it a limitation of national sovereignty. The health of the visitors was proposed by Mr A. Dickson Wright and responded to by Lord Moran. The former observed that John Coakley Lettison was one of the last pair of seven sets of twins, and with his brother the only ones to survive. Lettison's father was a Quaker planter in the West Indies. John Coakley was born in 1744, was sent to England in 1750, founded the Medical Society of London in 1773, and died in 1815.

Three hundred doctors and medical students at the Johns Hopkins Hospital, Baltimore, watched on television screens as surgeons performed an operation. The experiment is regarded as a new and effective method of surgical education. Two television cameras were used, one mounted over the operating table itself and the other equipped with a telephoto lens, in the gallery of the operating theatre. The surgeon performing the operation gave a running commentary through a microphone mounted above the table. Television receivers were placed in other parts of the hospital and the students could watch the operation closely "without crowding round the patient." Dr Edwin Crosby, the director of the hospital, commented: "Television has brought the operative field within the critical sight of large numbers of doctors and students and will permit them to witness many operations."

We have received from the Melbourne Permanent Postgraduate Committee a copy of the syllabus of medical postgraduate facilities for 1947, which include continuous and intensive refresher courses, late afternoon courses, a course for dermatologists, country courses for higher degrees and diplomas and by overseas lecturers, film afternoons, supernumerary residencies and individual postgraduate study. The programme opened in February and each month until November a number of the above mentioned courses will be held. Full particulars may be obtained from the director of the committee, Dr F. Kingsley Norris, CBE, DSO, c/o Royal Australasian College of Surgeons, Spring Street, Melbourne, C 1, Australia.

Mr E. D. Macgregor, CB, Director of Establishments in the Ministry of Health since May, 1939, is retiring from the public service on March 31. Mr E. M. T. Firth, Assistant Secretary of the Establishments Division, has been promoted to be an Under Secretary, and the Minister, with the approval of the Prime Minister, has appointed him to succeed Mr Macgregor as Director. Mr S. J. Wilkinson has been promoted to be an Under Secretary in the Ministry.

Dr Arthur Massey, CBE, medical officer of health to the City of Coventry since 1930, has been appointed Chief Medical Officer to the Ministry of National Insurance at a salary of £2,250 per annum. Dr Massey, who will take up his appointment shortly, is to advise the Minister on medical matters in connexion with the administration of the National Insurance Act and the Industrial Injuries Act.

We have received recently the *Handbook* for 1946 of the National Children's Adoption Association. It includes a report of the Executive Committee from April, 1944, to March, 1946, and can be obtained for 1s on application to the Association at 71, Knightsbridge, London, S W 1.

A. O. Davy, FRACS, L. F. Dods, MD, FRACP, C. C. Finlay, MB, ChM, Prof B. T. Mayes, FRACS, FRCOG and Group Capt H. R. G. Poate, FRCS, FRACS, RAAF have been appointed MVO (Fourth Class).

Dr Donald Paterson has recently been made a Corresponding Member of the Société de Pédiatrie de France and an Honorary Fellow of the American Academy of Pediatrics.

Prof John A. Ryle received the honorary Doctorate of Science from McGill University, Montreal, at Oxford, on March 11.

Mr R. M. De Mowbray, FRCS, of Lymington, Hants, who died on Sept. 24, 1945, left £55,894. Dr J. A. Pringle of Canterbury, who died on Feb. 12, 1946, left £36,631. Lieut-Col A. Whitmore, MD, IMS (ret), of Medleying, Cambs, who died on June 26, 1946, left £31,376. Dr A. F. Voelcker, FRCP, of Marhamchurch, Cornwall, who died on June 9, 1946, aged 84 years, left £16,559. Col Hugh Murray Morton, CM, CBE, DSO, late RAMC, of Berwick on Tweed, who died on Aug. 7, 1946, aged 73, left £23,036. Dr William Evans Thomas, JP, of Rhondda Glamorganshire, who died on Jan. 20, 1946, aged 82, left £38,19. Dr Benjamin Rigby Johnston, of Westmorland, who died on March 17, 1946, aged 84, left £15,919. Dr Herbert Harland Ra of Whitby, who died on Aug. 5, 1946, aged 68, left £9,802. Dr Herbert Charles Meacock, who died on Feb. 28, 1946, left £83,921. Dr Elizabeth Stanton, MRCS, LRCP, who died on Feb. 1, 1946, left £37,972 gross, with net personality £37,819.

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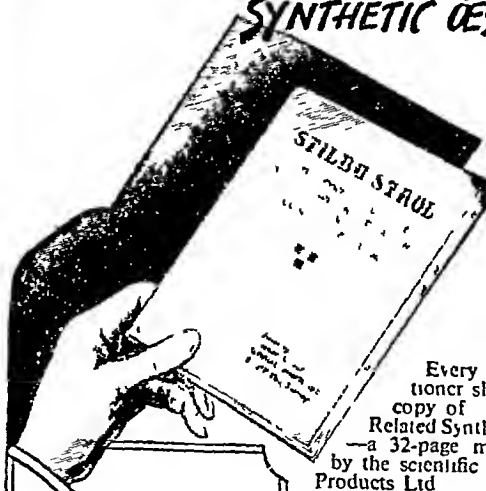
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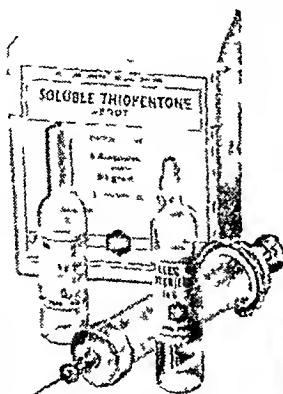
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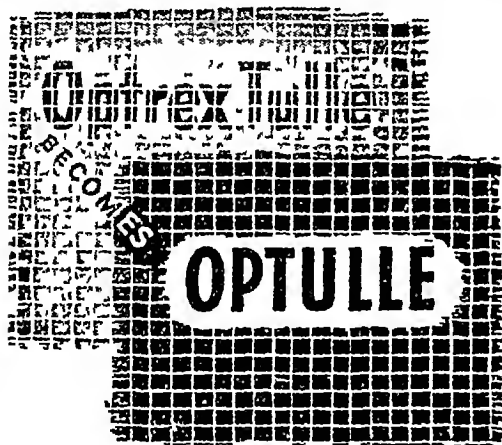
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Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Penicillin in General Practice

Q—I should like advice on the uses of penicillin in general practice. An indication of the types likely to be most useful to the G.P. a few notes on storage and the recommended dosage for the more ordinary but none the less distressing conditions would be appreciated.

A—Penicillin powder as now supplied in sealed ampoules is so much more stable than earlier products that it can be stored at ordinary room temperature for any reasonable period. Solutions are better kept in a refrigerator unless used within a few days as are creams. The temperature in the open part of a domestic refrigerator—about 40° F. or 4.4° C.—is satisfactory.

Some minor conditions can be treated by the local application of penicillin impetigo by means of a cream and throat infections by oral tablets. Any infection not so superficially situated can usually be treated only parenterally—that is, by intramuscular injections. If this has to be done the fact that the lesion is small does not mean that the dose can be small in proportion. Whether a staphylococcus is producing osteomyelitis or merely a carbuncle of moderate size, the minimum concentration of penicillin required in the blood to check its further activity is the same. It is therefore useless to give penicillin intramuscularly in doses of less than, say, 20,000 units four hourly. If the interval between doses is longer than this the dose must be greatly increased. Hence this form of treatment is not usually worth while except in fairly severe or potentially dangerous septic conditions. There are now several books on the therapeutic use of penicillin, one of which the questioner is advised to consult for further details.

Treatment of Chronic Diverticulitis

Q—What is the best treatment for chronic diverticulitis in a patient of 72 who has been suffering on and off for the last ten years? There is a history of enteric and diarrhoea in the Boer War and dysentery followed by colitis after Gallipoli. The patient suffers frequent pain and discomfort especially at night. Some relief is obtained from colloidal aluminium silicate given during the day and codeine gr. 1 (2 (32 mg) at night. Is it advisable to go on with this? Would a course of sulphathalidine be worth trying?

A—This type of case often offers great therapeutic difficulties. It is advisable to continue with a low residue diet and mineral oil in some form, as these measures should diminish stasis and the risk of further infection. The predominance of pain at night suggests that intestinal flatulence is a factor and to diminish this it would be advisable to restrict bread and potatoes to a minimum, some help may be given by charcoal in finely divided form. Any superadded spasm would be reduced by belladonna or atropine. Unless there is abdominal tenderness it is unlikely that very active inflammatory change is in progress around the diverticula. If this is present it would be worth trying one of the sulphonamide drugs, preferably sulphadiazine or a similar compound. Sulphathalidine would be better avoided on account of its constipating effect. There is no harm in continuing with colloidal aluminium silicate and codeine for a time.

Teeth grinding

Q—What is the cause of teeth-grinding of sudden onset during sleep? What treatment is advised?

A—Teeth grinding during sleep is evidence of some degree of tension in the child and is in the same category as over-activity, restlessness, nail biting, etc. during the day and restlessness or disturbed sleep at night. It may be provoked by physical discomfort associated with skin irritation, enlarged adenoids, etc., and the traditional connexion with intestinal worms may

arise when they cause anal irritation. Most commonly however, the cause and treatment are to be sought in the daily life of the child. Such factors as an over-anxious mother, intra-familial stresses, undue restriction in the home or pressure at school should be explored. Spasmodic teeth-grinding has been quoted (Kanner *Child Psychiatry*) as being associated with neurological damage in juvenile paresis and it presumably may occur as a minor epileptic phenomenon. Such organic causes are extremely rare. The aetiology in adults is similar, but the stress is much more liable to be within the personality and less susceptible to modification of the outside situation.

Bee-stung Anaphylaxis

Q—A bee expert of 30 years experience when giving practical demonstrations makes a bee sting the back of his hand. He gets no local reactions or sensations whatever. Is he more liable to anaphylactic reaction than a beekeeper who is only occasionally stung?

A—There is evidence to suggest that frequently repeated stings produce a condition of immunity and that reactions are more likely to develop after occasional stings. It would seem, however, that some persons are more likely to develop reactions than others and this might well depend on whether or not they have an allergic personal or family history.

Treatment of Dipsomania

Q—What is the current authoritative medical opinion on the treatment of dipsomania by ingestion of large quantities of alcoholic drink followed by injection of apomorphine? It has been recommended for a patient of 49 and I am anxious to give it a trial.

A—An account of the treatment described is given in this *Journal* for March 18, 1944 at page 399, together with the references. It has been regularly used by Voegtlin in San Francisco, and by Reese in Madison Wis., and is certainly successful in willing subjects. The duration of cure differs, out of 1,042 patients treated only 40% were still cured 5 years later. The treatment can, however, be repeated at yearly intervals.

Thymol Turbidity Test

Q—What is the thymol turbidity test?

A—The thymol turbidity test is fully described by N. F. MacLagan (*Brit. J. exp. Path.* 1944, 25, 234) who devised it. It is an empirical test, derived from an accidental observation. The addition of thymol as a preservative to a solution used in the serum colloidal gold reaction was noticed to cause a turbidity or precipitate with sera from cases of parenchymatous liver disease. For details of the technique the original paper should be consulted. MacLagan gives its results in 248 cases of liver disease (positive in 91% of cases of infective hepatitis, 100% of hepatic cirrhosis, 47% of post-arsphenamine jaundice, 52% of Weil's disease and 7% of obstructive jaundice) and in 217 control patients of whom 21% gave positive results (cases of glandular fever, rheumatoid arthritis, heart failure, pernicious anaemia, etc.). A positive result is believed to indicate an increased serum gamma-globulin content.

Buccal Ulceration and Menstruation

Q—What are the aetiology and treatment of ulcers of the mouth which occur only near the time of menstruation? I have an edentulous patient aged 40 who has severe pain and signs of mild inflammation at one point on the lower jaw coinciding with a menstrual period. X-ray examination reveals no abnormality of the ramus.

A—Cyclical buccal ulceration occurring in relation to menstruation is a well recognized syndrome and there is often, but not always, a coincident ulceration of the vulva or lower vagina. The aetiology is unknown but there are many theories put forward to account for it. It has, without much evidence, been regarded as the result of an infection by a special bacillus, others look on it as a form of herpes. The view that it is an allergic manifestation is supported by the fact that there is sometimes a strong family history of other allergic diseases. The relation to menstruation and the fact that the ulceration clears up during pregnancy (but usually recurs afterwards) have given rise to several theories with an endocrine basis.

Various vitamin deficiencies and disturbances in the alimentary tract have also been blamed. It is possible that different mechanisms operate in different cases. Treatment is unsatisfactory. Protein-sensitivity tests should be carried out and any focus of sepsis in the mouth eradicated. Large doses of vitamin C might be tried. Chorionic gonadotrophin (500 i.u. intramuscularly twice weekly) appears to help in some cases, but may have to be continued indefinitely. See also replies to questions in the *Journal* for Dec 25, 1943 (p. 839), and June 15, 1946 (p. 940).

Green Teeth

Q—*I have a patient aged 2 years with green teeth. Has the Rh factor any bearing on this disease?*

A—The presence of true green teeth is a rare condition usually following icterus gravis, and has been noted in the permanent teeth of patients who have recovered from that disease in infancy. The Rh factor is, of course, connected with this disorder. The more common appellation of green teeth is given to teeth showing the characteristic green stain of chromogenic bacteria. This is often seen on the anterior teeth in children, and can usually be removed with mild abrasives.

Generalized Pruritus

Q—*An old woman of 75 is suffering from widespread pruritus. She was in good health though frail until a couple of years ago since when she has had burning pain at different times in the perivulval and perirectal region, the left side of the chest, left iliac fossa, the face and the forearms. The perirectal pain seems to be the worst. She has had no sugar in her urine. Any advice would be helpful.*

A—It is important to exclude carcinoma (especially of the stomach, rectum, or bowel), anaemia, or vitamin deficiency. In the absence of these the itching is likely to be psychogenic in origin, or may be due to arteriosclerosis, especially as it affects the central nervous system, or to vitamin B deficiency. Injections of liver and phenobarbitone in 1/2-gr (32-mg) doses may help. Locally Grenz-ray therapy, if available, should be applied, otherwise the following should be prescribed:

R	Acid carbol	mx (0.6 ml)
	Calamin	gr xl (2.6 g)
	Lanolin	gr xxx (2 g)
	Ol. oliv	℥ss (15 g)
	Aq. calcs	ad 3j (30 g)

Fiat cremor

Cocaine and allied preparations should never be employed.

Sweating Feet

Q—*A boy of 11 suffers from excessive sweating of his feet. There is the usual strong smell from his socks and shoes, and the boy is very conscious of the condition with a dread of elaborate treatment lest the other boys know. What can I do for him?*

A—This is emotional sweating, and the boy should take phenobarbitone gr 1/4 (16 mg) each night for three, six, or twelve months as may prove necessary. He should wash the feet every night, have clean socks daily, and use the following foot powder as a daily routine before putting them on:

R	Sod. hexametaphosph	5%
	Acid. salicyl	2%
	Zinc oxid	} aa ad 100%
	Talc	
	Acid. bor	

Fiat pulv

Congenital Syphilis

Q—*A woman whose husband has contracted syphilis has become pregnant by him. She herself has not contracted the disease and her Wassermann remains negative. Is there any chance of the baby being syphilitic?*

A—If the wife has not contracted syphilis she cannot give birth to a syphilitic child. *Treponema pallidum* does not pass in a spermatozoon to the ovum. However, the possibility must be considered that she has contracted the disease but shows no sign of it; it would therefore be wise to keep her under careful observation with periodical blood tests right up to term.

Letters and Notes

Sodium Morrhuate Injections

Mr HAROLD DODD (London, W) writes: The reply (Feb. 8 p. 243) to "What is the explanation of the 'fainting feeling,' pain in the ankle, and severe headache after the above is, I suggest, only partial. It seems to me that the essential is that sodium morrhuate is a substance of variable chemical composition. Some preparations contain an element which, when injected for the sclerosis of varicose veins, causes reactions varying from the above faint feeling to sudden death. I have reported one of the latter after 3 ml. of 5%. The journals also from time to time have told of other fatalities and collapses. Many medical men will describe experiences of the above undesirable reactions. The crux of the matter is, therefore, that sodium morrhuate should be abandoned forthwith for varicose vein sclerosis. It is dangerous quite apart from the fact that it is an indifferent sclerosing agent. I think its use is criminal. Even after injections of 'ethamolin' (a somewhat similar but stable preparation) occasional unpleasant reactions have been described in the medical press. May I recommend an alternative sclerosing agent whose qualities are safe, self-sterilization, powerful sclerosing action, a but slightly painful chemical thrombo-phlebitis, and no irritation when inadvertently injected outside veins. I have not seen an injection ulcer from it. Autoclaved gelatin 1%, glucose 25%, glycerin 30%, phenol 2% in distilled water. It is called P3G fluid. Dose 1-5 ml. It has one disadvantage during very cold weather: requires slight warming because the gelatin tends to thicken. I have used this daily for three months in hospital and private work with excellent results. I was reintroduced to carbolic acid as a sclerosant by Mr. Riddoch, of Birmingham, who tells me that he has injected it in another formula for years on thousands of occasions with consistent safety.

Health Service in Ancient Egypt

Dr T. S. WILSON (London, S.W.11) writes: Diodorus Siculus (1.82) writes the following about the health services of ancient Egypt: "In expeditions and journeys from the country all [the sick] are taken care of without giving pay privately, for the physicians receive support from the community, and they provide their services according to a written law compiled by many famous physicians of ancient times. And if after following the laws from the sacred books they cannot save the patient, they are let go free from all complaint, but if they act contrary to what was written, they await condemnation to death, since the law maker thinks that few men would have knowledge better than the method of treatment observed for a long time and prescribed by the best specialists." The passage of several millenniums does not appear to have altered the opinion of the law-maker to any considerable extent. May one, however, assume that the Minister of Health has at least decided against the reapplication of the ancient Egyptian penal code?

Penicillin Lozenges

Dr G. J. GRAINGER (London, S.W.4) writes: Could not penicillin be prepared in the form of gelatin base gums or pastilles as opposed to the present day lozenges? I suggest this for the following reasons: (1) They would take longer to dissolve, and therefore the action of penicillin in the buccal cavity would be prolonged, (2) many patients complain of the "chalky flavour" of the lozenges, (3) in some patients this produces marked nausea, (4) there would be less tendency to crush and swallow a pastille, (5) a smaller dosage of penicillin would be required in the treatment of oropharyngeal affections.

Correction

In the article "The Place of Unilateral Renal Disease in Hypertension" by C. W. HARDWICK and A. W. BADENOCH, published in our issue of March 8, the word hyperplasia at the beginning of the last paragraph of column 1, p. 295, should be hypoplasia and the sentence read: "In renal hypoplasia there is an immature rudimentary kidney."

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TRIFONTS, ALHANY, WESTCENT LONDON. ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* unless the contrary be stated. Authors desiring REPRINTS should communicate with the Publisher, Manager, B.M.A. House, Tavistock Square, W.C.1, on receipt of proof. Authors over seas should indicate on MSS. if reprints are required as proof are not sent abroad. ADVERTISEMENTS should be addressed to the Advertisement Manager, B.M.A. House, Tavistock Square, London, W.C.1 (hours 9 a.m. to 5 p.m.). TRIFONTS, ALHANY, WESTCENT LONDON. BRITMEDADS, WESTCENT LONDON. MEMBERS' SUBSCRIPTIONS should be sent to the SECRETARY of the Association, TELEPHONE: EUSTON 2111. TELEGRAMS: Medusca, Westcent London. B.M.A. SCOTTISH OFFICE: 7 Drumsbough Gardens, Edinburgh.

LONDON SATURDAY MARCH 22 1947

POISONING WITH A PREPARATION OF IRON, COPPER, AND MANGANESE

BY

GILBERT FORBES, M.D., B.Sc., F.R.F.P.S., F.R.C.S.E.d

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Most iron salts are relatively inert, and modern therapeutic practice recommends their use in full doses. Certain iron preparations are, however, apt to cause dyspepsia and even one Blaud's pill may occasion abdominal discomfort in susceptible individuals. According to Goodman and Gilman (1943) iron salts 'used in the treatment of anaemias may cause gastric distress, colicky pain, and diarrhoea. These complaints are more prominent after ferric salts than after ferrous salts, and more common with the soluble than the insoluble preparations.' They consider that this is especially true of ferrous sulphate owing in part at least to the smaller doses used.

Cases of poisoning due to the ingestion of iron are extremely rare. Smith and Cook (1934) mention a case of a girl who swallowed 1 oz (28 g) of ferrous sulphate and recovered. Nearly all the cases of poisoning by iron preparations are due to the tincture of perchloride of iron, but a case of iron encephalopathy has been reported by Hurst (1931) following the oral administration of huge doses of iron and ammonium citrate. He states that no other example of remote symptoms due to iron (other than local gastro-intestinal effects) has been reported.

Some experimental work has been done on iron poisoning but for the most part the method of administration has been by injection. McGuigan (1926) quotes Kunkel to the effect that the fatal intravenous dose of iron for dogs is from 20 to 50 mg per kg of body weight. Meyer and Williams according to McGuigan (1926), found that 0.6 g of ferrous sulphate injected into the veins of a dog caused pronounced vomiting and diarrhoea, 8 g given orally proved fatal to a dog in 26 hours, and the necropsy showed ecchymosis of the stomach and intestines. McGuigan also reports the death of a man following the ingestion of 45 ml of tincture of iron.

Copper sulphate falls into the category of irritant metallic poisons. Acute poisoning with this substance is very rare and fatal cases are still more uncommon. Consequently the fatal dose of this salt is unknown, but Smith and Cook (1934) advance the suggestion that doses of 1½ oz (42 g) and upwards would act as powerful irritants on adults and that a much smaller quantity would suffice to destroy infants or children. Copper sulphate is a powerful emetic and may be used clinically for this purpose in doses of from 5 to 10 gr (0.32 to 0.65 g). If taken in larger quantities it causes acute gastro-enteritis. Because of its irritant properties if this salt is given as an emetic and fails to act the stomach must be promptly emptied by some other means (Douthwaite 1931). Retained copper is absorbed from the intestine and passes to the liver where it is stored. It is excreted partly in the bile and partly in the urine.

The irritant properties of copper sulphate are to some extent an asset. On ingestion vomiting occurs promptly and diarrhoea follows later. These processes aid in eliminating the poison from the system, so preventing absorption and reducing the risk of remote toxic effects on other organs. It has been observed (Smith and Cook 1934) that in non-fatal cases jaundice is sometimes a symptom, and this indicates that copper salts are apt to lead to liver damage. A considerable volume of experimental work has been done on this problem in the form of animal feeding experiments. Mallory, Parker, and Nye (1921) announced that it was possible to produce pigmentation and cirrhosis of the liver in rabbits and sheep by the oral administration of copper salts or of metallic copper in powdered form. Their results have been confirmed by Hall and Butt (1928), and denied by Flinn and Von Glahn (1929) and by Polson (1929), who claim that copper does not produce either pigmentation or cirrhosis, and that the pigmentation seen by Mallory and his co-workers is a natural phenomenon in the rabbit and is due to diet only. More recently Mallory and Parker (1931) have repeated their experiments and have found that copper given by injection in sufficient doses will kill a rabbit in from 24 hours to two to three weeks, and that necrosis and pigmentation of the liver cells can be demonstrated histologically. They assert that by special staining methods they have succeeded in demonstrating the copper in the liver cells. If the rabbits survive for a variable period, cirrhosis of the liver follows. They also describe the occurrence of necrosis of the tubular epithelium of the kidneys. Their results are supported by Hall and MacKay (1931), who found that 50% of their copper-fed rabbits developed cirrhosis of the liver, and that large quantities of copper were stored in this organ. Indirect support is also given by the finding of Gordon and Rabinowitch (1933) that in cirrhosis of the liver in man the copper content is increased. Thus there seems to be some evidence that copper salts can produce liver damage in addition to the gastro-intestinal irritation admitted by all toxicologists.

Manganese is generally regarded as being a relatively non-toxic element. A search of the literature has failed to reveal a case of acute manganese poisoning in man. There are however, reports of chronic poisoning of industrial origin where the symptoms are those of hepatolenticular degeneration. The neurological syndrome resembles in some respects that characteristic of Parkinson's disease (Goodman and Gilman, 1943). Von Oettingen (1935) reports that the lesions of the liver and central nervous system seen clinically can be produced in animals with toxic amounts of manganese, while Hurst and Hurst (1928) failed to detect any changes in the brain even in

the presence of gross damage to the liver. A single large dose of a manganese salt given subcutaneously will prove fatal in one to two days, while smaller doses repeated will produce cirrhotic changes in weeks or months, similar changes are found in rats which have had manganese chloride added to the diet (Findlay, 1924). Hurst and Hurst (1928) also produced acute and chronic changes after giving injections of manganese. It is fairly clear that both acute and chronic damage closely allied to acute yellow atrophy and cirrhosis, as seen in man, can be produced in animals experimentally.

It is questionable whether these experiments have proved the toxicity of manganese under ordinary conditions in man. According to Richards (1930) the bulk of the evidence seems to show that when ingested, even in fairly large amounts, manganese compounds have no toxic effects. He quotes the work of Reiman and Minot (1920) and of von Oettingen and Sollman to prove that feeding manganese ores to dogs and pigeons over a long period and in large amounts fails to produce any significant changes in the manganese content of the blood and tissues or any pathological symptoms. Richards fed manganese to pigs and found no toxic symptoms after the daily ingestion of 3.5 g of manganese citrate for nearly nine months.

Case 1

A healthy boy aged 3 years 3 months took a box of tablets off the kitchen table in his home at 12 noon on April 23, 1946. According to the mother's estimate the box contained about 50 tablets. At 12.30 p.m. the same day the box was found to be empty, and the child admitted having swallowed all the tablets. Each tablet contained ferrous sulphate exsicc 3 gr (0.2 g) copper sulphate 1/25 gr (2.6 mg) and manganese sulphate 1/25 gr. Shortly afterwards the boy vomited and a few tablets were returned. During the afternoon of that day the child slept fitfully was thirsty and appeared to be very weak. At 6 p.m. he vomited again, and the vomitus was clear fluid only. He had a fairly comfortable night, and next morning his general condition had improved. On the following day he showed no symptoms likely to cause alarm till 10 a.m., when his skin became yellow, his pupils dilated, and he was very restless. The child's condition steadily deteriorated till 5.30 p.m. on April 25, when he died—53 hours after taking the tablets. Medical advice was sought by the boy's mother immediately she discovered what he had done, but no treatment was considered necessary in view of the fact that he had vomited. Actually he was not seen by a doctor till 48 hours afterwards and he had no treatment during the illness.

Post-mortem Examination.—The only significant external findings were a suggestion of jaundice in the sclerotics and some abdominal distension. The stomach contained 3 oz (75 g) of dark coffee ground material and the mucous membrane along the lesser curvature was brown and necrotic. The remainder of the mucosa was rather oedematous but not acutely inflamed. The anterior wall of the stomach was stained blue and the subperitoneal vessels were injected. The small bowel was filled with black semi-solid material which had stained the rather oedematous mucous membrane and there was vascular engorgement here also. The large bowel was healthy, but contained hard black masses of constipated faeces. The liver looked about normal in size weighed 510 g, was not unduly flabby and there was no pronounced wrinkling of the capsule. Both on the surface and on section this organ was in part bright yellow and in part reddish purple. The distribution of these areas was irregular and the normal liver markings had disappeared. The spleen was slightly enlarged and there was a very small quantity of blood stained fluid in the peritoneal cavity. The kidneys were in a state of advanced cloudy swelling and in the pelvis of each there was a small quantity of bright-yellow crystalline material. The bladder contained 1 1/2 oz (14 ml) of cloudy urine which was not grossly bile-stained. The only abnormalities noted in the respiratory system were a few haemorrhages each about 1/4 in (0.6 cm) in diameter at the lung roots and some thick mucus in the bronchi.

The heart muscle was pale and there were two small sub-endocardial haemorrhages on the posterior wall of the left ventricle. Further haemorrhages, similar to those seen on the lungs, were noted at the lower pole of the thymus and along the descending thoracic aorta. All the other organs were normal.

Histology.—The liver showed degenerative changes ranging from cloudy swelling to complete necrosis. Some of the liver lobules had entirely disappeared while in others the central cells still remained. Where the liver cells had vanished the capillaries were widely dilated and there were extensive areas of haemorrhage. General polymorph infiltration was in evidence and deposits of granular pigment were scattered about. There was necrosis of the gastric mucosa to varying depths. Throughout the stomach wall the vessels were intensely engorged and there were haemorrhages between the muscle layers. The submucous layer was infiltrated with polymorphs and in places there were minute abscesses. The tubules of the kidneys and the heart muscle showed cloudy swelling. The lungs were acutely congested and there was some oedema. Desquamated epithelium and red cells were present in the bronchi.

Chemical Analysis.—The liver and the bowel and its contents were wet ashed with nitric and sulphuric acids. The copper in the residue was determined polarographically, using a Tinsley recording polarograph, with the following results: liver 11.2 mg, bowel 5 mg. The manganese was determined by converting it to permanganate ion and measuring the absorption in a Hilger Spekker absorptiometer. The following results were obtained: liver, 4.2 mg; bowel 8 mg.

Case 2

At 7.15 p.m. on Sept 9, 1946, a 1 year-old boy swallowed a quantity of the same proprietary preparation as in Case 1. It is estimated that he took between 30 and 35 tablets. The mother at once gave him salt and water and when this failed to produce emesis she inserted her fingers into his throat and he vomited undigested food and a number of the tablets. Shortly afterwards the boy returned some brown material and within an hour fresh and clotted blood. The child was admitted to hospital 90 minutes after taking the tablets.

On admission he was pale, collapsed, and shocked with laboured noisy, moist and bubbly breathing. The pulse was thin and rapid, the rate being 170 a minute. There were dark brown stains on his mouth resembling dried altered blood. The percussion note of his chest was unimpaired and moist breath sounds were heard at all areas. All other systems appeared to be normal. On admission to the ward the child started retching and when held up by his feet he vomited about 1 oz (28 ml) of fresh bright red blood mixed with mucus. Immediate treatment was given to counteract the shock, warmth being applied externally. Gastric lavage was considered to be contraindicated and bland fluids were given in the shape of milk and iced water. His general condition improved and after a minimum (0.06 ml) of nepenthe at 10.15 p.m. he went to sleep. Four hours after admission the child again collapsed and appeared in extremis. The only positive findings were moist sounds in the chest and indications that the bronchial tree was full of fluid—presumably aspirated vomit. Intranasal oxygen was given, with slight improvement. The tablets in question were found to be radio opaque, and the neck, chest and abdomen were radiographed to determine whether any tablets could be seen in the stomach, bowel or respiratory passages. None was observed. Atropine 1/150 gr (0.43 mg) was given at 4.5 a.m. on Sept 10 and the child seemed slightly improved, but during the forenoon his temperature rose to 103 F (39.4 C). On the ground that an aspiration pneumonia was developing, a course of penicillin was started at 12 noon with the result that the temperature began to fall. During the day there was one bowel action, the stool being very dark brown and offensive. At 6 p.m. the child again collapsed and vomited a small quantity of reddish brown fluid. He was placed in an oxygen tent but he died at 1.30 a.m. on Sept 11—that is about 30 hours after taking the tablets.

Post-mortem Examination.—This was carried out 34 hours after death. There was no jaundice. The only positive finding externally was the presence of a blotchy rash on the abdominal wall. The trachea and bronchi were filled with thick greenish

and which, from its colour, obviously contained some of the pigmented coating of the tablets. Both lungs were congested, and in them there were areas of collapse and a few scattered small haemorrhages. There were a few areas of pneumonic consolidation in the lower lobe of the right lung. The stomach was empty. Under the peritoneum covering it some haemorrhages could be seen. The lining of the stomach was brown due to necrosis of the mucous membrane. The small bowel was normal, apart from an occasional area where the vessels were engorged. The large bowel was healthy and the contents of the bowel were stained black. The liver weighed 354 g and its capsule was smooth. The liver tissue was yellow, but there were no haemorrhagic areas. Cloudy swelling of the kidneys was present. The urine contained no bile and no urobilinogen or tyrosine crystals. The other organs were free from abnormality.

Histology—The liver showed cloudy swelling and some fatty degeneration but no necrosis. The gastric mucosa was necrotic to various depths and much of the necrotic lining had been shed. The whole wall was intensely congested and there were extensive areas of haemorrhage in all its layers. In the submucous layer accumulations of polymorphs could be seen. The sections of the lung showed a typical bronchopneumonia. Cloudy swelling of the pancreas and kidneys was noted.

Chemical Analysis—The liver and the bowel and its contents were analysed by the same method as was used in Case 1 with the following results: copper in liver, 2.88 mg; in bowel, 58 mg; manganese in liver 1.375 mg; in bowel, 3.56 mg.

Comment on Analysis

Quite a number of estimations of the normal copper content of the liver have been made and a few of those published have been summarized in Table I. Many of the

TABLE I—Normal Copper Content of Liver

Authority	Age	Copper per kg. of Liver	
		Fresh	Dry
Sheldon and Ramage (1931)	Foetus	mg (37.5)	mg 150
	Adult	(11.2)	45
Zizine and Briskis (1936)	Infants under 2 years	14.0	—
	Children 2-14 years	11.5	—
Jennings (1931)	Adult	(6.2)	24.9
	Infants to 6 weeks	(57.5)	230
Brückmann and Zondek (1939)	Adults	(8.65)	34.6
	Infants to 7 weeks	(66.2)	265
Ramage <i>et al.</i> (1933)	Children 3-12 years	(15.0)	60
	Adults	(6.9)	27.5
Kleinmann and Klink (1930)	Adults	(6.4)	25.4
	Adults	(5.5)	22.0
Herkel (1930)	Children 3-12 years	9.03	—
	Infants to 2 years	24.0	—
Tompsett (1935)	Adults	5.86	—
	Adults	—	—
Parker and Nash (1940)	Children 3-12 years	9.03	—
	Infants to 2 years	24.0	—
	Adults	5.86	—

figures are given in terms of milligrams or copper per kilogram of dried tissue. The human liver contains approximately 75% of water (Gordon and Rabinowitch, 1933) and on this basis the figures quoted for dry tissue have been converted to milligrams of copper per kilogram of fresh liver. These figures are shown in parenthesis in Table I. It is at once apparent that there is a considerable variability in the results. This is due to two factors: first, the series of estimations was in most cases too short to strike a reliable average, as in any biological variable there is considerable deviation on either side of the mean; and secondly, the copper content of the foetal and infant liver is considerably in excess of that of the adult (Sheldon and Ramage 1931). From the figures quoted the average for infants up to 2 years is 40.4 mg per kg. of fresh liver, for children from 2 to 14 years 11.8 mg per kg., and for adults 7.2 mg per kg.

In Table II some estimations of the manganese content of the liver are quoted. It seems that this element is present in fairly constant amounts, and that there is no storage in fat (Brückmann and Zondek, 1939). The average content per kilogram of fresh liver is 1.8 mg.

TABLE II—Normal Manganese Content of Liver

Authority	Manganese per kg. of Liver	
	Fresh	Dry
Brückmann and Zondek (1939)	(1.75 mg)	7.0 mg
Cited by Brückmann and Zondek	(2.1 mg)	8.4 mg
Ramage <i>et al.</i> (1933)	1.75 mg	—
Richards (1930)	1.70 mg	—
Reiman and Minot (1920)	—	—

Table III shows the content of manganese and copper per kilogram of fresh liver in the two cases under consideration. There seems to be no parallel between the

TABLE III—Manganese and Copper Content of Liver in Cases 1 and 2

	Liver Weight	Copper per kg. of Liver	Manganese per kg. of Liver
Case 1	510 g	21.9 mg	8.2 mg
2	354 g	8.1 mg	3.9 mg

two. In Case 1 the liver contains about twice the amount of copper expected, and in Case 2 only a fifth of the normal average. In Case 1 the manganese in the liver is over four times the normal, while in Case 2 it is only twice. No reasonable conclusions regarding the passage of the absorbed copper to the liver can be drawn, because of the relatively small amounts ingested and the variability in the normal content in young children. In both instances the manganese content was substantially increased, which suggests that, as the basic figure is more constant, this element tends to pass to the liver.

Animal Experiments

In order to determine with certainty which of the ingredients of the preparation in question was responsible for the death of these two children, a number of animal feeding experiments were undertaken. Guinea-pigs and cats were used. In the first instance six pairs of guinea-pigs were treated with the tablets. One pair served as controls and were given 6 ml of water only. The remainder were dealt with in pairs with 5, 4, 3, 2, and 1 tablet respectively. Those given two tablets at 3 p.m. one day were all found dead next day at 9.30 a.m. The post-mortem findings were similar in all cases. The stomach showed a bluish-green patch on the greater curvature, and was distended with granular coffee-ground material heavily stained with fresh blood. The mucosa was brown and necrotic, and patches of it had been shed. Haemorrhages could be seen with the naked eye in the stomach wall. The upper part of the small bowel was injected and the contents were blood-stained. The large bowel and its contents were normal and the animals did not suffer from diarrhoea. The liver appeared normal and no abnormalities, apart from occasional haemorrhages on the lungs and pericardium, were noted elsewhere.

Histological examination of the stomach showed necrosis of the mucous membrane to varying depths, with detachment of the more superficial layers. The vessels were engorged and haemorrhages could be seen in the submucous and muscular layers. "Polymorph" infiltration of the submucosa was noted. No wholesale necrosis was seen in the sections of the liver, the commonest appearance being cloudy swelling. Some vacuolation of the cells was not uncommon, and this was more in evidence in those animals given the larger doses. Here the cytoplasm appeared granular and fragmentary, and sometimes the cell contained a nucleus isolated in a large vacuole surrounded by an intact cell membrane. These areas were irregularly scattered and did not bear any special relation to the portal canals. "Polymorph" accumulations in the liver sinuses were not uncommon, but the groups usually

amounted to no more than a half-dozen cells. No significant histological changes were observed in any of the other tissues.

The two controls and the two guinea-pigs given one tablet each remained apparently unaffected. One control and one of the other animals died later from bronchopneumonia. All four animals were dissected, and no abnormality was discovered in the gastro-intestinal tract.

Two cats were each given five tablets, and within a short time they became ill and vomited blood. One of the cats was killed 4½ hours later. The other cat survived but was ill for several days. It refused food, had no energy, and its coat was ragged. It had apparently completely recovered 18 days later when it was destroyed. The post-mortem examination of the first cat revealed naked-eye and microscopical changes in the stomach identical with those found in the guinea-pigs. All the other organs, including the liver, were normal. The second cat appeared to be perfectly healthy at necropsy and there was no histological abnormality of the stomach. Sections of the liver, however, showed changes similar to those seen in the guinea-pigs given the heavier dosage. Many areas looked healthy, while in others the cells were in various stages of degeneration up to complete necrosis. There were no large areas of necrosis, but rather small nests of cells here and there surrounded by healthy liver tissue. No regenerative processes were seen.

At this stage of the investigation it was apparent that when a certain dose of this preparation was exceeded it was relatively lethal to cats and guinea-pigs. To determine which ingredient was the noxious one, it was decided to administer them separately to a further batch of animals. To begin with, ferrous sulphate was used alone. This was given to four pairs of guinea-pigs in doses of 3 gr (0.2 g) each to the first pair, 6 gr (0.4 g) to the second, 9 gr (0.6 g) to the third, and 12 gr (0.8 g) to the fourth. One of the guinea-pigs given 3 gr died in 5 hours, the other survived, as did the pair given 6 gr, while those given 9 and 12 gr died overnight. The post-mortem findings were identical to those observed in the guinea-pigs previously treated with the proprietary tablets. The animal killed by 3 gr of ferrous sulphate weighed only 210 g while its mate weighed 445 g, the pair given 6 gr weighed 675 and 770 g. On considering those guinea-pigs killed by the smaller doses we find that, on an average, 1 gr (0.065 g) of ferrous sulphate per 64 g body weight will prove fatal (Table IV).

TABLE IV

Weight of Guinea pig	Dose of Ferrous Sulphate	Guinea pig Weight per Grain of Ferrous Sulphate
416 g	6 gr (0.4 g)	69 g
355 g	6 gr (0.4 g)	59 g
210 g	3 gr (0.2 g)	70 g
535 g	9 gr (0.6 g)	60 g
560 g	9 gr (0.6 g)	62 g
Mean		64

The fact that the ferrous sulphate alone had the same effect and produced pathological changes identical with those occasioned by the proprietary tablets suggests strongly that the iron salt is the noxious ingredient. It was therefore decided to give six fresh guinea-pigs manganese sulphate and copper sulphate together. The proprietary tablets contain 1/75 gr (0.87 mg) of these salts for each grain of ferrous sulphate, and it was found that about 1 gr of ferrous sulphate per 64 g body weight of guinea-pig would prove fatal. The first pair were given 1/75 gr of the manganese and copper salts per 64 g body weight, the second pair double that amount, and the third pair a

triple dose. This treatment had no effect of any sort on the guinea-pigs. It would appear, therefore, that the children and the experimental animals died from acute ferrous sulphate poisoning.

Conclusions

The proprietary preparation in question is widely used therapeutically and is generally regarded as being quite innocuous. This may be true in ordinary doses, but the two cases described and the results of the animal experiments clearly show that in very large doses this preparation may be highly dangerous. It is clear that these are cases of acute ferrous sulphate poisoning. This salt, in contact with the gastric juice, would be converted into the chloride which has a considerable irritant action. This accounts for the acute haemorrhagic gastritis found in the children and in the animals. The remarkable feature of Case 1 was the extreme liver damage found. We failed to produce comparable lesions in the experimental animals. Of course, in their case death occurred quickly, while the elder boy lived for 53 hours after taking the tablets. The allowed time for considerable toxic absorption from the damaged tissues of the stomach, and this alone may have been sufficient to produce the degree of liver destruction found. The younger boy lived for 30 hours, and in his case the liver damage was not nearly so great. He died from an aspiration pneumonia, and had he not contracted it he might well have recovered. The quantities of copper and manganese taken were too minute to have any toxic effect.

Summary

The toxicology of the salts of iron, copper, and manganese is briefly reviewed.

Two cases of fatal acute poisoning due to a proprietary preparation containing ferrous sulphate, manganese sulphate and copper sulphate are described.

The results of a chemical analysis of the liver and of the bowel and its contents are given in each case.

A short series of animal feeding experiments is described proving that the ferrous sulphate is the noxious ingredient in the preparation concerned.

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AN OUTBREAK OF DIPHTHERIA IN A HIGHLY IMMUNIZED COMMUNITY

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The outbreak described below is considered worthy of record because methods of immunization against diphtheria and of maintenance of the immunized state are still in the developmental stage, and anything which can throw light on the efficiency of our present methods is of value. One important point about which there still seems to be some disagreement is the value of the Schick test in the field as an indication of immunity. The amount of circulating antitoxin in the blood is considered to be a more accurate indication, but this investigation is impracticable for general application. The real measure of protection against diphtheria would probably be regarded as the rapidity and degree of response of the protective body mechanism to the toxins of the organism, it having already been sensitized by previous immunizing injections.

It is clear that immunization by generally accepted methods does not in every case necessarily protect from a sharp attack of diphtheria. It is also clear that diphtheria of at least moderate severity can occur in a Schick-negative person. In this event it could not be guaranteed that death would not occur if circumstances were unfavourable. The chief points brought out in the present outbreak are: (1) The possibility of an alarming outbreak of diphtheria in a highly immunized community (94% previously immunized, 80% Schick-negative). (2) The failure of previous immunization to protect against a severe attack in certain cases. (3) The occurrence of a high proportion of cases among Schick-negative reactors.

Description of Outbreak

The institution under consideration is a modern private day school for girls of all ages, run on up-to-date lines with good hygienic facilities. The buildings are airy, on two floors, and there is no overcrowding. The children come from a number of adjoining districts. The school has three divisions—senior, junior, and infants. Among the infants are a few small boys. The three divisions are mainly separate, but there is a small amount of mixing between the senior and junior schools in the main building. The infants' department is situated in a separate building which was formerly used for residential purposes, and, with the exception of a few children who stay for midday lunch, the infants do not mix with the other divisions. Dinners are not provided at the school, but about 20% of the children bring midday lunch and mix in one room during the lunch hour. The approximate numbers in the divisions are: seniors, 160, juniors, 70, infants, 100. The teaching staff numbers 15.

First Phase

The school was closed for half-term holiday from March 1 to 5 inclusive. On the 3rd information was received from an adjoining district that a child (Case 2) attending the senior school had been removed to hospital with diphtheria. Owing to the school being closed it was not possible to inspect the children in school, but a list of class contacts was obtained and the names were telephoned to the various districts on the same day. As a result of this information two more cases (Case 1 and Case 4) from the same class were discovered in an adjoining area. As soon as the school was reopened on March 6 all the children were inspected and swabs were taken from class contacts

and from any children showing the slightest suspicion of a pathological condition in the nose or throat. The number of children swabbed amounted to about 10% of those attending school, and all these results were negative. On this and ensuing days lists were prepared of children absent from school, and these were circulated to the medical officers of health of the districts where the children lived. This proved a very useful measure in the recognition of doubtful or missed cases.

The position on March 6 was that all the children attending school were well, and so far as was known they had not been in contact with a possible case for six days. In view of the fact that the great majority of the children (94%) gave a history of immunization, there appeared to be no urgent need for anything but continued observation at this stage.

In the meantime home inquiries brought to light several other pupils who had sickened during the holidays. The total number of cases belonging to this phase was eight (see Table I). Seven of these were senior girls and one was a junior girl. The infants' school was not affected. Seven of the cases became ill during the holiday week-end between Feb 27 and March 3. One of the cases (Case 1) developed what was apparently a mild tonsillitis on Feb 22 and this was followed by heavy nasal diphtheritic infection. This was the first case in point of time.

Second Phase

On Sunday, March 24, notice was received that a further case of diphtheria (Case 9) had occurred in one of the senior classes (Form IV) which had been involved in the previous outbreak. The date of onset in this case was given as March 22. This was 22 days after any of the previous cases had attended school. On March 25 a case (No. 10) was reported from another senior class (Form III) which had been previously affected. On the same day the whole school was inspected and Schick testing was carried out in the two classes involved. In the meantime arrangements were made to obtain the parents' consent for Schick testing and combined active and passive immunization where considered necessary for the whole school.

On March 26, with the exception of six objectors, the whole of the remaining school-children and staff were Schick-tested. Controls were used for the staff only. The intention was to give combined active and passive immunization to Schick-positives only, but as it was not considered justifiable to wait longer than 24 hours before adopting this treatment an early reading was taken, and this meant the inclusion of a considerable number of children with doubtful reactions among those who received immunization. Fifty-three per cent of the children had this treatment, which consisted of the injection of 0.3 ml of APT into the deltoid in the left arm and 500 units of diphtheria antitoxin similarly into the right arm. Six Schick-positive members of the staff were given 1 ml of TAF instead of APT. A Schick reading of the children after an interval of five days showed that actually only 20% were positive.

During the ensuing days throat and nasal swabs were taken from the whole school, including staff. On March 26 four more children went down, two of whom were in the junior school, but the infants' division was clear. The total number of carriers found without symptoms or signs was eight. Five children had positive throats only, two had a positive nose only, and the other had a positive nose and throat. A type report was available for seven out of the eight carriers, and all of these were group 1. Four carriers were in the senior division, one in the junior, and three in the infants (see Table III). Naturally, all of these

children were excluded from school. For various reasons general swabbing was not completed until April 6.

The school broke up for Easter on April 11 and four further cases were reported during the holidays. One case (No. 15) developed on April 9, 14 days after she had received 500 units of antitoxin and 0.3 ml of APT. Another case (No. 18) was taken ill on April 16, 21 days after similar treatment. The other two (Cases 16 and 17) were Schick-negative children who had not received any further injections, and they developed their illness on April 9 and 15 respectively. The number of clinical cases associated with the second phase of the outbreak now totalled 10 (see Table II).

During the week before May 2, the date on which the school was due to reopen, a further complete swabbing of

immunized, the degree of virulence must have been very high. The development of symptoms and membrane was in a number of cases extremely rapid. The virulence was such that a guinea-pig was killed in 24 hours. At some previous time all except two, or possibly three, of the 18 cases had received immunization which was probably adequate, and at least four were Schick-negative just before the onset of the illness. This probably accounts for the fact that there were no deaths. The state of immunization of the children was comparatively good, 94% having been immunized at some time previous to 1946. This was reflected in the Schick-negative rate, which amounted to 80%.

Analysis of the cases shows that three occurred among 23 children who had never been immunized (a case rate of

TABLE I—Cases of Diphtheria First Phase

Case	Age	Form	Date of Immunization	Prophylactic Used	No of Injections	Schick Test	Date of Onset	Date Last in School	Remarks
1	15	IV Sen	1940	Not known	2	Not done	22/2/46	22/2/46	Mild tonsillitis and heavy nasal infection
2	15	IV Sen	1937	T A F	3		27/2/46	28/2/46	Severe
3	14	III Sen	1942	Not known	3		2/3/46	28/2/46	Mild slept with Case 2
4	15	IV Sen	1938	T A F	3		3/3/46	28/2/46	Severe
5	15	III Sen	1941	APT	2		3/3/46	28/2/46	Mild
6	14	III Sen	1941		2		1/3/46	28/2/46	Severe
7	8	Prep I Jun	1941		2		2/3/46	28/2/46	Moderate
8	12	I Sen	1941		2				Mild

TABLE II—Cases of Diphtheria Second Phase

Case	Age	Form	Date of Immunization	Prophylactic Used	No of Injections	Schick Test	Date of Onset	Date Last in School	Remarks
9	15	IV Sen	Not done	—	—	Not done	23/3/46	22/3/46	Severe
10	14	III Sen	1940	APT	2	Neg 26/3/46	23/3/46	22/3/46	Mild
11	13	II Sen	1941	APT	2	Slight pos 26/3/46	26/3/46	26/3/46	Moderate
12	12	I Sen	1941	Not known	2	Pos 26/3/46	26/3/46	26/3/46	Severe
13	10	Prep I Jun	1944	APT	2	Neg 26/3/46	26/3/46	26/3/46	Mild
14	9	Prep II Jun	1935	APT	2	Pos 26/3/46	9/4/46	10/4/46	Moderate
15	14	III Sen	1942		2	Neg 26/3/46	9/4/46	9/4/46	Mild
16	12	I Sen	1941	Not known	2	Neg 26/3/46	15/4/46	10/4/46	Very mild (not typical)
17	12	I Sen	1941	Not known	2	Neg 26/3/46	16/4/46	10/4/46	
18	14	III Sen	1939	Not known	2	Pos 26/3/46			

TABLE III—Diphtheria Carriers

Case	Age	Form	Date of Immunization	Prophylactic Used	No of Injections	Schick Test	Date Last in School	Remarks
A	17	V Sen	1934	T A F	3	Neg 26/3/46	19/3/46	Throat negative nose positive
B	14	III Sen	1941	APT	2	Neg 26/3/46	28/3/46	Throat positive nose negative
C	8	Prep I	1942	APT	2	Neg 26/3/46	5/4/46	
D	6	Infant B	1942		2	Neg 11/3/46	5/4/46	Throat negative nose positive
E	13	II Sen	1943	APT	2	Neg 26/3/46	5/4/46	Throat positive nose positive
F	13	II Sen	1943		2	Neg 26/3/46	8/4/46	Throat positive nose negative
G	8	Inf trans	1942		2	Neg 26/3/46	8/4/46	
H	6	Infant A	1943		2	Neg 26/3/46	8/4/46	

all the children and staff was carried out at the school by special appointment, the results were negative. At the same time a further 0.5 ml of APT was given to children who had been Schick-positive and a boosting dose of 0.5 ml was given to Schick-negatives. No further case occurred after April 16.

Discussion

A notable feature of the first phase was the explosive nature of the outbreak. Reviewing the cases in retrospect, it will be seen that one patient (Case 1) became ill about a week before the others, her illness having started on Feb. 22, the date she was last at school. It may be that the closing of the school for the half-term holiday period was instrumental in preventing further spread during this phase.

The reason why the infection remained quiescent for some three weeks and then flared up again is not clear. Where typing was carried out (12 cases and 7 carriers) the organism was of the gravis type. It is therefore a fair assumption that this type of organism was responsible for the whole occurrence. Judging by the severity of the illness in some of the children who had been previously

immunized, the degree of virulence must have been very high. The development of symptoms and membrane was in a number of cases extremely rapid. The virulence was such that a guinea-pig was killed in 24 hours. At some previous time all except two, or possibly three, of the 18 cases had received immunization which was probably adequate, and at least four were Schick-negative just before the onset of the illness. This probably accounts for the fact that there were no deaths. The state of immunization of the children was comparatively good, 94% having been immunized at some time previous to 1946. This was reflected in the Schick-negative rate, which amounted to 80%.

Analysis of the cases shows that three occurred among 23 children who had never been immunized (a case rate of 13%), while 15 occurred among 299 immunized children (a case rate of 5%). One case included in the first group (a case rate of 5%) received one injection more than 10 years before, and is not regarded as having been immunized. Dividing the immunized children into two groups—those immunized within five years and those before that period—it was found that the percentage of cases was approximately equal. It appeared, however, that with regard to clinical severity those patients more recently immunized had some advantage over the others. Bearing in mind that the numbers involved are small, the following table is given for what it is worth.

	Severe	Moderate	Mild
Cases immunized within five years	2 (20%)	3 (30%)	5 (50%)
Cases immunized longer than five years	2 (40%)	1 (20%)	2 (40%)
Cases not immunized	2 (66%)	1 (33%)	0

There was an anomaly in the infants' division. Taken by itself, although the immunization rate was 96% the Schick-negative rate was only 69%. It is rather striking that no cases occurred in this division, although there was evidence of a carrier condition in three cases. It is possible that there is a more rapid response of the protective mechanism to a secondary stimulus in the younger age groups.

The second phase of the outbreak was dealt with in general on the lines advocated by Fulton, Taylor, Wells, and Wilson (1941), with the exception that combined active and passive immunization was confined in the main to Schick-positive reactors. Four cases developed after this procedure, two were Schick-positives (Cases 15 and 18) who had received 500 units of antitoxin and 0.3 ml of APT 14 and 21 days, respectively, before the onset of their illness, and the other two (Cases 16 and 17) were Schick-negative children. In view of the fact that four cases went down in the 24 hours intervening between Schick testing and readmission, it is clear that it is inadvisable to wait even 24 hours for Schick-test results before carrying out immunizing measures in the face of virulent infection. Furthermore, four of the cases were Schick-negative reactors. The repeat swabbing and boosting doses to Schick-negatives before readmission after the Easter holidays were carried out as additional safety measures. A difference of opinion exists as to the value of general swabbing, and it is true that most of the carriers gave only one positive result, although a few were more persistent.

In this district, where the average incidence of diphtheria is low and the diphtheria carrier is almost non-existent, it has been the policy to swab close contacts and to take measures to restrict their movements when positive. In an episode such as this it would be difficult to ignore the possible danger to others from unknown carriers of virulent organisms and universal swabbing, with full recognition of its limitations, should be employed. It should, however, be completed in the shortest possible time so that all infected children, whether carriers or cases, may be excluded without delay.

It is clear from this experience that even a highly immunized community as judged by present-day standards is not entirely safe against a very virulent type of organism. It is also clear that immunization is of limited value unless it is maintained by boosting doses at regular intervals during the whole of school life. Opinions will differ as to how much of this work is necessary or practicable in order to reach the desired end. Parents do not take kindly to over-frequent injections for their children, and after infancy the frequency of sharp reactions with APT has a bad propaganda value for the whole scheme of immunization. Even TAF is not without its quota of discomfort. The Schick test is not reliable enough to justify the omission of immunizing injections in negative cases, but serves a useful purpose in measuring the conversion rate of various batches of antigen. In the present state of our knowledge it is suggested that the normal immunizing course in infancy should be followed by a boosting dose of selected antigen every three years irrespective of Schick-test readings. The antigen selected and the dose given will be a matter of individual choice.

Summary

An outbreak of diphtheria is described which occurred in a day school where 94% of the children had a history of previous immunization and 80% were Schick-negative.

The necessity for repeated doses of antigen during the whole of school life is emphasized. The interval suggested between doses is three years.

The limited value of the Schick test, as a measure of immunity is pointed out.

I should like to express my gratitude to Dr. Stone, of the E.M.S. Laboratory, Epsom, for her most valuable help in carrying out the bacteriological work, and to the medical officers of health of adjoining districts—Dr. Ellis, Dr. Iye, Dr. Johns, and Dr. MacIntyre—for their enthusiastic co-operation.

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FAUCIAL DIPHTHERIA AMONG ARMY PERSONNEL IN BELGIUM, 1945

AN ANALYSIS OF 122 CASES

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The purpose of this paper is to discuss certain aspects of the diagnosis and management of diphtheria in circumstances a little different from those usually obtaining in civil life. It was known before the invasion of Europe that diphtheria was prevalent in German-occupied Belgium and Holland, and it was recognized that when this part of the Continent was reached the disease might become a major medical problem. Consequently, compulsory lectures and demonstrations were arranged for medical officers of adjacent units. Prompt administration of serum was stressed and the admission to hospital of doubtful cases was encouraged. It followed that a very large number of patients who in normal circumstances would never have got beyond the stage of ambulant treatment were admitted to hospital for a brief period and had a thorough bacteriological investigation of their throats.

The Investigation

Bacteriology.—The absence of facilities for testing the virulence of organisms limited the scope of the investigation, and the bacteriological diagnosis has depended upon assessments from the point of view of morphology, cultural characteristics, and biochemical reactions of the organisms. The following bacteriological technique was employed. Preliminary throat swabs were plated on (1) tellurite plates (Hoyle's modification)—it is better to avoid human blood in this preparation as it is less inhibitory to organisms other than those of diphtheria, (2) blood-agar plates, 5% blood, (3) Loeffler slopes. A smear was stained with methylene blue and examined for Vincent's organisms. No attempt was made to diagnose diphtheria on the direct smears. The next day a combined smear was made from the Loeffler slope and the blood-agar plate and stained with Albert's stain. The blood-agar was also examined for haemolytic streptococci and the Hoyle plates were inspected for growth. If the slide was positive a diagnosis of morphological diphtheria was made and the result was immediately sent to the ward. The Loeffler slope which showed a morphological diphtheria bacillus was retained. If there was no growth on tellurite in 48 hours the Loeffler slope was subcultured to another tellurite plate. The following day the Hoyle plates were examined. Colonies were studied macroscopically and microscopically. All those showing a rod form were subcultured to a medium which was found to have an advantage over a Loeffler slope.

The medium consisted of 10% serum (animal sera were better than human), 100 ml of agar, 0.50 ml of neutral red as supplied for MacConkey's medium, and 1% saccharose. The last three were heated together until the agar was melted, and on cooling to 45.5°C the serum was added and it was then poured into Petri dishes. This medium was found to be of more value than subculturing back to Loeffler slopes, for the following reasons: (1) Colonies on this medium could be viewed and easily manipulated. (2) Frequently when using Loeffler slopes cocci were found as a contaminant on subculturing.

from Hoyle plates (3) Single colonies could be picked off with ease and put into saccharose Hiss serum water (4) With experience the saccharose and non-saccharose fermenters could be differentiated immediately (5) The morphology, altered by growth on tellurite, was immediately restored on the serum-saccharose medium The growth on the above medium was then subcultured to glucose and starch serum-water media Haemolysis was studied by subculturing on to 5% blood-agar plates

The diagnosis as to type was based on colonial appearances on tellurite plates, morphological appearance of organisms from a serum-sucrose medium, sugar reactions, presence or otherwise of haemolysis on blood agar, presence or absence of granularity in fluid media. Clearance swabs were plated direct on to tellurite and examined in 48 hours. If growth had occurred sugar reactions were determined.

Ward Procedure—Throat swabs were taken on admission and a preliminary laboratory diagnosis was obtainable by the following morning. This was confirmed later by subcultures and sugar reactions. Serum was given on clinical evidence, and where clinical and laboratory findings were at variance swabbing was repeated—often two or three times. Penicillin was being administered in the form of pastilles over a period of five days. It was not given until the diagnosis was certain, and it was considered desirable to wait five days after its last administration before starting the bacteriological investigation of the throat. As a result, clearance swabbing was not begun until the fifteenth to eighteenth day. Patients were swabbed—both nose and throat—on three consecutive days each week, until three negative swabs were obtained. Half of the cases clearing early had an additional swab or swabs beyond those necessary for clearance.

Material—The period covered was from Jan 1 to May 30, 1945, and records of 122 cases were available, 17 of which were not direct admissions. The latter are included, as they were observed for development of circulatory and neurological complications. In only one of these was the type of organism recorded, and they were excluded from investigations concerning duration of symptoms before admission, appearance of throat on admission, serum dosage, and, with the one exception, type of organism. Owing to the unexpected disbandment of the hospital a number of records were lost. Complete records of throat examinations were available only up to the end of April (Table I), but personal records of the actual cases of

TABLE I—Throat swabs January to April, 1945

Diphtheria	108
Vincent's angina	39
Haemolytic streptococci	985
Nil	33
Total	1,165

diphtheria were saved. The records of five cases were also lost, and these are incomplete as regards duration of symptoms, throat appearance, serum, and complications, but are available for type and, in all but one, throat clearance.

TABLE II

	Duration in Days							
	Less than 1	1-2	2-3	3-4	4-5	5-6	6-7	Total
No of cases	38	29	11	8	1	2	1	90

The result has been some differences in the total number of cases in the various analyses, but the manner of their omission excludes the possible introduction of bias.

Types of Diphtheria—Analysis of the first four months (Jan to April, 1945) showed the following types: *mitis* 49, *intermedius* 9, *gravis* 34, morphological 16, total 108.

The figures shown (Table II) regarding the *duration of symptoms* before admission speak well for the effectiveness of the lecture demonstrations.

Clinical Diagnosis

It became obvious that membrane formation as a basis for clinical diagnosis was relatively useless. Many cases were seen too early for the formation of true membrane, and five presented with no exudate at all, but developed it the following day. All of these five were seen on their first day. True membrane was found in only 27 cases, the remainder having exudate—follicular to confluent in type—readily wiped off by the swab (Table III).

TABLE III

	Exudate			True Membrane	Total
	None	Follicular	Confluent		
No. of cases	5	19	39	27	90
Average duration of symptoms on admission (days)	1	1.9	2.0	2.5	

Marked oedema of uvula, palate, and tonsillar regions was observed in 41 cases, and faucial oedema came to be considered of importance diagnostically—it being relatively rarely observed in the ordinary streptococcal throat. A very characteristic presenting type was the "two day quinsy", the appearance was due to marked oedema in the region of the tonsil—membrane or exudate being hidden behind the swollen mass. This was regarded as practically diagnostic of toxic diphtheria.

To summarize, the diagnostic criteria were as follows. Cases with membrane and the "two-day quinsy" cases were considered as definite diphtheria. Those showing confluent exudate were treated as diphtheria until proved otherwise by repeatedly negative swabs. Follicular exudate was viewed with suspicion, and the presence of oedema of the fauces was taken as strongly suggestive even in the absence of exudate.

Hypertoxic Cases—Seven cases showed marked toxæmia on admission. Four were of the "bullneck" variety, with oedema of the neck extending down over the clavicles, and one of these developed oedema of the glottis, requiring tracheotomy. All those observed long enough for its development—five—showed late neurological complications. None gave any evidence of serious cardiac involvement. The duration of symptoms before admission was 2-3 days in one case, 1-2 days in 4 cases, and less than 1 day in 2 cases.

Circulatory Complications—No serious cardiac complications were seen, and what changes were observed were very difficult to assess. Two cases developed extrasystoles for a short period in their third week. Four cases showed a pulse rate persistently below 50 per minute, but as they were all highly trained Commandos it was thought that this was a convalescence bradycardia. Four cases had pulse rates over 100 per minute while at rest, but at least two of them were very nervous individuals and one had been in hospital previously with a "nervous heart". Six cases showed tachycardia on leaving their beds for the first time. Seven cases had systolic blood pressures below 100—two on admission, the remainder at the end of the third week.

Neurological Complications

Out of a total of 101 cases observed long enough to develop neurological complications, 31 were reported as having done so. Five of these were doubtful, leaving 26 definite cases. The majority of these progressed no further than paralysis of the palate, which in many instances was very transient—lasting no longer than a week. Seven cases

had later involvement of the pharynx and limbs. Only two cases were recorded with accommodation paralysis, but, as it was never specifically inquired for, minor degrees were probably missed.

The average time of onset of paresis was palate 26, accommodation 34, pharynx 42, limbs 48 days. No respiratory or trunk paresis was observed, but cases with widespread involvement of limbs were evacuated and may have developed it subsequently. Of 32 cases showing faucial oedema 46.9% developed neurological complications as compared with 19.6% in 46 without oedema, out of a total of 78 cases whose records were complete in both respects. This difference gives a χ^2 of 5.39 and $0.05 > P > 0.02$, and indicates the value of faucial oedema is a diagnostic sign.

Toxaemia seems to be the main factor influencing the development of neurological complications (Tables IV-VI) in that in this series they appear to be relatively unaffected by duration of symptoms prior to admission, by early clearance of the throat, and by the administration of serum.

TABLE IV

Clinical Signs of Severity	No. of Cases	Proportion Complicated
Nil	46	19.6%
Faucial oedema	27	37.1%
Bullneck	5	100%

TABLE V

Day of Disease when Admitted	No. of Cases	Proportion Complicated
1st	29	27.6%
2nd	27	33.3%
3rd	10	30.0%
4th and over	9	33.3%

TABLE VI

Throat Clear by 3rd Week	No. of Cases	Proportion Complicated
Yes	41	35.5%
No	26	26.9%

Serum at first sight appears, if anything, to promote the development of neurological complications, but the fact that the more toxic cases received more serum probably accounts for the discrepancy (Table VII).

TABLE VII

Serum in Units	No. of Cases	Proportion Showing Signs of Toxaemia	Proportion Complicated
0-48 000	24	33%	25%
49-80 000	36	39%	25%
81 000 -	18	56%	50%

As would be expected, gravis infections showed a higher percentage of cases with neurological involvement. A comparison of gravis with all other types gave $\chi^2=7.42$ and $P<0.01$ (Table VIII).

TABLE VIII

Type	No. of Cases	Proportion Complicated
Gravis	27	48%
Inter-medius	8	13%
Mitis	40	20%
Morphological	10	10%

Treatment and Management

Serum—Serum was administered as soon as the clinical diagnosis was made and was repeated next day if no improvement had occurred. An attempt was made to give the full dosage as a single injection, the degree of toxaemia being assessed on the first examination (Table IX). The

intravenous route was used only with a serum dosage of 100,000 units or over. Hypertoxic cases received 100,000 units intravenously and 60,000 to 100,000 units intramuscularly. In addition they received penicillin intramuscularly—20,000 units 3-hourly up to a total dosage of at least 1,000,000 units. They also received penicillin

TABLE IX—Distribution of Serum Dosage

Dosage	No. of Cases
0-24 000	4
25 000-48 000	26
49 000-72 000	31
73 000-96 000	27
97 000-120 000	4
121 000-144 000	1
145 000-168 000	3
169 000-192 000	3
193 000-216 000	0
217 000-240 000	1
Total	100

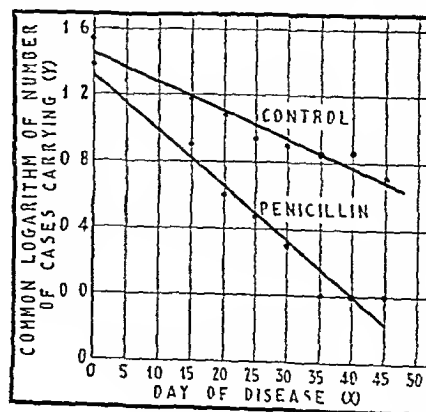
pastilles by mouth. All patients were nursed flat for the first 21 days, or longer if complications intervened. Strict recumbency was not insisted on, they were allowed one pillow and were permitted to make themselves comfortable in bed.

Penicillin Pastilles—Penicillin pastilles were prepared by the method of Martín (1944) with 500 units per pastille. They were available relatively late. The decision as to which case was to receive penicillin was decided by the toss of a coin—thus ensuring random selection. The only exceptions to this procedure were four of the hypertoxic cases. A total dosage of 200 pastilles over a period of five days was aimed at. The pastilles were held in the side of the mouth without sucking and continuously renewed. Twenty-four of the penicillin cases and 34 of the control series had been observed up to the 45th day and the number still with positive throats at 5-day intervals was ascertained. Examination of Table X shows that the num-

TABLE X

Day	1	15	20	25	30	35	40	45
Penicillin	24	8	4	3	2	1	1	1
Control	34	15	12	9	8	7	7	5

bers fell off in geometric proportion, as would be expected from general considerations and from the work of Hartley and Martin (1919-20). Hence, taking the logarithm of these figures, we got two series, the relation of which to time could be quite adequately represented by straight lines.



(see Graph) Regression lines were calculated by the method of least squares, and gave the following formulae

Letting y = number carrying on any particular day
Letting x = the particular day

Penicillin $\log_{10} y = 1.3529 - 0.03391x$
Control $\log_{10} y = 1.4696 - 0.01765x$

The first figure to the right of the equation is a function purely of the number of cases in each group. The second figure is an estimate, in the form of a regression coefficient, of the logarithm of the rate of clearance of each particular group—a figure which varies from epidemic to epidemic. The difference between these two regression coefficients—0.01627—is an index of the difference in rate of clearance between the two groups. This figure can be shown to be highly significant statistically, its standard error being 0.003338, giving a "t" of 4.88 and a probability for 12 degrees of freedom which is less than 0.001. The figures compare favourably with the formula obtained by Hartley and Martin

$$\text{Log}_{10} y = 2.6002 - 0.0218 x$$

The statistical methods were derived from Fisher (1944), and Yates's correction for continuity was used throughout in the estimation of χ^2 .

Discussion

This epidemic has been described because it is felt that it is comparatively unusual in four points—namely, the short duration before admission, the large serum doses used, the age group covered, and the use of penicillin pastilles.

The short duration of symptoms before admission demonstrates the value of brief educational talks during epidemic periods. From the figures, prompt administration of an adequate dosage of serum does not appear to play any great part in preventing the development of palatal paresis, although it may limit the neurological involvement. On the other hand, it is felt that the low incidence and comparative triviality of the circulatory changes may be the result of the treatment. With regard to factors operating in the development of neurological complications this series is not ideal for studying the effects of duration of symptoms prior to admission, as the majority were seen on the first or second day. The fact that we are dealing with an adult population, presumably partially immune, is reflected in the difficulty of diagnosis of early cases. The comparatively late development of membrane in the partially immune has been pointed out by Neubauer (1943), who also noticed that exudate was readily wiped off without bleeding. That a number of cases later progressed to membrane formation indicates that the appearance of follicular and confluent exudate is a stage in the development of membrane. Pallor of mucous membrane was of little diagnostic use in this epidemic, as 40% had a concomitant streptococcal infection.

The series receiving penicillin was small, but the results are statistically quite definite, and it can be assumed that penicillin pastilles are effective in increasing the rate of clearance. A number of late carriers were also treated with penicillin pastilles. The impression was formed that it was much less effective in this type of case, but the numbers treated were too small to be certain of this.

Summary

An epidemic of diphtheria in adults has been described notable for the short duration of symptoms before admission. Difficulties of diagnosis have been discussed and the results of a short series of cases treated with penicillin have been given.

We are indebted to the Director of Medical Services for permission to publish this paper. We wish to thank Brig E. Bulmer, late R.A.M.C., and Lieut-Col W. Melville Arnott, R.A.M.C., for assistance, interest, and encouragement during the course of the investigation, and the nursing and medical staff—particularly Capt. Fitzpatrick, R.A.M.C.—for their thoroughness and care in dealing with the patients.

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PENICILLIN IN THE TREATMENT OF DIPHTHERIA

BY

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Diphtheria is one of the commonest causes of death among young children, and before the days of antitoxic serum it had a staggering mortality. Antitoxin has no doubt greatly reduced its mortality rate, nevertheless, it remains the most dangerous infectious disease to children. The sensitivity of *Corynebacterium diphtheriae* to penicillin is well known, but the therapeutic value of penicillin in diphtheria has not yet been ascertained.

Review of Literature

Christic and Preston (1946) reported two cases of malignant diphtheria with bull-neck treated with heavy doses of antitoxic serum and penicillin; one patient died and the other recovered. Richard J. Dodds (1946) reported 13 cases of diphtheria treated successfully with systemic penicillin in addition to normal doses of antitoxin. Ercoli, Lewis, and Moench (1945) reported experiments in which penicillin in a concentration of just over 1 unit per ml inhibited *C. diphtheriae* *in vitro*. They induced experimental bacteraemia in mice by intraperitoneal injection of *C. diphtheriae* mixed with mucin. Subsequent injections of penicillin or sulphadiazine overcame the bacteraemia. However, when toxin was injected subcutaneously into rabbits or guinea-pigs it could not be counteracted by penicillin. A small inoculum of bacilli injected into guinea-pigs produced a local lesion with toxæmia just like human infection. In such cases they found that penicillin had negligible action. These observers concluded that penicillin might be of slight benefit in the prophylaxis of exposed contacts but that it could have no appreciable value in the treatment of patients suffering from clinical diphtheria, for which antitoxin should be given without any delay.

Penicillin in the treatment of diphtheria carriers appears to have been tried successfully by Berman and Spitz (1945). They treated 10 diphtheria carriers with penicillin solution containing 500 units per ml four times daily. 1 ml of this solution was instilled into each nostril and 1 ml was sprayed into the throat with an atomizer. Within five days all reverted to a non-carrier state, whereas with a control group this took five to seven weeks. These observers believe that penicillin offers a quick and simple solution to the problem of diphtheria carriers. The fact that the organisms disappear quickly from the nasopharynx indicates that penicillin may be used as an adjunct in the treatment of clinical diphtheria. The replacement of antitoxin by penicillin, however, is not advocated.

It will be seen that there is no report of the use of penicillin without antitoxic serum in the treatment of clinical diphtheria. A trial of this nature is no doubt fraught with risk, as penicillin, although effective against *C. diphtheriae*, has no action on its toxin. The present study was undertaken with a view to ascertaining whether the drug can be used alone in place of the serum. The risk has been minimized by selecting early cases under the assumption that

the child can destroy and/or eliminate a certain amount of diphtheria toxin. A few moderately severe cases have also been treated, but we kept a very close watch on them for development of bad symptoms.

The following facts should be kept in mind when conducting a clinical trial of penicillin in diphtheria: (1) That the main cause of death in diphtheria is the injurious action of the powerful exotoxin secreted by *C. diphtheriae* on the circulatory and nervous systems, and that the therapeutic value of antitoxic serum is due to its ability to neutralize this exotoxin, on which penicillin has no direct effect. (2) That there are cases of diphtheria in which death is due to asphyxia caused by mechanical obstruction of the air passage by the diphtheritic pseudomembrane. Penicillin by exerting its lethal effect on *C. diphtheriae* may be able to check further formation and spread of such membranes when it is used early enough. (3) That the role of secondary respiratory infections in increasing the mortality in diphtheria is not insignificant, and penicillin may be a valuable therapeutic agent against such infections.

Method

For the sake of convenience the series was divided into four groups. Only penicillin was given in each case, the mode of administration in all cases being as follows:

A solution of a sodium salt of penicillin containing 100,000 units in 20 ml of sterile normal saline was used. Of this solution 2 ml (containing 10,000 units) was injected intramuscularly every three hours using a 2-ml syringe that had been sterilized by boiling, the penicillin solution being kept in a refrigerator. The time for stopping the penicillin injections was determined by the following factors: (1) the fall of temperature and pulse rate to normal level, (2) the disappearance of the pseudomembrane, and (3) three consecutive negative swab cultures taken daily. The minimum period of treatment with penicillin was four days and the maximum period seven teen days. It will be evident from the case reports that the injections of penicillin were continued longer than necessary. In many of the earlier cases penicillin was given even when the patch had disappeared and the throat swab had become bacteriologically negative. This was due to our ignorance about the dose necessarily effective in diphtheria. We were trying to cover a new field of clinical investigation, which we were afraid might be injurious to the patients. Hence, when treatment with penicillin was first started in August, 1945, the drug was given for a period probably longer than necessary, this was just to be on the safe side. Later it was found that there was no need to continue penicillin when the patch cleared up and the swab became negative.

Classification into Groups

Group I Early Cases, Bacteriologically Positive—There were 12 cases (8 females and 4 males), 11 were Hindus and 1 a Muslim, their ages varied from 8 months to 11 years. They had had fever and sore throat for two to six days. The temperature ranged from 99° to 104° F (37.2°–40° C) and the general condition was good. They had either a small patch on one or both tonsils or a moderate sized patch on one tonsil. Before starting penicillin injections throat and nasal swabs were taken and inoculated immediately on the spot into Dorset's egg medium or Loeffler's serum medium. Within 48 hours the temperature dropped to normal in seven cases and within three to six days in the rest. The patches cleared up completely within two to five days. The throat swabs became negative in three to seven days after treatment was started, the total dose of penicillin required varying from 390,000 to 510,000 units. The patients were kept in hospital for one to four weeks but had no complications so were discharged as cured and parents were asked to report every week if any complication occurred. One of the patients had an attack of non-diphtheritic sore throat about a week after discharge.

This was successfully treated with sulphonamides, and tonsillectomy was advised. No bad report was received from the remaining cases.

Group II Early Cases, Bacteriologically Negative but Clinically Diagnosed as Classical Diphtheria—There were eight such cases—all Hindu boys aged from 10 months to 6½ years. They came with a history of slight fever and cough of one to four days' duration. They had a small patch on one or both tonsils, a moderate-sized patch on one tonsil, or a small patch on one tonsil and another small patch on the uvula. The patches had all the characteristics of diphtheritic membrane, and so they were diagnosed as classical diphtheria. Their rectal temperature varied from 99° to 102° F (37.2° to 38.9° C) and their general condition was good. Before starting treatment throat and nasal swabs were inoculated into culture media. Within 72 hours the temperature dropped to normal except in one case where the temperature fell to normal on the sixth day. Within two to three days the patches cleared up completely. The throat and nasal swabs were negative from the beginning. Two patients who had received 480,000 and 560,000 units of penicillin were discharged at the request of their parents after a week's stay in hospital, and the parents were instructed to report if complications occurred at home. Another patient had had 480,000 units of penicillin when his parents took him away on risk bond. At the time of discharge he was doing well and there was no trace of a patch in the throat. The remaining cases had 320,000 and 400,000 units of penicillin and were discharged after two to four weeks.

Group III Moderately Severe Cases, Bacteriologically Positive—There were four of these cases—two Hindu boys aged 3 and 4 years and two Muslim girls aged 3. They had had a fever and sore throat for six or seven days. One had slight suction. Three had large patches on both tonsils and a small one on the uvula, one had small patches on both tonsils, with bleeding from the nose and enlarged cervical and maxillary lymph nodes. Two were slightly toxic. After taking nasal and throat swabs penicillin was started. Within three to six days the temperature fell to normal, with improvement of the pulse rate and disappearance of the patch. Throat swabs were negative in three days in two cases, in five days in one, and in six days in the other. They received 400,000, 480,000, 720,000, and 1,190,000 units of penicillin. They were kept under observation for four weeks without there being any complication and were then discharged as cured. No report of any complication has been received.

Group IV Moderately Severe Cases, Bacteriologically Negative but Clinically Diagnosed as Classical Diphtheria—In this group there were three cases—two boys and one girl, all were Hindus, their ages being 1, 2½, and 3 years. They came with a history of fever and sore throat of three to seven days' duration. They were slightly toxic, the temperature varying from 99° to 101° F (37.2° to 38.3° C). One had a moderate-sized patch on each tonsil; the second had a moderate-sized patch on the tonsils and uvula, hoarseness of voice, and slight difficulty in breathing, and the third had one moderate-sized patch on the left tonsil and another in the pharynx. The patches had all the typical characteristics of diphtheritic membranes. Throat and nasal swabs were inoculated before any treatment was started. Within one to three days the temperature came down to normal. The patches cleared up in two to three days. Suction and hoarseness of voice disappeared next day. The patients received 360,000, 365,000 and 400,000 units of penicillin. Two of them were kept in the hospital for four and five weeks without any complication and were then discharged as cured. The third stayed for

two weeks, and was reported to be keeping well a fortnight after discharge from hospital

Case Reports

Case 1—A female Hindu child aged 4 was admitted on Sept 5, 1945, with a history of fever and sore throat for six days. General condition fair. Temperature 99° F (37.2° C), pulse 120, respirations 24. Small patch on left tonsil and another on tip of uvula. Throat swab positive. Temperature fell to normal within 48 hours, patch cleared up within five days, swab became negative in seven days. Total dose of penicillin, 960,000 units. No complications. Discharged on Sept 17 at request of parents. No bad report received.

Case 2—A female Hindu child aged 1 was admitted on Sept 10, 1945, with a history of fever and sore throat for four days. General condition fair. Temperature 99° F, pulse 125, respirations 24. Tonsils congested and enlarged, patch on both tonsils. Throat swab positive. Temperature dropped to normal within 48 hours, patch cleared up in three days, swab became negative in five days. Total dose of penicillin, 560,000 units. No complications. Discharged on risk bond on Sept 17. No bad report received since.

Case 3—A male Hindu child aged 2½ was admitted on Sept 10, 1945, with a history of fever and sore throat for five days. General condition fair. Temperature 99° F, pulse 110, respirations 24. Tonsils enlarged, patch on left tonsil. Throat swab positive. Temperature fell to normal in 24 hours, patch cleared up in two days, swab became negative in three days. Penicillin was stopped on Sept 19. Total dose, 720,000 units. No complications. Discharged on Sept 21. Had an attack of non-diphtheritic sore throat, treated successfully with a sulphonamide and was advised to have tonsillectomy afterwards.

Case 4—A female Hindu child aged 10 was admitted on Nov 14, 1945, with history of fever and sore throat for two days. General condition fair. Temperature 102° F (38.9° C), pulse 135, respirations 32. Tonsils enlarged, patch on both tonsils. Throat swab positive. Temperature fell to normal within 36 hours, patch cleared up in two days, swab became negative in three days. Penicillin stopped on Nov 22. Total dose, 640,000 units. No complications. Discharged on Nov 23. No bad report received since.

Case 5—A female Muslim child aged 3 was admitted on March 27, 1946, with a history of fever and sore throat for six days and otorrhoea for two days. General condition fair. Temperature 102° F, pulse 126, respirations 30. Tonsils much enlarged, patch on both tonsils. Nose blocked with dry blood clot at the nares. Small furuncles in left external ear, which was discharging pus. Cervical lymph nodes enlarged. Throat swab positive, ear and nasal swabs negative. Temperature dropped to normal within three days, patch cleared up in four days, swab became negative in five days. Bleeding from nose stopped in two days. Penicillin was stopped on April 2. Total dose, 480,000 units. No complications. Discharged on April 24. Everything normal except slight discharge from left ear.

Case 6—A male Hindu child aged 10 months was admitted on Sept 10, 1945, with a history of fever and sore throat for two days. General condition fair. Temperature 100° F (37.8° C), pulse 130, respirations 30. Tonsils enlarged, one small patch on left tonsil and another on uvula. Throat swab negative. Temperature dropped to normal in 72 hours, patch cleared up in two days. On Sept 15, the day of discharge, his throat was clear. Total dose of penicillin, 480,000 units.

Case 7—A male Hindu child aged 6 was admitted on Sept 12, 1945, with a history of fever and sore throat for two days. General condition fair. Temperature 100° F, pulse 112, respirations 24. Tonsils enlarged, small patch on left tonsil. Throat swab negative. Temperature fell to normal within 72 hours, patch cleared up in three days. Penicillin stopped on Sept 19. Total dose, 560,000 units. No complications. Discharged on Sept 21 at request of parents. No bad report received since discharge.

Case 8—A male Hindu child aged 1½ was admitted on Nov 21, 1945, with a history of fever and sore throat for one day. General condition fair. Temperature 100° F, pulse

134, respirations 32. Tonsils enlarged, small patch on both tonsils. Throat swab negative. Temperature fell to normal within three days, patch cleared up in two days. Penicillin stopped on Nov 27. Total dose, 480,000 units. No complications. Discharged on Nov 28 at request of parents. No bad report received since discharge.

Case 9—A male Hindu child aged 6½ was admitted on April 22, 1946, with a history of fever and sore throat for one day. General condition fair. Temperature 102° F, pulse 120, respirations 26. Small patch on both tonsils. A few rhonchi in lungs. Throat swab negative. Temperature dropped to normal in three days, patch cleared up in three days. Penicillin stopped on April 27. Total dose, 400,000 units. No complications. Discharged on May 4. No bad reports received since.

Case 10—A male Hindu child aged 1 year was admitted on April 24, 1946, with a history of fever and sore throat for four days. General condition fair. Temperature 100° F, pulse 135, respirations 30. Patch on left tonsil. Throat swab negative. Temperature dropped to normal within three days, patch cleared up in three days. Penicillin stopped on April 28. Total dose, 320,000 units. No complications. Discharged on May 5. No bad report received since.

Case 11—A male Hindu child aged 3 was admitted on Aug 6, 1945, with a history of fever and sore throat for seven days. Slightly toxic. Temperature 103° F (39.4° C), pulse 140, respirations 28. Moderate sized patch on tonsils and uvula. Throat swab positive. Submaxillary lymph glands enlarged and tender. Temperature fell to normal within 72 hours, patch cleared up in three days, swab became negative after five days, the glands subsided in five days. Penicillin stopped on Aug 15. Total dose, 720,000 units. No complications. Discharged on Aug 30. Reported to be keeping well a fortnight later.

Case 12—A female Muslim child aged 2 was admitted on Aug 22, 1945 with a history of fever and sore throat for seven days. Slightly toxic. Temperature 102° F (38.9° C), pulse 150, respirations 32. Slight suction. Moderate sized patch on tonsils and uvula. Throat swab positive. Temperature dropped to normal within three days, patch cleared up in four days, swab became negative after six days. On Aug 25 penicillin had to be stopped owing to lack of supply. The temperature again shot up. Penicillin restarted on Aug 27 and temperature fell to normal on Sept 5. After this she had an uneventful recovery. Penicillin stopped on Sept 11. Total dose, 1,190,000 units. Discharged on Sept 25. No bad report received since.

Case 13—A male Hindu child aged 3 was admitted on Aug 10, 1945, with a history of fever and sore throat for seven days. Slightly toxic. Temperature 99° F (37.2° C), pulse 125, respirations 28. Moderate sized patch on both tonsils. Throat swab negative. Temperature dropped to normal within 24 hours, patch cleared up in two days. Penicillin stopped on Aug 14. Total dose, 365,000 units. No complications. Discharged on Sept 17. No bad report received.

Case 14—A female Hindu child aged 2½ was admitted on April 7, 1946, with a history of fever and sore throat for three days. Temperature 100° F (37.8° C), pulse 140, respirations 35. Slightly toxic. Voice hoarse. Slight suction present, cervical lymph glands enlarged. Moderate sized patch on tonsils and uvula. Throat swab negative. Temperature dropped to normal within 48 hours, patches cleared up within three days. The suction and hoarseness of voice disappeared on the fourth day and the glands subsided within five days. On April 24 she developed slight pyrexia (99–100° F (37.2–37.8° C)), which continued intermittently till April 30. No local signs could be detected to account for fever. She was discharged on risk bond on May 2. Penicillin was stopped on April 12. Total dose, 400,000 units. No bad report received since discharge from hospital.

Case 15—A male Hindu child aged 1 year was admitted, on April 15, 1946, with a history of fever and sore throat for four days. Temperature 100° F, pulse 130, respirations 38. Slightly toxic. Moderate-sized patch on left tonsil and another on pharynx. Throat swab negative. Temperature fell to normal within three days, the patch cleared up in three days. On April 22 he developed slight pyrexia, which con-

intermittently for about a week. No local sign could be found to account for fever. Temperature normal on May 2. He was discharged on risk bond on May 3. Penicillin was stopped on April 19. Total dose, 360,000 units. Reported to be keeping fit a fortnight after discharge.

Case 16—A Hindu female child aged 7 was admitted on Sept 25, 1946, with history of fever for two days, pain in throat, and difficulty in deglutition. Anaemia present. Neck glands enlarged both sides. Tonsils enlarged, with moderate-sized patches. Throat swab positive. Temperature 99.6° F (37.55° C), pulse 124, respirations 32. Temperature dropped to normal within 48 hours. Patch cleared up within five days. Total dose of penicillin, 485,000 units. Discharged on Oct 31. No complications.

Case 17—A Hindu male child aged 11 was admitted on Sept 4, 1946, with history of painful throat and difficulty in deglutition for two to three days. No history of fever. General condition fair. Temperature 98.4° F (36.9° C), pulse 88, respirations 24. Moderate sized patch on both tonsils. Throat swab positive. Patches disappeared on fourth day. Throat swab negative after two days. Total dose of penicillin, 390,000 units. No complications. Discharged on Sept 26.

Case 18—A Hindu female child aged 10 was admitted on Aug 2, 1946, with a history of fever for four days, difficulty in deglutition for two days, and painful throat. General condition fair. Moderate sized patch on right tonsil and small one on left tonsil. Temperature 99° F (37.2° C), pulse 110, respirations 26. Cervical lymph nodes enlarged and tender. Throat swab positive. Temperature fell to normal on third day. Patch disappeared on fourth day. Throat swab negative on third day. Total dose of penicillin, 430,000 units. No complications. Discharged on Aug 27.

Case 19—A Hindu male child aged 6 was admitted on July 31, 1946, with history of fever and sore throat for seven days. General condition fair. Moderate sized patch on both tonsils. Temperature 104° F (40° C), pulse 134, respirations 32. Throat swab positive. Temperature reached normal level on fifth day. No patch detected on fourth day. Throat swab negative on third day. Total dose of penicillin, 510,000 units. No complications. Discharged on Aug 27.

Case 20—A Hindu female child aged 7 was admitted on Sept 2, 1946, with a history of fever and sore throat for one day. Moderate sized patch on left tonsil and small one on the right. General condition good. Throat swab positive. Temperature 103° F (39.4° C), pulse 140, respirations 32. Temperature fell to normal on seventh day. Patch disappeared on fifth day. Throat swab negative on second day. Total dose of penicillin, 460,000 units. No complications. Discharged on Sept 26.

Case 21—A Hindu male child aged 8 months was admitted on July 17, 1946, with a history of fever and cough for eight days and reluctance to feed for the last three days. General condition fair. Small patch on left tonsil. Temperature 100° F, pulse 122, respirations 24. There was also extensive impetigo. Throat swab positive. Temperature came down to normal on fifth day. Patch disappeared on fourth day and throat swab negative on third day. Total dose of penicillin, 470,000 units. No complications. Discharged on Aug 23.

Case 22—A Muslim female child aged 3 was admitted on March 7, 1946, with a history of fever for six days, difficulty in breathing for four days and difficulty in deglutition and painful throat for four days. Tonsils very much enlarged and covered with several small thin patches. Cervical and submaxillary lymph glands of both sides were enlarged. Temperature 103.8° F (39.9° C), pulse 122, respirations 32. Throat swab positive. Temperature reached normal level on third day. Patch disappeared on fifth day and throat swab became negative on third day. Total dose of penicillin, 480,000 units. No complications. Discharged on April 24.

Case 23—A Hindu male child aged 4 was admitted on Nov 1, 1946, with history of fever and cough for two days and slight difficulty in breathing. General condition fair. Tonsils enlarged. Moderate-sized patch on right tonsil, extending down towards the larynx, a small crescentic patch on left tonsil and a small patch on the uvula. Temperature 100° F, pulse 110, respirations 36. Throat swab positive.

Temperature reached normal level on sixth day, patch disappeared on fifth day. Throat swab negative on third day. Total dose of penicillin, 400,000 units. Discharged on Dec 4.

Case 24—A Hindu child aged 8 months was admitted on Aug 2, 1946, with a history of fever for one day, with excessive salivation. General condition fair. Small patch on right tonsil. Temperature 100° F, pulse 130, respirations 30. Throat swab positive. Temperature fell to normal on fourth day. No patch on throat on third day. Throat swab negative after second day. Total dose of penicillin, 390,000 units. No complications. Discharged on Aug 22.

Case 25—A Hindu male child aged 6½ was admitted on April 22, 1946, with a history of fever and painful throat for one day. General condition good. Small patch on both tonsils. Temperature 102° F (38.9° C), pulse 140, respirations 20. Throat swab negative. Temperature fell to normal on third day. Patch disappeared on third day. Total dose of penicillin, 400,000 units. No complications. Discharged on May 4.

Case 26—A Hindu male child aged 1 year was admitted on April 24, 1946, with history of cough and fever for four days. General condition fair. Small patch on both tonsils. Glands of neck enlarged. Temperature 101.4° F (38.55° C), pulse 120, respirations 30. Throat swab negative. Temperature fell to normal on sixth day. Patch disappeared on third day. Total dose of penicillin, 400,000 units. No complications. Discharged on May 2 on request.

Case 27—A male Hindu child aged 2½ was admitted on June 27, 1946, with a history of fever, cough, and excessive salivation for two days. A 1/4-in (6-mm) circular patch was seen on right tonsil. General condition fair. Temperature 102° F, pulse 134, respirations 26. Throat swab negative. Temperature fell to normal within 72 hours. No patch was seen next morning but a raw ulcer area was found on right tonsil persisting up to fourth day. Total dose of penicillin 210,000 units. No complications. Discharged on July 13.

Discussion

As only 27 cases were treated with penicillin it would be unsafe to draw any definite conclusion from the results of treatment. Still, it would not be out of place to discuss a few points regarding the merits and demerits of such treatment. As no antitoxic serum was used, only early cases or moderately severe cases with slight toxæmia were selected, for obvious reasons. Of the 27 cases 16 were bacteriologically positive, and the remaining 11, though bacteriologically negative, were clinically diagnosed as diphtheria. In the majority the temperature dropped to normal within one to three days. In diphtheria treated with antitoxic serum the temperature usually takes longer to fall to normal, this may, of course, be due to the fact that when large quantities of antitoxic serum (animal serum) are injected, the serum itself prolongs the raised temperature. In all cases the general condition greatly improved within three days, and in those cases in which this was good at the start of treatment it never deteriorated with the progress of the disease. Even the extensive patches affecting the tonsils, uvula, pharynx, and larynx disappeared within five days and the small patches within one to two days. Treatment with antitoxic serum does not heal the patch so quickly, usually it takes a week or more to clear an extensive patch. The bacteriostatic (and probably bactericidal) effect of penicillin may help to clear the patch and thereby quickly remove the source of exotoxin formation. This factor may have a definite influence on the ultimate prognosis of the disease. In all the 16 cases which were bacteriologically positive the swab became negative within six days. This is rather quick compared with the results in antitoxin therapy, where it takes more than a week, sometimes weeks, before the swabs become negative. Extension of the patch after starting the treatment was never noticed. In the present series of cases complications were singularly absent. The circulatory and nervous complications which are the

direct effect of diphtheritic toxin were absent, and so were the respiratory complications which are mainly due to secondary organisms. Tracheotomy was not necessary in any of the cases, though two of them were admitted with slight suction, of course such a result could be obtained with antitoxic serum. Not a single death occurred in the present series.

The mortality rate for diphtheria at the Medical College Hospitals, Calcutta, during the five-year period from 1941 to 1945 varied from 20 to 36%. The lowest (20.3%) occurred in 1941 and 1945, and the highest (36.5%) in 1944. The average mortality was 25.6%—total admissions, 1,429, deaths, 366. In the present series the mortality was nil, but we must keep in mind that of the 27 cases 20 were mild and 7 moderately advanced. From such a small number of cases we cannot assess the value of penicillin in the treatment of diphtheria, but we feel that the subject requires further study. Penicillin cannot replace antitoxic serum in severe cases of diphtheria where immediate neutralization of toxin is imperative, but is it possible to treat early cases with penicillin alone? Diphtheria confers a good deal of immunity to the sufferers who survive. For the production of active immunity we often have recourse to injections of modified toxin such as TAF and T.A.M. or A.P.T. Now if an early case of diphtheria is treated with penicillin alone the infection may be checked, and at the same time the amount of toxin absorbed in the system will be partly destroyed and partly used up as an antigen. Can this toxin act as a stimulus for the production of a better type of immunity? The answer should be 'yes,' as we know that the best way to acquire immunity is to suffer from the disease in a mild non-fatal form. Incidentally, it may be mentioned that prophylactic immunization is practically not done in India as a routine.

The disadvantage to a child of three-hourly injections of penicillin should be kept in mind. It is distressing to the patient, and the parents will often object. Whether this disadvantage will be overcome by the discovery of a preparation such as penicillin in beeswax and peanut oil or by the injection of a single large dose of penicillin, as has been tried successfully in some cases of gonorrhoea, is still a matter of speculation, but such possibilities cannot be disregarded. Whether penicillin in conjunction with antitoxic serum can reduce the mortality rate and the incidence of complications in severe cases of diphtheria is also a subject that needs intensive study.

The financial aspect must also be considered. We have shown that the average curative dose of penicillin is within the limit of 500,000 units. In this institution an average curative dose of antidiphtheritic serum for a similar group of cases was 50,000 to 60,000 units. When we started to use penicillin therapeutically in the middle of 1945, the drug was scarce and the price varied from Rs 20 to Rs 15 (£1 10s to £1 2s 6d) for each phial of 100,000 units. At the end of 1946 the price was Rs 3/8 (5s 3d) for 200,000 units, and the supply was ample. The price of antidiphtheritic serum in the middle of 1945 was between Rs 6 and Rs 7 (9s and 10s 6d) for 10,000 units. The present price is Rs 7 (10s 6d) for 10,000 units. Thus the cost for each case treated with penicillin is Rs 8/8 (12s 9d) and for each case treated with antidiphtheritic serum Rs 35 to Rs 42 (£2 12s 6d to £3 3s). We expect the price of penicillin to fall still further. This reduction in cost is at present possible only in an institution where there is a whole-time staff and nurses to attend to the patients. In private practice the patient will have to bear the additional cost of continuous medical attendance for three-hourly injections, careful nursing, and the storage of penicillin, particularly in tropical climates.

Summary

Twenty seven cases of diphtheria treated with penicillin alone are reported. 16 were bacteriologically positive and 11, though bacteriologically negative, were clinically typical cases of diphtheria. Twenty were early and seven moderately severe.

All the cases recovered without developing any complications, the temperature was normal within three days the throat swabs became negative within three to seven days, and the patches disappeared within two to five days.

The merits and demerits of penicillin in diphtheria and the possibility of future improvement are discussed. Penicillin treatment is undoubtedly more economical.

Typing of the particular strain was not ascertained. Only the clinical aspect of the cases is mentioned.

Our thanks are due to Prof. B. P. Trivedi for his ungrudging help in bacteriological matters, and to the Superintendent, Medical College Hospitals, Calcutta, for kindly allowing us to use the hospital records in preparing the article and for supplying us with penicillin.

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A CASE OF MESENTERIC THROMBOSIS COMPLICATING MULTIPLE WOUNDS RECOVERY FOLLOWING MASSIVE RESECTION

BY

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Mesenteric thrombosis is a catastrophe that seldom occurs in men of military age. The following case history has an added interest because its aetiology is difficult to dissociate from the consequence of severe shell wounds sustained nearly four months previously.

Case Report

A trooper of the Royal Tank Corps aged 32 had enjoyed excellent health until he was wounded in action on Jan. 31, 1944. Severe injuries to both lower limbs necessitated transfusion and prolonged resuscitation before wound toilet was performed on Feb. 2. Secondary haemorrhage arose from an extensive infected wound in the left thigh on Feb. 12, and was controlled by ligation of the femoral artery in Hunter's canal. He then progressed satisfactorily until March 1, when a wound in the neighbourhood of the right knee-joint was found to have caused suppurative arthritis. This demanded wide incisions and splinting with strapping extension.

The patient first came under my care at the 67th British General Hospital on May 5, 1944. His general condition was very satisfactory and no disease of heart or lungs was noted. Temperature, pulse, and respirations remained normal. The plasters were changed. The wounds of the left thigh and leg were healed and a fracture of the left tibia had united. The right knee joint was still slightly swollen and the drainage incisions were granulating. Quadriceps exercises were performed daily.

Occurrence of Thrombosis.—At 4 a.m. on May 27 the patient was awakened by abdominal pain, and after expressing a desire to defaecate, he attempted unsuccessfully to use a bed pan. Vomiting then occurred, and collapse was evidenced by increasing subnormal temperature, and a rapid thready pulse. The abdomen moved with respiration and tenderness was limited to a circular area 6 in. (15 cm.) in diameter around umbilicus. Morphine, 1/4 gr. (16 mg.), was administered and plasma drip was started. At 8 a.m., although the degree

collapse was less profound pain had greatly increased. It was spasmodic in character, causing him to cry out and to grip his abdominal wall. Generalized abdominal rigidity was noted during the attacks of pain, but in the intervals guarding was only apparent around the umbilicus, there was no visible peristalsis and the abdomen was silent on auscultation. Lieut Col W Brindle, R A M C was called in consultation and made a diagnosis of mesenteric thrombosis. He recommended surgical intervention. By 10 a.m., after administration of 2½ pints (1.42 l) of plasma, the patient's general condition improved, his pulse rate was 110 and his blood pressure 98/70.

Operation—Major Ward, R A M C induced anaesthesia with 0.5 g of thiopentone and continued with gas and oxygen. In addition the tissues of the abdominal wall were infiltrated with 2% novocain. A midline incision extending 4 in (10 cm) above and below the umbilicus was employed, and on incising the peritoneum much blood-stained fluid escaped. Distended coils of chocolate coloured small intestine with oedematous haemorrhagic mesentery presented and were delivered from the wound. The peritoneal coat of the damaged gut still retained the normal sheen, but the upper and lower limits of devitalization were sharply demarcated. Bowel clamps were applied to healthy intestine 2 in (5 cm) above and below the involved segment and resection was rapidly performed. The mesentery was clamped and removed at its base beyond the areas of most intense haemorrhage. In all 91 in (231 cm) of gut was removed, and repair was effected by means of an end-to-end anastomosis. The omentum was sutured around the junction and over the mesenteric stump. The abdominal cavity was then mopped dry, and the abdominal wall was closed in layers without drainage.

Post operative Treatment and Progress—Continuous gastric suction was instituted and 2 pints (1.14 l) of whole blood was administered. Injections of morphine 1/4 gr (16 mg) were given four-hourly during the first 24 hours. By the following day the patient's general condition was much improved. His haemoglobin was 98%, pulse 120, temperature 100 F (37.8° C). Intravenous glucose saline introducing 2 g of sulphapyridine during each period of four hours was given by the drip method. Frequent sips of water were allowed, and although the bulk of this fluid was withdrawn by suction it helped to keep the mouth moist and relieved his thirst. The bowel acted satisfactorily four days after operation and gastric suction was discontinued on May 31. On June 13 after an apparently smooth convalescence, he complained of pain in the right iliac fossa and next day it was necessary to open a small abscess which had pointed in this region. Subsequently his progress was uninterrupted, and when he was evacuated to England on July 2 his condition was very satisfactory. He found no difficulty in digesting ordinary diet, and his stools were well formed and regular.

Follow up—On Sept 10 1944 I was informed by Maj Gen Ogilvie who examined the patient at a hospital in England that no further complications had arisen and that he appeared fit and well. He was also seen at Liverpool Hospital in 1945. He had made a full recovery and was doing light work.

I am most grateful to Lieut Col W Brindle, R A M C, for his advice and help in dealing with this case, and to Col A Angus M C Lieut R A M C for permission to publish this paper.

The Register of Ambulance Stations compiled by the Home Ambulance Service of the Order of St John and the British Red Cross Society gives the addresses and telephone numbers whence ambulances may be obtained throughout Great Britain. The Home Ambulance Service was set up in 1919 to provide a better means of transport for the sick and injured than those commonly available particularly in the country, where improvised cabs and wagons often had to be used. It now has 1,000 vehicles in service. The ambulances are provided by the Order and Society and the responsibility for running houses and maintaining them rests entirely with voluntary workers. Thus the smallest possible fee is charged to patients and those who cannot afford to pay receive free transport. In 1923 the Mobile X-ray Service was started, as complementary to the work undertaken by the ambulances to bring X-ray units to the bedridden and immobile. In 1926 the work of the ambulance service was supplemented by a first aid road service boxes of splints and bandages were set up at the roadside and have proved invaluable to the many victims of road accidents.

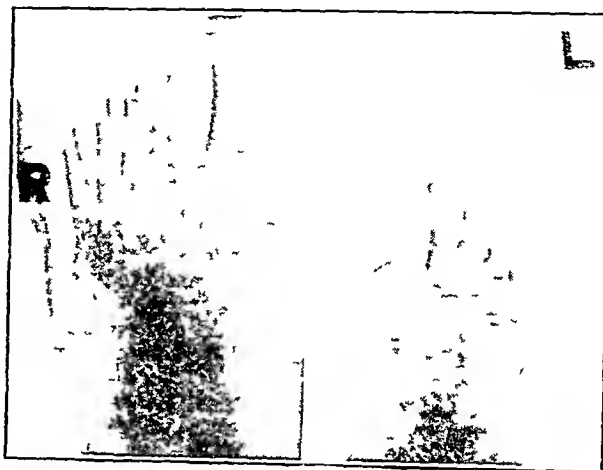
Medical Memoranda

A Case of Dislocation of the Metatarso-Tarsal Joints

The following case is of interest because of the rareness of the condition and the radical form of treatment adopted.

CASE REPORT

Miss A., aged 56, was first seen on Oct 10 1945. She fell a short distance down a step on to her right foot, which became swollen and very painful. Tenderness was most pronounced over the base of the first metatarsal. A radiograph showed a complete



Radiograph of both feet, Oct 10, 1945

lateral dislocation of the metatarso-tarsal joints, with a fracture of the first cuneiform at the base of the first metatarsal. Reduction in the out-patient department failed and she was admitted under my care on Oct 13. The following day a pin was inserted through the metatarsals, and a weight of 7 lb (3.1 kg), later increased to 10 lb (4.5 kg), was applied, the leg being bandaged to a Braun frame. This produced some distraction but no reduction and after two days manipulation under anaesthesia was performed with the weight in place. No real improvement was obtained. The pin was removed and after the skin had recovered from fairly severe blistering I performed the formal operation of arthrodesis of all metatarso-tarsal and inter-metatarsal joints on Oct 31. There was considerable fracturing of both metatarsal and tarsal bones which was not obvious in the radiograph. Plaster was applied and by March 16 1946 the patient was discharged, with no detectable clinical abnormality. Despite the extensive arthrodesis the foot was not less mobile than its fellow.

COMMENT

This fracture is not referred to by the majority of authors but Böhler (1935) mentions various tarso-metatarsal dislocations, of which those involving the first and fifth are the most common. He advises distraction, with a pin through the metatarsals and os calcis. This might have been successful, although I doubt it. The risk in such a method is persistent pain afterwards. If mobility is to be of great importance as in the subtalar joint it is a debatable question whether arthrodesis is the best treatment but in such a case as this it seems to me the ideal treatment, as mobility is minimal at these joints and there is little risk of persistent pain if the arthrodesis is successful.

An interesting case of fracture dislocation of the mid tarsal and cuboideo-navicular joints was reported recently by Jaslow (1946). This produced a rather similar picture but at a different level in the foot. His case was also treated by fixation, using a screw, with a completely satisfactory result. The very satisfactory result in my case suggests that arthrodesis as a primary measure is the best form of treatment.

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- Böhler L. (1935) *Treatment of Fractures* 4th ed p 468 Wright Bristol
Jaslow L. A. (1946) *J Bone Jt Surg* 28 386

Reviews

MANUAL OF MALARIOLOGY

Practical Malarology By Paul F Russell, M.D., M.P.H., Luther S West, Ph.D., and Reginald D Minnwell, Sc.D. Prepared under the auspices of the Division of Medical Sciences of the National Research Council. Foreword by Raymond B Fosdick. (Pp 684, 238 illustrations 40s.) London and Philadelphia W B Saunders Company 1946

One of the outstanding features in the last war was the successful application of the results of years of research and increasing experience in malaria prevention to protecting our troops in some of the most malarious countries in the world. One reason for this success was the recognition by the higher military command of the importance of such measures and its active participation in seeing them carried out. Equally important was the extent to which medical men and others trained in malaria field work and skilled specialists have been forthcoming. Among the latter none stands higher than Paul F Russell of the International Health Board of the Rockefeller Foundation, one of the authors of *Practical Malarology*. Dr Russell, besides having spent many years in malaria research and prevention in the Philippines, in Malaya, and in India, was chief malarologist to the American Forces in North Africa and Italy during the war. He has been assisted in preparing the volume by Luther S West, of the Entomological Section and Reginald F Minnwell, of the Protozoological Section of the Parasitology Division of the United States Army Medical School.

Though published as a military manual the book has been written primarily for the civilian. In 684 pages it covers a wide field, as indeed it must do if it is to serve its purpose, for the practising malarologist has now to be conversant with the many aspects of malaria. Detailed information is what he requires more than anything else on, for example, the parasites of malaria, human, avian, and simian, the wide field of malarial epidemiology, various community indices, which bulk so largely in practical work, and on the different forms of control measures—methods of spraying, dusting, flushing, water covering pisciculture, and much else. There is also the important subject of the modern synthetic antimalarial drugs and the legal and social aspects of preventive work. The authors deal with all this fully, and give information about practical laboratory and field procedures and technique, the collection of eggs, larvae and adult mosquitoes, the taking of spleen and parasite indices, the precipitin reaction as used in determining the source of the blood feed of mosquitoes, cultural methods, and other modern laboratory techniques. Giemsa, Leishman, and other staining methods are described with formulae for making the stains. The section on mounting, preserving, and dissecting mosquitoes is particularly full and up to date, as is that on mixing and distributing dusts and sprays, which includes an account of DDT and its uses. At the end of each chapter is a list of references, in all over 600.

The book is well illustrated with many figures of modern apparatus and excellent photographs of breeding-places, etc. In an appendix are the synoptic tables for identification of the anopheles species of different countries. The book is in fact the most modern and complete account of practical laboratory and field work yet published.

RICKARD CHRISTOPHERS

A COMPENDIUM OF MEDICINE

Modern Management in Clinical Medicine By F Kenneth Albrecht, M.D. (Pp 1,238, illustrated 55s.) London: Bailière, Tindall and Cox 1946

The curious title does not properly describe this book, which is essentially a one-man encyclopaedia of medicine. The author was formerly director of a U.S. marine hospital, and his book is in the same class as French's *Differential Diagnosis* or Tidy's *Synopsis of Medicine*—the off-duty task of a busy and experienced clinician who is interested in organizing his knowledge and keeping it up to date. It is easy to condemn a book of this kind as all paste and scissors, but the fact remains that Dr Albrecht has done his self-imposed task surprisingly well.

He begins by considering the case history and then reviews the various systems in detail. Some of the sections, such as those on nutritional deficiency, peripheral vascular disease, the diagnosis and management of venereal diseases, arthritis, endocrinology, allergy, and geriatrics are much fuller and more practical than is usual in current textbooks. There are a chapter on clinical laboratory medicine and an appendix containing details of therapeutic procedures and diets. Throughout the book there are numerous tables and summaries which provide convenient reference to an astonishing amount of precise knowledge. If you want a sheet of instructions for almost any topic from fever therapy to bed bug control, from patch testing to a barium meal and follow through, you will be almost certain to find it here. There are numerous diagrams and photographs and some excellent coloured plates. The whole book runs to over 1,200 pages in double column yet remains manageable and easy to handle. Book reviewers have so often said "this book should be on every practitioner's shelf" that the statement has become suspect. We will therefore say that with Albrecht at his side the practitioner will never be nonplussed and will always have the most modern information on the problems he meets in his consulting room and his daily round.

L. J. WITTS

MANUAL OF PARENTHOOD

Parentcraft: A Handbook for Parents and Students Second edition (Pp 248 8s 6d.) London: National Association of Maternity and Child Welfare Centres and for the Prevention of Infant Mortality.

This is a second edition of a publication of the National Association of Maternity and Child Welfare Centres produced first in 1945 to replace *Mothercraft* which had been out of print for many years. In this book many authorities deal with various aspects of child welfare. The essays are grouped into four parts—the first dealing with the parents, the second with the child, the third with prevention and treatment of the common ailments of childhood, and the fourth with the social aspects of parentcraft, including eugenics, the care of the unmarried mother and her child, and the various social services concerned with childhood.

Much information is crammed into a small space, but in common with so many of such manuals the whole stress is laid on the physical side of the question, and the psychological is somewhat neglected. For example, in the discussion on breast feeding, except for the statement that the mother should give her whole attention to feeding her baby, there is not a word on the important psychological aspect of the "nursing couple". Even in Agatha Bowley's section it is disappointing to find that she does not make more of the emotional development of the child. Mr Kenneth Walker deals with some psychological questions in his section on preparation for marriage, but otherwise the information is severely materialistic. If it were not for this unfortunate lack of balance the book could be usefully recommended to all those dealing with the rearing of children.

TUMOURS OF THE HEART

Les Tumeurs et les Polypes du Cœur. Étude Anatomique Clinique By Dr Ivan Mahaim (Pp 568, illustrated. No price given.) Paris: Masson et Cie 1945

Readers of Dr Ivan Mahaim's fine monograph on lesions of the bundle of His, published in 1931, will welcome his new work *Les Tumeurs et les Polypes du Cœur*. The scanty attention which has been paid to these uncommon conditions is due in part to their incurability, but the author has made a correct diagnosis of tumour of the heart twenty-five times in the past fifteen years, and he feels that there is a possible future for surgical intervention. Gummatous and tuberculous lesions and hydatid cysts have been excluded from his series, which includes not only benign, malignant, and secondary growths of the heart and pericardium, but also the intracardiac polyp.

The polyp of the heart is the commonest of all these tumours and is most frequently found pedunculated in the left auricle where it may threaten occlusion of the mitral orifice. The author distinguishes the anatomical features of myxomatous polyps and scouts the thesis of Thorel that all these lesions derive from organization of thrombus. He proceeds to discuss the clinical features of the three types of mechanical a

which may occur embolism by fragments of polyp, obliteration of a cavity by progressive enlargement, and occlusion of a valvular orifice. Among benign non polypoid tumours of the heart Mahaim has included the rare lipoma and fibroma, and the angiosarcoma and rhabdomyosarcoma. The only malignant tumours of the heart among the 400 assembled from the literature are the varieties of sarcoma, which show a special predilection for the auricles, while the pericardium is often involved.

The author considers that there is among physicians an insufficient awareness of the circumstances which call for consideration of the diagnosis of cardiac tumour. Unexplained syncope, attacks of unusual variability of physical signs in valvular disease, pericardial effusions without obvious cause, and unexpected arterial emboli should all bring to mind the possibility of tumours in the pericardium, the heart, or its cavities. Thus arterial embolectomy or the induction of pneumopericardium may be important diagnostic procedures. Just as the clinical separation of the varieties of congenital cardiac defect has been followed by the discovery of surgical methods of treatment so may operative measures be found for the removal of polyps, once the physician has become more skilled and more certain of the diagnosis of these dangerous lesions.

Dr Mahaim's excellent treatise is essentially for the cardiologist who will be interested and stimulated by it.

AN AMERICAN "BURDETT"

The American Hospital By E. H. L. Corwin, Ph.D. (Pp. 242, 8s. 6d. net). The Commonwealth Fund, London. Geoffrey Cumberlege.

The hospital service is now one of the major industries of the United States. It owns \$½ billion dollars worth of property (\$ billion in the French meaning of one thousand millions), its operating costs are 1½ billion dollars a year, and the principal stockholder is the American public. *The American Hospital*, one of the studies brought out by the New York Academy of Medicine Committee on Medicine and the Changing Order, is a careful survey of this hospital domain. In the United States there is one hospital bed (or cot) to about every 80 of the population, and every year one person in about ten is admitted as an inpatient. In 1940—the last pre-war year for America—71% of all hospital beds were maintained by Government, that is to say by Federal, State, county, or city, authorities, and 29% were in hospitals supported by religious denominations, lay voluntary hospitals and proprietary hospitals. One could quote figures endlessly on the finance of the hospitals and the distribution and utilization of their resources. One point only can be mentioned in a brief review. It has always been a tradition in the United States that apart from whole-time officers, all physicians, surgeons, and specialists attached to hospitals should be unpaid. The experience gained in hospitals and the prestige of association with them was thought sufficient reward. This practice has held good alike for tax-supported and for voluntary hospitals, and it did not alter even when paying patients were admitted. Of late, however, it has been realized what demands an extensive clinical service in hospital can make, and there is a tendency to pay whole-time salaries to the chiefs of these services with permission to continue a limited private consulting practice outside the hours of duty at the hospital. Hospital affiliation is a *sine qua non* for the surgeon, and to a large extent for the physician. In large cities in order to maintain a proper standard of organization, hospital staffs are not allowed to exceed certain quotas, so that a high proportion of physicians have no hospital appointments. In smaller communities hospitals give staff privileges to all reputable physicians and surgeons in their area.

The facts and figures in this compilation will have no direct interest for hospital administrators in this country, but much else in the American experience will be found suggestive and stimulating. It is an authoritative and most painstaking work.

Mr. FRANCIS MITCHELL HEGGS has now produced a third edition of *The M.B. B.S. Facts*, being a collection of papers set at the London M.B. B.S. examination for the years 1932–45, classified and arranged under convenient headings. In classifying the questions unnecessary minor subdivisions are avoided by the use of general headings. This booklet is published by J. and A. Churchill at 8s. 6d.

BOOKS RECEIVED

[Review is not precluded by notice here of books recently received]

Pye's Surgical Handicraft Edited by Hamilton Bailey, F.R.C.S. 14th ed. (Pp. 668, 25s.) London: Simpkin Marshall, 1947.

A large number of illustrations have been added to this well known manual.

Traité d'Hygiène Vols. 1 and 2. By A. Rochaix, P. Sedallian and R. Sohier. (Pp. 1,098 and 1,898, 2,800 francs for 2 vols.) Paris: Masson, 1946.

Intended to be a comprehensive account of the problems of hygiene in cities, factories, hospitals, schools, etc.

Miracle Drug By D. Masters. (Pp. 191, 10s. 6d.) London: Eyre and Spottiswoode, 1946.

A popular account of the discovery, development and uses of penicillin, illustrated.

Oral Diagnosis and Treatment By S. C. Miller, D.D.S., F.A.C.D., et al. 2nd ed. (Pp. 903, 50s.) London: H. K. Lewis, 1946.

This edition includes new material on penicillin, x-ray diagnosis, oral bacteriology, and extra oral fixation of mandibular fractures.

Belsen Uncovered By D. Sington. (Pp. 207, 8s. 6d.) London: Duckworth, 1946.

A description of Belsen and its inmates by one who was the first British officer to enter the camp on its liberation and the last to leave.

After-Treatment By H. J. B. Atkins, D.M., M.Ch., F.R.C.S. Third edition. (Pp. 328, 18s.) Oxford: Blackwell Scientific Publications, 1946.

This guide to general practitioners, house officers, sisters and dressers contains new material on penicillin and gastric suction.

Les Gliomes Infiltrés du Tronc Cérébral By G. Guillaum, I. Bertrand, and J. Gruner. (Pp. 286, 450 francs.) Paris: Masson, 1945.

After a historical introduction there is a discussion, with many illustrations, of brain stem tumours characterized by absence of raised intracranial pressure and rapid development.

Currents in Biochemical Research By various contributors. Edited by D. E. Green. (Pp. 486, \$5.00.) New York: Interscience Publishers, 1946.

A collection of papers on biochemistry in relation to medicine, agriculture and social problems.

Chemistry of Vitamins and Hormones By S. Rangaswami, M.A., Ph.D., and T. R. Seshadri, M.A., Ph.D. (Pp. 329, Rs. 7.80.) Waltair, South India: Andhra University, 1946.

A short account of the chemical composition and synthesis of vitamins and hormones.

Research and Regional Welfare Edited by R. E. Coker. (Pp. 229, 18s. 6d.) Chapel Hill: University of North Carolina Press, 1946.

A collection of papers presented at a conference on research at the University of North Carolina in 1945. Subjects included are nutrition, research and industry, fisheries, and agriculture.

The Normal Encephalogram By L. M. Davidoff, M.D., and C. C. Dyke, M.D. Second edition. (Pp. 232, 27s. 6d.) London: Henry Kimpton, 1946.

An account of the technique of encephalography and the information obtainable therefrom. Many illustrations.

Studies in Science Edited by W. C. Coker. (Pp. 375, 18s. 6d.) Chapel Hill: University of North Carolina Press, 1946.

Includes papers on penicillin, quinine, regeneration of lymphatic channels following ablation of lymph nodes, parathyroid cysts, and blood volume changes following acute haemorrhage.

1946 Year Book of General Therapeutics Edited by O. W. Behea, Ph.D., M.D., F.A.C.P. (Pp. 443, 21s.) Chicago: The Year Book Publishers, 1947.

Contains chapters on the new sulphonamides, penicillin, streptomycin, influenza virus vaccine, folic acid, and 'benadryl'.

BRITISH MEDICAL JOURNAL

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CONTROL AND TREATMENT OF DIPHTHERIA

Diphtheria is an infection of rather insidious onset, characterized by local membrane formation and generalized toxæmia. The clinical disease affects only 5-10% of an unimmunized community among whom the infection is endemic, and deaths or serious sequelæ are rare in patients treated with antitoxin within twenty-four hours of onset. If, therefore, the infection always began acutely with characteristic symptoms enabling early diagnosis and prompt treatment diphtheria would have no terrors for layman or doctor, and large-scale artificial immunization would not be needed. As it is, delay in diagnosis allows the powerful diphtheritic toxin to damage heart muscle and other susceptible tissues before the National Immunization Campaign was started in 1940 this infection caused between 2,000 and 3,000 deaths yearly, and the hospital treatment of 50,000-60,000 affected patients cost over one million pounds. To-day between 50 and 60% of all children aged 1-15 years have been inoculated with diphtheria prophylactic, and the incidence of diphtheria has fallen steadily each year since 1941: the notifications (corrected) are now about one-third of those of pre-war years, and the provisional number of deaths (excluding non-civilians) in 1946 was 444. That immunization has been the main factor in this decline is indicated by the findings that during the years 1942-4 four out of five cases of diphtheria and twenty-nine out of thirty deaths were in unimmunized patients, though the total numbers of immunized and unimmunized children during that period were approximately equal.

These data give no grounds for complacency, nearly one-half of our children remain unimmunized, and every year some 600,000 infants reach their first birthday and require immunization. Furthermore, a baby once inoculated is not thereby made immune to diphtheria for life. In recent years there have been many recorded instances of diphtheria in "immunized" children. The objective in diphtheria immunization must be not only to inoculate 80% or more of our children but to maintain in their blood a level of antitoxic immunity sufficient to reduce to a minimum the risk of diphtheritic infection. The number of queries in our "Any Questions?" column shows that diphtheria immunization still has many puzzling features for both practitioner and medical officer of health. A review of the present position seems apposite.

Diphtheria can occur in inoculated persons for one or more of a number of reasons. In immunization with alum precipitated toxoid (A.P.T.) the antitoxic titre reaches its maximum about eight weeks after the second injection and,

then slowly declines, so that a year later there may be a Schick-reversion rate of 2-8% and in two to five years the Schick-positive rate may be 10-20%. In other words one out of every five inoculated children may again be susceptible to diphtheria a few years after the first course of immunization. If the child had its first course at the age of one year it may contract the infection when it becomes exposed to risk at school or nursery-school. A boosting dose of 0.2 ml A.P.T., which will raise the antitoxin titre to a higher level than ever before, should therefore be given as soon as the child begins to mix with other children, and this boosting dose may be repeated five years later. Among older children receiving their first or second boosting dose toxoid antitoxin floccules (T.A.F.) is the prophylactic of choice, since with it there is less likelihood of reactions.

Another cause of diphtheria in immunized persons is the local invasiveness of the *gravis* and *intermedius* types of *C. diphtheriae*, which allows them to produce a throat lesion—diphtheritic tonsillitis—even in the presence of some antitoxic immunity. This is the probable explanation of the outbreak among older girls in a day-school reported in our present issue by Dr James Fanning. Infection spread although 94% of the girls gave a history of immunization and the Schick-positive rate was only 20% but it is noteworthy that the severe infections occurred among girls who were Schick-positive, or had not been previously immunized, or, if so, had been inoculated more than five years earlier. Too much reliance must not be placed on the Schick test as a measure of resistance to infection since negative Schick reactions have been found in persons with as little antitoxin as 1/100-1/500 unit per ml; it is estimated that the protective level is around 1/30 unit. As a rule infection with *gravis* or *intermedius* strains in Schick-negative or previously immunized persons is atypical, being characterized by follicular exudate rather than membrane, an acute inflammatory reaction with local oedema, and a higher temperature than is usual with diphtheria. It is therefore sound practice to have a bacteriological examination made of any case of follicular tonsillitis, because an atypical diphtheria of this kind, though it may not require antitoxin, is likely to spread infection in school or at home if allowed to go undetected. If an outbreak occurs in a highly immunized semi-closed community probably the best procedure is to carry out large-scale swabbing of contacts, isolate carriers, and give everyone a boosting dose of T.A.F.

A third possible explanation of diphtheria in the inoculated is the use of a poor prophylactic reagent. Thus it has been found that after two doses of T.A.F. the Schick relapse rate may be as high as 30% in two years' time.¹ Considerable variation may occur with different preparations even of A.P.T., though a minimal standard of antigenic potency as measured by the response in the guinea-pig is accepted by manufacturers in this country. Holt, using a purified toxoid precipitated with pure aluminium phosphate, has attempted to eliminate the variables, and it may happen that this new reagent—diphtheria toxoid

¹ Croft J M, Spooner E T C, Marmion M B, and Booth W G, *Monthly Bull. Min. Hlth & P.H.L.S.* 1945 4 175.
² Holt, L B 1947 1 282.

aluminium phosphate precipitated—will in time replace the more variable A P T. The alum-precipitated prophylactics given in adequate doses of 0.2 to 0.3 ml. are good immunizing agents because they create a depot and thus ensure an effective sensitization of the antibody mechanism so that when a second dose is given one month or even one year later there is rapid formation of antitoxin. However, although there is nowadays an increasing tendency to begin diphtheria immunization earlier than one year of age—because cases and deaths do occur in infancy—we still do not know how good is the antibody response which the rather immature tissues of the infant can make to an antigenic stimulus. In any event, if immunization of the older children is maintained at a high level the risk of the baby's being exposed to infection will be small.

In the treatment of diphtheria with antitoxin the most important point is to give it as early as possible and by the most effective route, for antitoxin is more prophylactic than curative and cannot undo damage that has already been done by the toxin. There is a steady rise in deaths from diphtheria with each day's delay in treatment. Practitioners are still far too reluctant to give a dose of antitoxin to the 'early doubtful case', with the present refined antiserum a dose of 8,000 units, sufficient for the early case, is contained in 1–2 ml., and the risk of reactions is minimal. For the toxicæmic case about half the dose should be given intravenously, because absorption after intramuscular injection is relatively slow. No antibiotic can replace antitoxin in the treatment of diphtheria, but, combined with specific therapy, penicillin either sucked from pastilles or preferably given systemically may help to eliminate the organism from the throat more quickly than usually happens. For the mild or early case or for diphtheritic tonsillitis in the immunized penicillin may be used alone, though only the experienced physician will want to take the risk of omitting antitoxin from the treatment of a disease which is essentially a toxicæmic infection.

A FULFILLED MANDATE

UNRRA has passed into history with a record of accomplishment in public health on an unprecedented scale and with results of vital importance for the world. The Health Division came into existence at the end of 1943, so that field operations of any magnitude have covered a period of little more than two years and in many countries much less. During that short time medical and sanitary supplies have been provided in great abundance, national health departments resuscitated, epidemics prevented or arrested and the aided countries started on the way to recovery. The threat of famine and disease, the inevitable progeny of war and hardly less dreadful than war itself, menaced the devastated Continent. The wars of former times, relatively local conflicts, were yet followed by pestilences which often lasted longer and took heavier toll of life than the fighting itself: the uncontrolled after-effects of a world wide war baffle the imagination. Fortunately there were two restraining factors and UNRRA was the minister of both of these. One was the growing sense of international responsibility fostered by the

instincts of self-preservation and compassion, the other was the recent progress in medicine and public health—for example, the introduction of DDT.

The Health Division has operated in a dozen or more countries of Europe, carried out a vast programme of relief in China, and dispatched a mission to Ethiopia for the development of indigenous health services there. Assistance in the provision of medical supplies and organization of public health was at first limited to the invaded allied countries that had been seriously damaged and lacked foreign exchange; later it was extended to Italy and Austria, and to some extent to Hungary. In Germany UNRRA has had no responsibility for German nationals, its main function has been the care of displaced persons. Food, of course, was the first requirement, and UNRRA ensured for the most impoverished countries which were unable to compete with those having foreign exchange assets some share in the supplies available from the great producing lands. Serious under-nourishment still persists in several European countries but without UNRRA the situation would have been catastrophic.

The greatest achievement of the Health Division was the prevention of epidemic disease. During the four years of the first world war and the four years after it influenza, typhus, relapsing fever, malaria, smallpox, typhoid, and the dysenteries caused more loss of life than the war itself. An epidemic of louse-borne typhus in half a dozen countries outlasted the earlier war for six years. At that time no international anti-epidemic action was taken except for an effort by the League of Nations to stop the tide in Poland. To-day typhus is only sporadic, cholera has never appeared west of India, smallpox is rare in Europe, typhoid fever, after a serious epidemic in Poland and Germany, is once again under control, diphtheria, except in certain parts of Germany, shows a marked reduction in incidence, plague has gained no foothold, though at one time the occurrence of a number of cases on the Mediterranean seaboard caused anxiety. As for influenza, although the winter waves have come and gone, there has been no pandemic like that of 1918–19. However, UNRRA can take no credit for this providential deliverance, for had a pandemic threatened there would have been neither sufficient vaccines nor the means of bringing them to the masses in peril. The *Epidemiological Information Bulletin* in its final number issued by UNRRA from Washington, is scarcely exaggerating, nevertheless, when it declares that public health and medicine come out of this war as the only victors.

Re-establishing the exchange and co-ordination of epidemiological information has enabled danger-spots to be discovered and concentrated action to be taken. Except for the Pan-American Sanitary Bureau, this world-wide network was disrupted during the war, the League of Nations service remained at Geneva, but its communications were strictly limited. UNRRA took over the Health Research Unit of the League of Nations at Washington, expanded it into an Epidemiological Information Service, and set up a parallel service in London in the European Regional Office. It also opened by means of its China Mission, through the helpful agency of the China

National Health Department a service of information about cholera and plague in that country. In addition the British Government last year opened the Far Eastern Bureau. In the early part of 1945 UNRRA took over the duties imposed by the International Sanitary Conventions of 1944 governing the precautions against the spread of epidemic disease, the one for maritime and the other for aerial navigation, and became the receiving and transmitting agency of all notifications from the signatory Governments.

Some day, it is to be hoped, a historian will tell in full the story of this first exciting and formidable chapter of relief and rehabilitation. The programme of medical supplies reads like a fairy tale of shipments—over a million pounds of sulphonamide drugs, over 800,000 million units of penicillin, between 600 and 700 million units of insulin, over 1,200,000 pounds of aspirin, over 5,000 million units of diphtheria antitoxin and over 6 million millilitres of the toxoid. As for DDT the consignments are measurable by the millions of pounds of the powder and the millions of gallons of the solution. Almost all the displaced persons in the camps in Germany have been immunized against typhus, typhoid fever, and smallpox. Within seven months of the entering of Albania, hospital equipment, drugs and dressings sufficient for 30,000 people were delivered and enough DDT powder to protect the whole population for a year. In Greece where tuberculosis was a difficult problem, about twenty dispensaries, started by UNRRA tuberculosis teams are now in operation. In Yugoslavia typhus and malaria controls have been set up, clinical and dietary surveys carried out, and supplies and equipment provided. In the Balkans and Italy the results of an intensive anti-malaria campaign have been spectacular. Equipment including aeroplanes specially devised for aerial spraying with DDT, has been handed over to the Governments or to the World Health Organization. Country after country has received not merely largesse but consultation, collaboration, and training from selected health experts. UNRRA enlisted a professional staff of several hundreds—more than two hundred from the United Kingdom alone. Between 500 and 600 physicians were assigned to the assembly centres for displaced persons or to hospitals and clinics for the general population and large numbers of public health personnel were employed in an administrative or advisory capacity and in field work in their specialties. Dr Andrew Topping, Director, Medical Division, has gratefully acknowledged the help of local authorities in releasing public health officers for this work notwithstanding the pressure on their own departments.

The Health Division has now handed over the administration of its functions apart from those relating to the health of displaced persons to the Interim Commission of the World Health Organization, with its headquarters at New York City and its Epidemiological Information Service at Geneva. The Commission will also assume the functions of the International Office of Public Health, which worked from Paris until it was disrupted by the German occupation. The International Refugee Organization will eventually take over the care of displaced persons until they are ready for UNRRA medical,

dental, and nursing staff will continue to be responsible and it is expected that the majority will be absorbed into the new organization. Other transferred activities will be the training of health personnel by means of fellowships and teaching abroad, advice and assistance in the control of tuberculosis and malaria, and the sending of expert missions to countries with special needs. The medical and administrative teams in Britain and the United States of America hand over their mandate with satisfaction and the expectation of harvests to come. There has been a great and humane achievement.

A NEW TREATMENT FOR POST-OPERATIVE PULMONARY ATELECTASIS

Increasing knowledge of the pathogenesis of post-operative pulmonary complications and of methods of prophylaxis against them has led to *diminution in their frequency*, but it will always be necessary to perform operations on unfavourable subjects and at unfavourable times, and hence post-operative atelectasis may be expected to continue to present a therapeutic problem. Grandstaff¹ has recently reviewed the respiratory complications in a series of 2,704 operations at the Kansas City General Hospital. Some of his figures are surprising, for instance, in a series of 19 patients anaesthetized with nitrous oxide-ether sequence there were 10 cases of post-operative pneumonia, with 2 deaths. The mortality from pneumonia in 100 cases anaesthetized with cyclopropane-ether was 1%, and in 102 receiving spinal anaesthesia and nitrous oxide it was 3%. The total incidence of respiratory complications in the whole series was 2.6%, and of pneumonia 1.8%, and of the 51 patients with pneumonia 24 died. Grandstaff points out that high oxygen concentrations in inhalational anaesthesia, as are employed with cyclopropane, favour the occurrence of atelectasis, and it is his practice to give nitrous oxide during the last few minutes of cyclopropane anaesthesia to minimize this effect. He claims dramatic results in post-operative atelectasis, before pneumonic changes have occurred, from the application of 5% to 10% cocaine to the pharynx and pyriform sinuses as if in preparation for bronchoscopy. He states that the effect is not produced only by the stimulation of cough, because the same results were not obtained by merely applying a swab moistened with saline solution to the throat. He presents reports of five cases in which a post-operative atelectasis cleared up dramatically after this procedure had been tried, and states that since he introduced this method it has not been necessary to resort to other procedures for the relief of the atelectasis. It is clear that the evaluation of a procedure which inevitably produces severe coughing as a treatment for atelectasis is difficult. Grandstaff suggests that cocaineization of the throat acts by producing a reflex relaxation of the bronchial musculature, and although this explanation may seem a little far-fetched it is at least feasible. The method seems to be worth a trial.

POISONING BY IRON SALTS

Copper and manganese belong to the group of trace elements without which plants do not flourish but which are deleterious in excess. The same probably applies to animals, but on a normal diet and with normal absorption there is no question of either deficiency or excess. The position is very similar for the much larger amount of iron required apart from the deficiency which may arise from

loss of blood. It is now the custom to add copper and manganese to the preparations of iron needed when there is evidence of iron-deficiency and this seems to make medication with iron more efficient. However preparations of iron are to a certain extent toxic and the question arises whether such preparations with small quantities of copper and manganese, though more efficient may not at the same time be more poisonous in excessive doses or in those who are sensitive.

Dr Gilbert Forbes has seized the opportunity presented by those unfortunate accidents which arise from the experimental attitude of young children to materials they can swallow. He describes (p. 367) how two children aged respectively 3 years and 3 months and 1 year swallowed a preparation consisting of ferrous sulphate with copper sulphate and manganous sulphate. The elder child swallowed about 50 and the younger about 30 tablets each tablet contained 1/75 gr (0.87 mg) of the copper and of the manganous sulphate for each grain of ferrous sulphate. Both died. In neither case was there evidence of excessive absorption of copper or manganese. The elder boy showed some jaundice, and in both there was evidence of necrosis of the liver and of other organs. From experimental work on animals Forbes concludes that the toxic agent is essentially ferrous sulphate and that the copper and manganese are in too small a proportion to contribute to the toxicity of the relatively enormous doses taken.

It is well known that young children are much more vulnerable to certain drugs and poisons than are adults and that they absorb many substances more freely. However Forbes's results do suggest that overdosing with iron preparations is undesirable especially in individuals who are sensitive. Among metallic poisons those that are relatively easily absorbed are regarded as the more poisonous, but, granted that the metal is absorbed, there appears to be no essential difference in their toxicity except in the case of arsenic. 'BAL' (British anti-lewisite) was introduced as an antidote for arsenical war gases and was later applied to the treatment of arsenic-poisoning.¹ It has since been used successfully by intramuscular injection in acute mercurial poisoning. There is no obvious reason why 'BAL' should not be useful in other metallic poisonings particularly where the metal has a characteristic sulphide

favour of both of them. In combination with sulphonamides there is at least an additive if not a synergic effect. Inhibition of growth is achieved by concentrations of urea or urethane on the one hand, and sulphonamides on the other which when acting alone are ineffective. There is also some evidence that these two substances counteract the anti-sulphonamide effect of *p*-aminobenzoic acid, but the concentrations required are relatively so great and the effect so transient that this seems unlikely to be a factor in any success which the combination may have as an antiseptic. Weinstein and McDonald go further and suggest that urea and particularly urethane if used in sufficient concentration have so pronounced an independent action on bacteria that the addition of a sulphonamide may not have much value for the purpose of wound treatment. They propose that a mixture of urethane and penicillin should be used for treating mixed infections in wounds. Urethane serves to suppress coliforms which are not only resistant to penicillin but may destroy it, the penicillin deals with staphylococci, which are more resistant to urethane. That this combination will suppress the growth of both organisms together they have proved under *in vitro* conditions. Whether the liberal application of urethane may have any harmful effect is not discussed. Apart from this possibility the method seems worthy of a trial.

FELLOWSHIPS IN PLASTIC SURGERY

Sir Simon Marks has established three fellowships per year in plastic surgery, each to the value of £740 per year for two years tenable at Queen Victoria Hospital, East Grinstead Sussex. These Fellowships will be known as the "Simon and Matilda Marks Fellowships in Plastic Surgery."

This magnificent gift is undoubtedly a great contribution to surgery and will be warmly appreciated by the medical profession. The Queen Victoria Hospital East Grinstead has grown remarkably during the war. It has benefited by gifts from Canada, Australia, New Zealand and South Africa with the result that the buildings and equipment are of the most modern type. The recent addition of the American surgical wing, opened by the Queen last year and representing the memorial gift of the British War Relief Society of America went far to make this plastic centre the best in the Empire. Sir Simon's gift will ensure that the facilities at East Grinstead will be used in postgraduate education. He is to be congratulated upon his far-sighted generosity.

UREA AND URETHANE AS ANTISEPTICS

Urea was first applied to wounds chiefly as an aid to cleansing and the dislodgement of sloughs. Later it was combined with sulphonamides, with which, according to some American authors, it has a synergic action. The effect of urea and of urethane, which has been similarly used alone and in combination with sulphonamides has been thoroughly investigated *in vitro* by L. Weinstein and Alec McDonald with a view to explaining discrepancies in earlier findings.

Each of these substances has a direct action on bacteria that of urethane being about four times the more potent. Thus 2% urethane or 8% urea inhibits the growth of most bacteria. Concentrations of 10% and 20% respectively are bactericidal. A remarkable feature of this action is that Gram-negative organisms including so intractable a species as *Pseudomonas* are more susceptible than Gram-positive. The most resistant common species is *Staphylococcus aureus*. The urethane increases the solubility of sulphonamides another effect which has been urged in

"DOCTOR" SIGNS ON CARS

During the war the movement of cars had to be greatly curtailed and a traveller was likely to be stopped and asked by the police whether his journey was really necessary particularly if an air raid was in progress or troops were on the move. In such circumstances the "Doctor" sign on the windscreen afforded valuable protection against unnecessary delays in "doing the round." The need for it now however has vanished with the conditions that once made it a justifiable practice. It has been suggested that the police might relax parking regulations and not bother the owner of a car standing for an hour or more at the kerb but medical men are not entitled to any special immunity from the law. Though to display the sign may be convenient, it may come to be regarded as a form of self-advertisement. It has been suggested that some medical men do so regard it. To avoid any suspicion of this, medical men should discontinue a wartime habit.

¹ J. C. G. 1946, 12, 1-2-3
J. C. G. 1946, 12, 25-26
J. C. G. 1946, 12, 1-1-1

Correspondence

First Things First

SIR,—If there are insufficient hospital nurses Mr Bevan's prophecy that we shall soon have the finest medical service in the world is unlikely to be fulfilled. Thousands of hospital beds have been closed down for want of nursing staff, and the remainder are understaffed, giving rise to overwork and more resignations from the nursing service. All reforms are doomed to failure unless suitable accommodation can be provided for nurses. Cannot Mr Bevan persuade his right hand—i.e., the Minister for Housing—that it is essential to help his left hand—i.e., the Minister of Health? Without such help the hospital service of the country is bound to fail. In peacetime women will not agree to live in buildings designed like old fashioned barracks, nor are they prepared to sleep two in a room. Few hospitals to day have sufficient accommodation for nurses in order to start eight-hour shifts, and some have insufficient accommodation even for two shifts. The subject of accommodation is very urgent. The Government has realized that there is an electricity shortage, and it will take two years to build a power station, but it takes four years to train a nurse—I am, etc.,

London W1

MALCOLM DONALDSON

Groundnuts in East Africa

SIR,—The leading article on groundnuts in East Africa (March 8, p 301) points out the benefits which the Government scheme bids fair to confer on this country and the African. Too long has it been assumed that vast areas of East Africa are of no value to mankind and fit only to be relegated to big game and the tsetse fly.

The largest block of land selected, and that where operations are to be commenced, lies in the Southern Province of Tanganyika long noted for sleeping-sickness, increasing inroads of the tsetse fly, and the abundance of big game. In 1942 no less than 572 elephants were killed in that province.

Inferences drawn from fly clearances on the west coast, where conditions are dissimilar, will be of little value in Tanganyika. But in S Rhodesia, by the natural means of depriving the fly of its food supply, the Government has already rid nearly 4 million acres of 'fly,' and the clearance of another 2½ million acres is nearing completion. Settlers, with their cattle, are already established on land previously resigned to game and fly. Under the direction of Mr Chorley, the Government entomologist, native hunters have destroyed the game, the 'fly' has been starved out.

In his annual report for 1942 the Provincial Commissioner S Province, Tanganyika, stated that "vermin, in which term are here included elephant, hippopotamus, and other game continue to take great toll of the African's crops." It may be assumed that the business men in charge of the groundnut scheme will not permit the wreckage of their works by these animals. But no benefit will accrue to the African, except possibly those actually employed on the groundnut scheme, if the game (and 'fly') are merely driven away to native occupied land. Only aggravation of the state of affairs reported by the Provincial Commissioner can result from such action. The game must be destroyed, as it has been, with such beneficial results, in S Rhodesia.

All administrative officers undergo anthropological training and, better still, acquire an intimate knowledge of native life and customs in their daily work. There is no need, therefore for the dispatch of 'anthropological experts,' who would only be beginning to understand the local natives by the time that the extra fat was being consumed in this country—I am, etc.,

Bournemouth

J B DAVEY

Arsenical Encephalopathy

SIR,—It was with great interest that I read the article by Drs G Hipps and R Goldberg on arsenical encephalopathy (March 8, p 296).

While serving as a V D specialist in a large V D hospital in Bengal I saw over seventy cases of arsenical encephalopathy

all of them proved post mortem. During this time—August 1943, to June, 1944—many other hospitals in India reported large numbers of cases of arsenical encephalopathy.

The case reported was very typical in its origin with its aura—but we sometimes noticed that the man had complained of slight headache and of feeling unwell after his previous injection. These symptoms were thought to be of great significance. Their case is also typical with its convulsion but we did not notice tongue-biting, and almost always we noticed athetoid movements, which do not seem to have been present in the case reported. The high rise of temperature before the end is also typical and their post mortem findings are just as we always found in India. I quite agree with the authors on the unusual feature of their case. First, the long time interval before the condition developed. All our cases occurred between the second and fifth injection, nearly always after the third. Death was much more rapid in our cases and sometimes occurred twenty-four hours after the first symptoms. Thirdly, in our hospital we had no authentic case of recovery from arsenical encephalopathy. Death occurred in all cases. Our cases were all of early syphilis, no cases occurred in congenital syphilis. The treatment of early syphilis was then 0.3 or 0.45 g NAB with 0.2 g bismuth then 0.6 g NAB after 5 days and then 0.6 g NAB and 0.2 g bismuth weekly. Our treatment of the encephalopathy was very similar to that carried out by Drs Hipps and Goldberg.

Another important feature was that most of the cases were Indians, and I can only remember three cases in Europeans. Furthermore, the Indians were usually Southern Indians, in whom there is often a dietary deficiency in protein, and it was suggested that this could have been a contributory factor—I am, etc.

London W5

J M H McMURRAY

London Clinic for Epileptics

SIR,—Many of your readers are interested in one aspect or another of the difficult problem of the epileptic. These unfortunate people often find it hard to secure a place in industry even with the assistance of the DROs at the employment exchanges. A considerable number are known to be drifting about in the community in need of medical advice or of help with their social problems.

In an endeavour to meet this situation a clinic has been established by the London County Council at St John's Hospital St John's Hill, Battersea, on Wednesday afternoons at 2.30. The medical officer in charge is a senior officer seconded from St Ebba's Hospital and an experienced psychiatric social worker is in attendance. The clinic works in close association with the employment exchanges and with the colonies for epileptics, and it is understood that excellent results are being obtained. Doctors in private practice or on hospital or clinic staffs who wish for advice on epileptic patients living in London should make an application to the psychiatric social worker at the hospital—I am etc.

London SE1

ALLEN DALEY
Medical Officer of Health

Anaesthetic Apparatus and Cross-infection

SIR,—Writing in 1873 Skinner made the following observations on the use of anaesthetic apparatus:

"There is no one inhaler, my own excepted, where every patient is not made to breathe through the same mouthpiece, tube, and chamber. Sweet Seventeen is made to follow another whose nasal and pulmonary mucous membrane leave alone the cutaneous surroundings of the mouth and nares may be exhalant of all odours but those of purity and innocence."

Reading this recently reminded me of attempts made by the theatre sister to clean the rebreathing bag of our Coxeter Mushin apparatus as she thought it a nasty habit for all the patients to breathe out of this. A search of the literature revealed only one reference to the possibility of cross infection from anaesthetic apparatus, and that did no more than mention the possibility of the soda lime acting as a bacterial filter. I therefore thought it worth while to record some actual experiments performed on our apparatus. Already a swab had been sent to the laboratory from the inside of the breathing bag

This was returned. The swab contained a green mould Culture heavy growth of haemolytic *Bact coli*

It is my practice not to switch on the soda-lime absorber for the first few minutes of an induction so I next took the following swabs (1) from the expiratory valve before absorption and ether sparse growth *Bact coli* (2) from the inspiratory valve before absorption and ether one mycelial colony only, (3) from the expiratory valve after a half-hour's absorption and ether sterile, (4) from the inspiratory valve after a half-hour's absorption and ether sterile. This seemed reassuring so I used the apparatus for a whole morning's work—the last two cases being short gas-and-oxygen anaesthetics in which I used the Mushin apparatus without absorption and again I took swabs from the valves and absorber ends of the corrugated tubing. These results were (1) expiratory valve a few discrete colonies of pneumococci (2) inspiratory valve sterile after 24 hours culture. I may add that the face-pieces are immersed in biniodide solution between cases but the corrugated tubing is merely hung up when not in use.

It seems safe therefore to deduce that there is no danger of cross-infection from bacteria in a modern anaesthetic apparatus using soda-lime absorption and it even seems safe without the use of soda lime. There is still the possibility of virus cross infection and this is a matter which is perhaps worthy of investigation—I am, etc

Worthing

F R GUSTERSON

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Psycho-analysis

SIR—In your excellent account in your obituary column (March 8, p 316) of Pierre Janet's record you state that Freud's psychoanalysis produced better results than those of Janet. Is there absolute proof of this assumption? Janet's work, as you so aptly described, was on the lines of hypnotic suggestion, whereas Freud by his psychoanalysis reduced the complex regressions apparently by his reduction of abreaction. In the last generation of such giants in hypnotic treatment alone, where no psychoanalysis was used but only hypnosis how do you account for the remarkable results attained at the Nancy School by Liebault and Henri Bernheim also Wetterstrand of Stockholm who used hypnosis alone? Does it not prove that exalted suggestibility alone may reach the deep centres? Bleedings were produced rapid pulses were slowed down and in Wetterstrand's work in a case of paroxysmal tachycardia with the pulse running at nearly 200 beats per minute sphygmographic tracings showed the beats under hypnotic suggestion alone slowing down to 80 per minute. Bernheim produced blistering under hypnotic suggestion and Liebault practised among the poor at Nancy for 30 years using hypnotic suggestion alone and his results lasted and were excellent. This is all a true and strange paradox, and it would be interesting to have your comments on this where no Freudian methods were used—I am, etc

Southall Middlesex

JOHN R O BRIEN

World Food Council

SIR—With reference to the opening statement in the annotation on the above (Feb 8, p 228) it has to be emphasized that questions arise at once where the food ought to be grown and whether it is necessary for poor nations to increase their purchasing power in order to buy their food from abroad. Advocated by high-powered emotional appeal regarding starving nations the "World Food Board" plan aimed at stabilizing prices by means of buffer stocks and at disposing profitably for the producers, of unmarketable surpluses.

To deal with the last point first in the plan the starving nations were in reality to be used merely as dumps for excess food after it had been paid for by a third party, obviously to the great benefit of privileged countries and persons—the professional producers for sale of food, a very small part indeed of the world's population. The aid of 'starving' nations, with a population mainly of non-industrialized peasants and abundant cultivable land could, however, be enlisted in their

own interest to solve their underfeeding problem for good and all by their being educated and even constrained to grow the food for their own food (more likely to be of a suitable nature) on the spot—a different proposal of course from that of using large scale loans as a means of developing backward countries—backed up to the hilt moreover by the results obtained by amateur plot holders during the war.

For the professional food producing countries the solution of their long term problem lies of course in adapting supply to demand and in diversification of industries. Buffer stock measures that textbook commonplace and the present case cure all are a purely palliative make-shift contrivance applicable only internationally for the temporary alleviation of the effects of depressions. Their use internationally is impossible because consumers' interests are diametrically opposed to those of producers. They are moreover an example—a hidden one—of that universally condemned expedient the export subsidy the international variety of which would add insult to injury by requiring foreign industrial consumers to provide at considerable expense and loss of bargaining power the major part of the funds for the subsidy. Buffer stock schemes moreover are liable to other disabilities. Enormous expenditure would be involved in carrying them out. Where a commodity is produced at home and abroad the existence of tariffs to protect domestic production would prevent the establishment of a world food price the essential basis for their formation. Stocks would deteriorate on storage and finally, and worst of all because of further food prices to the producer there would be overproduction of food with unmarketable surpluses—a situation incapable of being met by production-control measures in view of the inelasticity of supply and demand. We are not dealing here with philanthropy and on a purely economic basis the building up of reserves to meet possible famine conditions ought to be the obligation solely of those nations subject to such hazards.

The development by Sir John Boyd Orr of the World Food Board plan from the suggestion by Mr S M Bruce in 1935 of a marriage between nutrition and agriculture and the composition of the Preparatory Commission to inquire into its soundness could be discussed in some detail with considerable advantage. Further remarks however will be confined to observations on a recent occurrence which in many respects supplies an up-to-date summary of the situation. In the House of Commons on Feb 6 Mr H Wilson MP reported on and supported the findings of the Preparatory Commission. Mr Richard Law MP suggested that both Mr Wilson's speech and the report buried Orr's proposal of a World Food Board whereupon Mr Wilson interrupted to say that Sir John Boyd Orr was highly delighted with the report. The obvious comment is that somebody has queer ideas of relevancy and refutation in a reply and that somebody else appears to be remarkably easy to please and to be liable to self-persecution as the quotation from the *Observer* (see *h M J* Feb 8 p 228) also demonstrates—I am etc

Aberdeen

J P MCGOWAN

Use of Penicillin Pastilles

SIR—Dr T H Manners Kerfoot states (Feb 1 p 197) that stomatitis after oral penicillin may be due either to the penicillin or the sucrose base. He argues that as the sucrose base is used in other pastilles not containing penicillin without causing stomatitis the penicillin must be the cause.

There is an alternative explanation that both penicillin and sucrose base are required to produce stomatitis. I believe this to be the true one for the following reasons. (1) As Dr Alexander MacGregor (p 197) points out in the original work on penicillin pastilles we treated over a thousand patients without causing stomatitis the base in this case being soft and viscous. (2) If sufficient penicillin is given by the systemic route it is secreted in the saliva producing the same changes in flora of the mouth as are obtained by local treatment. These patients do not develop stomatitis. It would appear therefore that penicillin alone or penicillin in a soft base does not cause stomatitis. If however patients having systemic penicillin at the rate of approximately one million units a day are given boiled sweets to suck they develop the condition.

The clinical evidence supports this suggestion, penicillin stomatitis starting in the areas receiving the most trauma, namely the tip and sides of the tongue, even in the later stages the more protected areas tending to escape. Though the pastilles and the trochisci both contain sucrose, the trochisci contain the greater quantity. It may be that continuous sucking of such a base alone would produce stomatitis, the importance of the penicillin being merely that more intensive treatment is prescribed when penicillin is an ingredient than when it is not. While Dr Kerfoot's observations suggest that this is improbable with the lozenges that he prepares it is conceivable that the continuous abrasive action of sucrose crystals on the buccal mucosa, supplemented perhaps by the osmotic effect of a hypertonic solution may be sufficient to cause stomatitis in the absence of penicillin. Observations on the point are desirable.

Quite apart from the relationship between the trochiscus and stomatitis there are other grounds for criticism. Dr MacGregor stressed the importance of a viscous base if the maximum effect is to be obtained on the tonsils, quoting the references for his opinion. This being so I will merely state that I am in complete agreement with him. The trochiscus is unsuitable for use in plastic surgery of the mouth because it is so hard that the patient will not tolerate it, and even if he can be persuaded to maintain it in a less sensitive part of his mouth the base accumulates in intra-oral wounds and has to be removed manually.

In conclusion I would stress that I consider the trochiscus penicillin highly unsatisfactory for the reasons stated, and hope that the manufacturing companies will soon devise a more suitable base. Until then, I believe the original pastille devised by Dr MacGregor and myself to be the most satisfactory in spite of its limited keeping properties—I am, etc.,

London WC1

DAVID A LONG

Delayed Reaction to Penicillin

SIR—The recent article by Dr A I Suchecki (Dec 21, 1946, p 938) on allergic reactions to penicillin prompts me to record a case where the reaction was unusually delayed.

CASE REPORT

At Forest Isolation Hospital, Mansfield, a girl of five years, suffering from bronchopneumonia following whooping cough received 400 000 units of penicillin in four-hourly doses from Dec 15-19. The penicillin used was an ordinary commercial brand in aqueous solution, injected intramuscularly. Rapid improvement was followed by a slight relapse ten days later, and sulphathiazole 8 g was given orally from Dec 30 to Jan 4.

On Jan 27—i.e., 39 days after cessation of penicillin and 23 days after cessation of sulphathiazole—she developed a raised, pink, blotchy rash, generalized in distribution but most marked over the sites of penicillin injections, oedema, especially of the hands and eyelids, pruritus of moderate degree, pyrexia of 101° – 103° F (38.3° – 39.4° C) and considerable bronchospasm which was temporarily relieved by adrenaline. There was no arthralgia, no hydrarthrosis, no lymphadenopathy, and no jaundice, and the urine was normal in all respects. The features which persisted longest were the oedema (which subsided on Feb 1) and the rash (which disappeared on Jan 31). On the neck the fading of the utricular eruption coincided with the appearance of a number of petechiae.

The most delayed penicillin reaction previously known to me was Dr J N Turnbull's case (Jan 18 p 111), where the reaction occurred 35 days after cessation of parenteral treatment. A delay of 39 days before the appearance of an allergic reaction is certainly most unusual yet the features were unlike those of a sulphonamide drug rash and were completely in line with those of penicillin reactions as described by Suchecki and others—I am, etc.,

Mansfield

I A G MACQUEEN

Endocrines in Gynaecology

SIR—The fact that the action of hormones depends not only on the hormones themselves but also on the mode of reaction to them of the target cells is well known in endocrine biology, and is bound up with the general conception of "biological field"—a conception which we owe to the brilliant work of J Needham and C Waddington. Albright coined the

characteristic expression 'Seabright bantam syndrome'. T male Seabright has female feathering, which is attributed to any predominance of female hormone in the bird but to the special reaction of its feathers to male hormone. This conception enables us to understand much of the physiopathology of endocrine diseases.

Mr Aleck Bourne (Jan 18, p 79) has rightly stressed the importance of this biological principle in practice. Endocrine diseases are not diseases of one of the six classical glands of internal secretion but disturbances in the balance of a whole system of constitutional or metabolic regulation composed of the genes, endocrines, neurovegetative system, psycho-associational cortex, certain environmental factors, and the reactivity of the cells—the "competence" of the biologists. Thus endocrinotherapy is not the sole method of treatment of endocrine diseases. On the contrary, its one-sided application may do harm by upsetting the balance of the system of constitutional regulation as shown by the bad effects of an exclusively endocrine treatment in certain eunuchoidisms in the young and by the disasters of attempts at rejuvenation with testicular organotherapy.

At the Annual Meeting of the BMA at Oxford in 1936 I opened a discussion on physical methods in endocrinotherapy, in which I stressed the importance of physical medicine in modifying the balance of the system of constitutional regulation and thus its superiority, in certain endocrine diseases, over organotherapy. In endocrine as in all other diseases we deal with the complete psycho-physical personality. It is curious that psychiatry and endocrinology, the two branches of medicine which have contributed to our modern concept of total personality in disease, seem to revert to the comfortable one-sidedness which they have been fighting; psychiatrists stress unduly the psychological factors at the expense of the organic factors while endocrinologists seem to dwell exclusively on the hormones with which we have been flooded—I am, etc.

London W1

A P CAWADIAS

Endocrine Receptors in Relation to Cancer

SIR—No doubt the idea that an endocrine stimulus or impulse must be received as well as transmitted has occurred to many, though I agree with Mr Aleck Bourne (Jan 18, p 79) that it has not been given the prominence which Mr Bourne rightly, I think, considers it should receive. The idea, however, was the main point of a paper entitled "A Theory of Cancer" published in the *Lancet* 1920 2, 1,298. It did not attract any particular attention as far as I know and I only remember it because I wrote it and because I have never ceased to think of endocrine glands in general as structures which not only transmit a particular kind of energy but whose effectiveness depends on the proper reception of the message transmitted. I suggested, in fact, that sensitivity to hormone messages was a necessary function of every normal cell of every tissue and I endeavoured to trace the sequence of events that must occur in a group of cells in which this function was being imperfectly carried out as the result of a failure to cope with an excessive demand on the regenerative capacity of those cells. I was not thinking of special hormones but of what I called the "co-ordinating hormone" a hypothetical hormone whose existence it seemed to me to be a logical necessity to assume, as in no other way could the harmony of growth and function of all normal tissues be explained.

I venture to recall these points now as a comment on Mr Bourne's paper because I thought that the idea of receptors (or, as I called it, cell sensitivity) could be applied to Dr A Paine's then recently published paper (*Lancet* 1920 2 692) on the origin of cancer. Dr Paine's views may be epitomized in the following quotation from his paper: "We have thus traced cancer to its source, it springs from a degenerate cell, a cell that has in some manner been damaged or injured, and from such a cell all cancer cells are descended." In my paper I attempted to show that cells so degenerated gradually failed in all their functions, both special and general, I tried to make the point that this failure must include the failure to respond to the message of the co-ordinating hormone and that failure in this function must inevitably result in cancer—I am, etc.,

Leicester

T C CLARE

National Health Service

SIR—Having read no constructive criticism of the National Health Service I offer the following. At the plebiscite I voted No, because I am against any form of compulsion, unless it be in war or for the maintenance of peace, law and order, or in cases of unsound mind. Under the present Act of Social Security and National Health everyone is compelled to contribute a certain weekly sum, for which in return he will receive certain benefits. This should in my opinion, be voluntary. The insurance company to whom premiums are paid should be a matter of individual choice. State or private.

A health service should be organized by the State for the benefit of those who pay their premiums and for those who are unable to pay at all. Consulting rooms, hospitals etc. should be provided and staffed. Vacancies on these staffs, some whole time, some part-time, should be filled by advertisement in the usual manner. Pay and conditions being good, there would be ample people to fill them. In addition these State-controlled hospitals would offer accommodation for all with three classes of luxury: those not in the State insurance scheme paying the usual fees and anyone wishing more luxurious accommodation paying the excess—the treatment in every hospital being carried out by its own staff. Private hospitals and nursing homes would remain as at present as also would the public health services.

Medical teaching would be provided at the State hospitals and in the consulting rooms, in collaboration with the universities and colleges. Each doctor would be able to choose to work in private practice or part- or whole-time in some branch of the State Service.

I cannot in such a short space give a scheme in complete detail but if it is worth doing it should not be too difficult. There is still time to start again and to produce complete medical facilities for all, based on the principles of freedom, and giving everyone the opportunity of being responsible personally for the care and future of himself and his family. It is only by giving such responsibility to the individual that the moral fibre of the country can be saved.—I am etc.

Southsea, Hants.

J. T. FURNIVALL

Two Negotiating Committees, Past and Present

SIR,—The strongest impression I took away with me from the recent Special Representative Meeting was the lack of confidence shown in the Negotiating Committee. One resolution which was carried asked them to resign; others tried to impose terms of reference upon the new Negotiating Committee, and many more asked the new committee to report back frequently. What is wrong with the old and new Negotiating Committees? It is not the individual members that are at fault, it is the constitutional set-up that makes it unsuitable to carry out the functions invested upon it.

The B.M.A. has been recognized as the only body capable of negotiating on behalf of all shades of medical opinion. It represents the Royal Colleges, the consultants, medical officers of health, the Medical Women's Federation and the general practitioners. Therefore the first Negotiating Committee, which had to discuss mainly the fundamental principles of the Act, should have represented the B.M.A. only and no other body. The committee would then have been bound to press upon the Minister the various resolutions passed by recent Representative Meetings with overwhelming majorities. Instead, we have had a Negotiating Committee divided among itself and giving the Minister the impression that the doctors were not united. The Negotiating Committee should have comprised men of talent and vision but nevertheless representing the majority view of the B.M.A. instead of men with violent sectional interests and conflicting views. How comes it that the Royal Colleges, which are already represented by the B.M.A. should have eight representatives of their own on such a body? Surely this is out of proportion to their political influence on the profession.

Then, a second Negotiating Committee should have been formed similar to the present one in constitution, in order to negotiate with the Minister on Regulations and Orders. The men on this committee should be chosen for their sectional interests and would discuss details of administrative machinery

and conditions of service. But the fundamental principles of the Act would by this time have already been settled by the first committee, representing the B.M.A. only and, through it, the profession.

We have now reached a critical stage in our relations with the Government. The Minister has asked for negotiations to be started, presumably in accordance with the terms of our recent resolution. This resolution suggests very feebly that the Minister may agree during some stage of the negotiations to consider an alteration in the Act itself. It would be wrong of the Minister and the negotiating body to assume that this milk-and-water resolution reflected the true attitude of the Representative Body. This body only gave way on the main resolution as a result of verbal promises made by the Chairman of Council. But the feeling of the meeting could not be mistaken. There was a determination not to compromise on its main principles and only to enter negotiations on the certainty (not the hope) that the Act itself would be amended.—I am etc.

Newcastle upon Tyne

H. H. GOODMAN

An 84-hour Week

SIR—With your permission I would like to answer Dr R. Dingwall Kennedy and several personal correspondents. It is becoming obvious that a large number of clinics will not be established for some years. During this period doctors' wives will be confined to their homes seven days and nights a week to answer calls. To day many doctors are not providing a 24 hour service and are getting away with it. Under the National Health Service scheme doctors, after an initial fire will be directed by the Minister to find an outlet for their energies elsewhere than in the scheme. He will have the power, will use the power and in my humble opinion will be quite right to do so if we sign the contract.

My letter was written as a warning and contained a constructive suggestion. Half-day and holiday rotas can be worked out by the doctors themselves but in emergency night service should be provided by the Minister. Among other things this will obviate the need of trying to get a domestic to live in. If we are to have planning let us plan properly so that general practitioners and their wives may lead fuller and less harassed lives.—I am etc.

London S.W. 6

G. ROSEMONI

Cerebral Malaria in Great Britain

SIR—Dr P. H. Willcox (March 8 p. 310) has wisely stressed the importance of CSF examination in individuals developing fever and meningism on return to this country from endemic malarious regions. On account of the frequency of malarial relapses it is also well to stress that in these cases malaria should first of all be excluded from the clinical picture before undertaking laboratory investigations for suspected concomitant infections such as meningococcal meningitis. Negative blood films should never preclude the possibility of malaria for among all its protean forms the cerebral type (except in children) most frequently evades microscopic detection.

A full blown pyogenic meningitis on the other hand, can always be bacteriologically confirmed though investigation to this end frequently necessitates anaesthesia before cerebrospinal fluid can safely be withdrawn from a restless delirious patient.

Intravenous quinine is easily administered and in cerebral malaria response is rapid and certain except when dangerous hyperpyrexia has supervened—a threat which is surely a further incentive to its prompt administration. Rapid subsidence of symptoms establishes diagnosis or at least proclaims the dominance of malaria in the clinical picture.

Intravenous quinine is fraught with no particular danger and where rapid decline of temperature and emergence from delirium or stupor do not ensue investigation can then be directed to the cerebrospinal fluid without having lost valuable time—for time is a more urgent factor in the treatment of cerebral malaria than in any pyogenic form of meningitis. It should not be forgotten that a leucocyte count at the outset when examining for parasites, helps in differential diagnosis.

I well recall the case of a young Fren in West Africa in 1943. He was febrile and continued for 3 days before...

too all the signs of meningism, including nuchal rigidity and Kernig's sign. Blood films on admission were negative for malarial parasites but despite this and during preparations for withdrawal of CSF it was suggested that he be given intravenous quinine 10 gr (0.65 g).

Half an hour after administration delirium had ceased, and lying comfortably in bed he spoke quietly and coherently and was curious to know what had happened to him. Examination of the CSF was then carried out and meningitis excluded as a concomitant condition.

Malaria is a great simulator and while not having had the opportunity of reading Dr Walter Broadbent's letter (Jan 4 p 32) I conclude this fact was uppermost in his mind when approaching his case—I am, etc.,

London W1

A C LOVETT-CAMPBELL

SIR—In subtertian malaria schizogony takes place in the capillaries and not in the peripheral blood. If the parasites "swarm" in abdominal capillaries, cholera, dysentery, biliary colic, cholecystitis, pancreatitis, liver abscess, or even acute obstruction may be simulated. Similarly if the parasite "swarms" in the capillaries of the lungs it may simulate bronchitis, pneumonia or pleurisy. It may even invade the capillaries of the heart and give rise to symptoms resembling myocarditis. The cerebral type is due to "swarming" in the capillaries of the brain which become blocked by emboli of parasites undergoing schizogony.

In the communications published in your correspondence columns on this subject the type of parasite is not mentioned. If *P. falciparum* is absent and only the BT parasite is present, I should doubt the diagnosis of cerebral malaria as I understand it and look for some other cause of the cerebral symptoms—I am etc.

Brookwood Surrey

H M STANLEY TURNER

Retrodisplaced Gravid Uterus

SIR—I have read with considerable interest the paper (Feb 1, p 169) on retrodisplaced gravid uterus by my old colleague, Mr H H Fouracre Barns but must quarrel with his conclusion that operative treatment of retrodisplaced uterus on account of abortion is not advocated.

In patient No 39 Mr Barns records the occurrence of three pregnancies in a patient in whom a ventrisuspension operation had been carried out. There is no record of the position of the uterus in the first two, but in the third it was certainly retrodisplaced, and following correction of this displacement a successful pregnancy occurred. From this it may reasonably be deduced that the ventrisuspension operation was unsuccessful and that the uterus was retrodisplaced in the first two pregnancies. When retroversion was eliminated the third pregnancy went successfully to term, and it seems probable that the same satisfactory conclusion might have been secured in the first two pregnancies had anteversion of the uterus been ensured.

In his case No 42 spontaneous anteversion of the uterus following pessary treatment at the twelfth week was unsuccessful in preventing abortion nine weeks later. In the next pregnancy, however, the uterus was replaced at nine weeks and pregnancy proceeded to a successful conclusion. In this case the circulatory or other factors adversely influencing successful nidation in cases of retrodisplacement of the uterus were treated in the second pregnancy at a sufficiently early stage to allow of recovery and restoration to normal, whereas in the first pregnancy treated at twelve weeks circulatory factors had already caused so much disturbance that it was impossible for the pregnancy to continue.

In one of my own cases abortion occurred at 12 weeks in her first two pregnancies. On each occasion the uterus had been retroverted when she was first seen at eight weeks and had been manipulated and maintained in a position of anteversion by pessary but, in spite of this, abortion had taken place about a month later on each occasion. Following this ventrisuspension was carried out and her third pregnancy went to term uneventfully. In this patient nidation had been so adversely affected by retrodisplacement during the first two months of the pregnancy that it was impossible for the pregnancy to continue. This is in contradistinction to the second pregnancy of Mr Barns's case No 42, but in individual variation in the capability of the pregnancy of tolerating adverse circumstances is found in other connexions than retrodisplacement.

While I agree with Mr Barns's contention that habitual abortion may occur in patients with retrodisplacement of the uterus for reasons unconnected with this fact, I feel nevertheless that where abortion has occurred more than once and where

the uterus is found to be retrodisplaced there is a strong indication for ventrisuspension. As he himself has pointed out circulatory abnormalities may interfere with the imbedding of the ovum. I agree that in the vast majority of cases retrodisplacement in the early months is compatible with normal pregnancy, and I share Mr Barns's Service experience in this connexion, but nevertheless where abortion has occurred I feel that the factor of retroversion which can be so easily eliminated, should be removed by operative means—I am etc.

Inverness

J A CHALMERS

Thrush Vaginitis in Pregnancy

SIR—Much has been written on the treatment of *Monilia albicans* in pregnancy by various authors and a majority use a 2% watery solution of gentian violet. From thereon their methods of application and frequency of application, etc. vary very considerably. Several of the drawbacks to this treatment are (1) the difficulty in adequately swabbing all the folds of the pregnant vagina, (2) the discomfort to the patient, (3) the very undesirable soiling of the patient's vulva which secondarily soils her underclothing, (4) the difficulty in getting a cure by this intermittent method.

For two years now I have been getting excellent results by the following method.

The 2% solution of gentian violet is kept in a bottle with a neck not larger than 3/8 in (0.9 cm.) in diameter (internal measurements). A "tampax" tampon is held against the open neck of the bottle, and the tampon and bottle are inverted and held in this position until the gentian violet has diffused almost the full length of the tampon, expanding it slightly. A Brewer's or Cosco's speculum is placed in the vagina and the large cheesy colonies of monilia are wiped away and the tampon inserted into the posterior vault of the vagina. This is left *in situ* for a week when it is removed and replaced by another fresh and similarly treated tampon. On the average I have secured a cure after three weeks of treatment. The tampon's continuous supply of gentian violet constantly acts on any monilia present. The soiling of the patient (plus the operator and his equipment) is reduced to a minimum, for any discoloured seepage from the vagina is easily controlled by an ordinary sanitary towel worn by the patient.

With this treatment the itching and discomfort of the patient usually disappear within twenty-four hours, and a complete cure is usually obtained in two or three applications. This method lends itself very favourably to treatment in private practice—I am, etc.,

Derby

LINDSAY WATT

Achromotrichia in Tropical Malnutrition

SIR—During three years of service in the S.E.A.C. and with the occupation force in Japan I have seen a large number of nutritional anaemia cases. I am not including here those in whom anaemia was a feature of sprue syndrome. These patients were young Indian other ranks between the age groups of 20 and 30 years and almost all of them strict vegetarians. The presenting symptoms were breathlessness on exertion, progressive debility, and anorexia. They invariably ran a low grade, intermittent temperature. Diarrhoea was not a common feature until the end and the tongue was not sore. Rarely manifestations of other associated avitaminosis, like dry rough skin and pigmentation over the face were present. CNS was never involved. Haematocrit investigations done on some mostly revealed that the anaemia was of the hyperchromic megalocytic type.

In confirmation of what Capt E Roebuck writes (Aug 24, 1946 p 277), I may add that achromotrichia without any alopecia or looseness of the roots was noticed very often. Although I have not any statistical control studies I feel quite certain that the incidence of depigmentation of hair among such patients far exceeds that in the population at large. Another thing noticed was that more North Indians were treated in hospitals for gross degrees of anaemia although probably there are more vegetarians from South India in the Indian Army. They responded very well to high protein diet, iron, and vitamins, with liver administered parenterally. Blood transfusion was needed frequently and a common effect not often recorded was that the irregular temperature settled down immediately after it—I am, etc.

British Occupation Commonwealth Force
Kure Japan

S K ROY
Lieut Col TMS/IAAC

Obituary

BRYAN AUSTIN McSWINEY, M.B., Sc.D., F.R.S.

British physiology and St Thomas's Hospital, London, have lost an outstanding personality by the sudden death of Prof. Bryan Austin McSwiney on March 8.

An only child, he was born in Chicago on May 20, 1894, his family came from County Cork, Eire. Entering Trinity College, Dublin in 1913, he was elected the Reuben Harvee Scholar in 1915. He then became a surgeon sub lieutenant in the Royal Naval Volunteer Reserve and saw service in the Eastern Mediterranean. Recalled to complete his medical studies, he graduated B.A. in 1916, and M.B., B.Ch., B.A.O. in 1917. He took the Sc.D. (Dublin) in 1928. Commissioned as a lieutenant in the R.A.M.C., he acted as assistant to the scientific adviser of the Ministry of Food. At the end of the war he was appointed assistant to the Professor of the Institutes of Medicine in the School of Physic, Trinity College Dublin. In 1919 he became lecturer in experimental physiology in the University of Leeds. In the following year he succeeded T. Graham Brown as lecturer in experimental physiology at the University of Manchester under Prof. A. V. Hill. Here he remained for six years and began his study of involuntary muscle which was to interest him throughout the rest of his academic career. While in Manchester he collaborated with Prof. J. S. B. Stopford and the late Mr. E. D. McCrae in a study of the efferent innervation of the stomach, and with Dr. J. C. Bramwell and Prof. Hill in the measurement of pulse wave velocities.

In 1926 McSwiney was invited to return to Leeds as professor of physiology a position he was to occupy for the next ten years. During this time he accomplished much of the work that brought him a world-wide reputation. His particular interest lay in the gastro intestinal tract. Initially concerned with its motility, he became interested through the problem of its tonus, in the study of the afferent innervation of the gastro intestinal tract. In their attack on this problem the work of McSwiney and his colleagues bears all the hall marks of singleness of purpose, consummate skill in physiological experimentation, and painstaking accuracy. McSwiney's interests in physiological investigation were not confined to academic research, he realized to the full the part physiology could, and must, play in industry and he was always willing to place his knowledge and enthusiasm at the disposal of industry. In his department he gave hospitality to physiologists and chemists working on behalf of the Safety in Mines Research Board, and to others concerned with subjects as diverse as the fastness of dyes in textiles, and veterinary anthelmintics. During this period he showed a flair for organization and for laboratory design. He was chiefly responsible for the design and equipment of a new wing to house physiological and biochemical research. This building which contains an animal house, operating theatre, x-ray laboratory, workshop, and a small scale chemical plant, in addition to biochemical and experimental physiology laboratories, remains in the forefront of such design.

In 1936 McSwiney was invited to the chair of physiology in the University of London at St Thomas's Hospital Medical School, in succession to Prof. John Mellanby. In June, 1939 he learned that W. M. Boothby and his colleagues had developed an efficient mask which would deliver oxygen at high concentrations with minimal embarrassment to the subject. With Sir Henry Tidy and Dr. J. Forest Smith he journeyed to Boothby's laboratory at the Mayo Clinic. They returned the week before the war began with much of the basic equipment used to form the oxygen therapy units of the E.M.S.

When it became necessary to evacuate the hospital and medical school from London in October, 1940 McSwiney was largely responsible for their establishment in Surrey. After his appointment as Dean of the medical school in 1940 he continually concerned himself in maintaining and extending the activities of the hospital and the school and later in arranging for their re-establishment in London. He was elected a Fellow of the Royal Society in 1944, and to the London University in 1946.

Since the war he had twice visited the West Indies on behalf of the University of London to consider the possibility of establishing a medical school there. Last summer, at the request of the Colonial Office, he toured East Africa to report on medical education. He had returned from examining for the Primary Fellowship of the Royal College of Surgeons in Egypt, India, and Australasia only a week before he was taken ill with bronchopneumonia, which was the prelude to his sudden and untimely death.

Bryan Austin McSwiney was remarkable for his accessibility. He listened as attentively to the most junior technician as to the most senior surgeon or physician. He was always willing to discuss any problem, though not prone to give dogmatic advice. His enthusiasm was boundless, his encouragement infectious and he revelled in work. He believed more than most in the apprenticeship system but once the term had been satisfactorily served he gave his colleagues his complete trust and support. Many owe such knowledge as they possess of a particular subject not so much to what he told them as to the encouragement and opportunities he gave them to further their own investigations. Above all his views were sound common sense. He will be missed by many people not all within his immediate academic circle. He leaves a widow, two daughters and three sons.

Mr. John B. Hunter writes: The news of the death of Bryan McSwiney will have come as a great shock to his many friends and colleagues. He came to London with a great reputation as a physiologist both as a teacher and research worker, having held several appointments in the provinces. Shortly after his arrival he showed he was also a man of affairs. He was in great part responsible for the promotion of the resuscitation units that were formed during the war bringing his physiological knowledge of shock to the practical side of resuscitation. In 1940 when he was appointed Dean of St Thomas's he became known to a wider circle in the University of London. His gift of clear thinking and his administrative qualities were soon appreciated and he became secretary to the Conference of Metropolitan Deans and a member of the Collegiate Council of the University and later a member of the Senate. It was my good fortune to be associated with him in these activities and together we travelled some thousands of miles on a Colonial inquiry, and I came still more to appreciate his likable qualities and his sense of humour chiefly shown in his appreciation of the ludicrous which does so much to keep our sense of proportion. His advice in connexion with medical education in the West Indies and Africa will be sorely missed in the University of London and the Colonial Office—for he had wide knowledge of the subject gained at first hand in the Colonies—as will his counsel on medical education in this country.

R. J. GLADSTONE, M.D., F.R.C.S., F.R.S.E.D.

The anatomical world will mourn the death of R. J. Gladstone on Feb. 12, for, although he did not hold a chair of anatomy, he was one of the best known members of the Anatomical Society of Great Britain and Ireland for over fifty years. He was born in 1865 the son of Dr. T. H. Gladstone and was educated at Clapham Grammar School and the University of Aberdeen, where he qualified M.B., Ch.M. in 1888. After leaving Aberdeen he became house-physician and later house-surgeon at the Middlesex Hospital. Having a bilateral congenital contract, he decided to make anatomy his special field of work, and was appointed junior demonstrator in anatomy at the Middlesex Hospital Medical School in 1895. The following year he was promoted to senior demonstrator of anatomy and took his final F.R.C.S.

By this time Gladstone had already started to publish some of his original papers, and in 1905 he went to Vienna with Dr. R. A. Young to investigate methods of teaching anatomy and surgery. A year later he visited Vancouver as a representative of the British Medical Association. He made new contacts and friends and came back to this country with fresh ideas on the teaching of medical students. He continued his association with the Middlesex Hospital in 1913 when he became reader in anatomy at King's College London, a post he held until his retirement in 1929. He had a very extensive knowledge of anatomy, anthropology, and embryology. He was a thorough master of his subject.

to say that Gladstone had a better knowledge of human and comparative embryology than any other anatomist of his day.

Gladstone was a born worker and put in a very full day in the anatomy department. He did his full share of demonstrating in the dissecting-room, and in this respect was an example to those senior demonstrators who consider their job is purely research. At night he worked on the many papers that came from his pen. He loved music and was always delighted to attend any musical show that medical students organized. He was an ardent supporter of the Zoological Society and spent most of his Sundays in the gardens making friends with a variety of different animals.

He could not see clearly beyond a few feet, and this no doubt was his greatest handicap in life, as he could not see the pranks his students were performing during his lectures, and he would have found it difficult to have had sole charge of a department. Although the students ragged him and were liable to be somewhat uproarious during his lectures, he was very popular and was affectionately known as "Gladeye." He worked hard for the Anatomical Society and put in many years as Recorder, his notes of meetings were a model for any successor to emulate. He rarely missed a meeting and was always willing to help the younger members of the Society. He never pushed himself forward and was always content to take a back seat. When he spoke at meetings his remarks were constructive and had practical experience as their main background.

Gladstone wrote with Cecil Wakeley a book on the pineal organ, which is a most comprehensive volume and one which has been styled as the most practical and valuable work that has ever been published on that subject. In 1930 he began to write a textbook on human embryology, but this has never been completed. This was because as soon as he finished one section he wanted to revise it and bring it up to date. He completed over 500 drawings for this book, and anatomists the world over are the poorer for its non-appearance. He married in 1912, and a son and a daughter completed a very happy home. He often worked far into the night, and was meticulous regarding the facts and figures that appeared in his writings. For many years he was a valued contributor to the columns of the *British Medical Journal* and he had been a member of the B.M.A. for over fifty years.

He was a lovable and meek man who turned the other cheek rather than speak out against those who did not agree with him. When he retired from King's College he spent his time abstracting medical literature, or else reading proofs and verifying references in medical articles passed for press. His house in Dulwich was bombed in 1941 and he had to move. He found a new home at Brockenhurst, where he continued his work until a few days before his death. Gladstone was a born artist and illustrated his many papers with excellent drawings. His daughter has inherited this talent. Gladstone left a wealth of embryonic material behind him at King's College. There are series of sections of human embryos, all carefully documented, which should prove of the greatest value to students of anatomy and embryology.

LOUIS COBBETT, M.D., F.R.C.S.

Dr. Louis Cobbett was taken ill at his home at Cambridge on March 9, and died in hospital the next day at the age of 85. Louis Cobbett was born in 1862 and was educated at Lancing and Trinity College, Cambridge. After leaving Cambridge where he had come under the influence of Sir George Humphrey, he went to St. Thomas's Hospital obtaining the Conjoint Diploma in 1890, the Cambridge M.B. in 1892 and later the F.R.C.S. He was house surgeon to the late Sir William MacCormac. He proceeded M.D. in 1899 with a thesis "On the nature of the action of antitoxin."

He returned to Cambridge in 1893 as demonstrator of pathology under C. S. Roy, the first professor of pathology in the university. In 1894 he resigned the demonstratorship and became John Lucas Walker student, a post he held till 1897. In 1894 he became interested in diphtheria, especially in the production and effects of antitoxin and in the cultural characteristics of the diphtheria bacillus. During the next few years he published several papers on these subjects. In 1900 outbreaks of diphtheria in Cambridge and Colchester gave him the opportunity of tracing the spread of the disease by the examination

of school and other contacts. He investigated the virulence of cultures from all patients and infected contacts, and in order to check the spread of the disease arranged for the isolation of the latter till the bacilli had disappeared from their throats and noses. His work was among the first large scale investigations of this type.

In 1902 he was appointed scientific investigator to the Royal Commission on Tuberculosis, with charge of one of the experimental farms at Stansted. The well-known results of his work there were published in an appendix to the Royal Commission's report of 1907. For about a year he held the professorship of pathology in the University of Sheffield and then returned to Cambridge in 1908 on his appointment to the lectureship in pathology, a post he held till 1929. During this period he taught with great enthusiasm and published many papers chiefly on the mode of spread of tuberculosis. After retiring from the lectureship he worked in the department of pathology, mainly on the bacteriology of tuberculosis, and gave courses of lectures to students taking Part II of the Natural Sciences Tripos. He had been a member of the British Medical Association and acted as vice-president of the section of pathology and bacteriology at the Annual Meeting in 1920.

According to a correspondent Dr. Cobbett was remarkable for his kindly disposition, his keenness in teaching, his interest in and kindness to the junior assistants in the department and his enthusiasm in discussing every subject in which he was interested. He was unmarried.

Dr. PRIDEAUX GEORGE SELBY died at the age of 81 on Feb. 26. Dr. Selby was born in 1865 at Dunedin, New Zealand. He was educated at Bedford Grammar School and at St. Bartholomew's Hospital. After qualifying in 1887 he studied for a while in Vienna. In 1890 he started in general practice at Teynham, Kent, and was soon after appointed medical officer of Beacon Hill Hospital in the old Faversham Rural District Council. In 1905 he succeeded the late Dr. F. A. Genge as medical officer of health for that district. In 1935, when the Faversham and Milton rural districts were amalgamated to form the present Swale Rural District, Dr. Selby retired, but on the death of his successor, Dr. Wernett, he resumed duty as acting medical officer of health pending a new appointment. When war broke out it became impossible to make such an appointment and Dr. Selby had loyally carried on ever since. A great deal of work devolved on him in organizing and superintending A.R.P. work in this locality, and many bomb incidents had to be attended to in addition to his ordinary work. He sold his general practice in 1943, but continued his work as acting M.O.H. until his death. During the war of 1914-18 Dr. Selby served with the rank of major in the R.A.M.C., and was awarded the O.B.E. Dr. Selby contributed two short articles to this *Journal* at the end of the last century and in January last we published a letter from him on the discovery of chloroform. He had been a member of the B.M.A. for just under sixty years.

Medico-Legal

A CONFLICT OF EVIDENCE

The Cornock Case

The trial of Mrs. Rosina Ann Cornock, who on March 7 was acquitted at Bristol Assizes, furnished an unusually striking and complete conflict of medical evidence.

Mr. Cornock was addicted to masochistic practices in which his wife took part and on the evening of Friday, Dec. 6, 1946, the day before his death, she had at his request tied up his wrists and ankles and beaten him. A young cripple called Gilbert Kenneth Bedford, and said to be in love with her, was staying in the house with the couple for the week end (as he often had before). He saw the scene through a glass-pannelled door. At some time after 1 a.m. on Sunday Dec. 8, Mrs. Cornock called an ambulance, and at 2 a.m. Dr. G. R. Fells found Mr. Cornock's dead body laid in a bedroom. The head was bruised in five places, the shoulders and elbows were injured, the small of the back was abraded, the knees and shins were bruised, and the wrists and ankles were rope marked. Torn-up love-letters written by Mrs. Cornock and Bedford to

each other were found Mrs Cornock was on Feb 7 last two months pregnant

The Crown suggested that she had again tied Mr Cornock up at his request and taking advantage of his helplessness drowned him in the bath. Her own story was that she did not love Bedford and her child was her husband's, by an act of intercourse about a fortnight before his death. On the Saturday evening, when Bedford was out the husband had insisted on another act of perversion (not specified but described by the prosecution as "disgusting and incredible"), and afterwards she had prepared a hot bath for him. He had gone up to take it between 10.30 and 11 p.m. Bedford had come in just then. After what seemed a long time she had gone upstairs and found her husband lying in the bath with one leg on either side of the top edge and his head under water. She had felt his pulse, which had stopped and had pulled out the plug. She and Bedford had dragged him out dropping him back once, and again on to the floor and a part of the geyser had broken off and wounded his shins. In the bedroom she had performed artificial respiration on the body for three quarters of an hour. Realizing that this was hopeless she had summoned help.

The medical evidence therefore, became highly important. Dr A. D. Fraser, honorary pathologist at Bristol Royal Infirmary, gave the cause of death as asphyxia by drowning. On a wax model head he demonstrated the five separate severe blows which he said could have been caused by a toy boat about a foot long produced. He said the injuries to the shoulders, elbows, and knees were caused before death possibly by the sides of the bath during a struggle. The abrasions on the small of the back could have been brush burns made by friction of a rope. He would not expect a man to faint in a bath from exhaustion due to the perverted practices described.

On the other side Dr C. R. Gibson, surgeon to the Bath City Police, said that the scalp injuries were consistent with heavy bumps on a flat surface when the heart's action was feeble. The injuries on the shoulders and elbows could not have been caused either by rubbing or by hitting the sides of a bath full of water but might have been caused by the body being dragged or dropped. The marks on the knees could not have been made by the knees being rubbed together, but could have been caused in a small bathroom by the body falling on the ground from the edge of the bath and then being rolled over on to the face for artificial respiration. He had verified by experiment on himself that rope marks on his wrists made an hour before a bath would show as bruises afterwards. To the prosecuting counsel (Mr G. D. Roberts, K.C.) he answered that the explanation of a struggle for life in the bath would be a very easy but a very bad one. Dr A. L. Taylor, honorary pathologist at Bristol General Hospital, said that the toy boat was an extremely unlikely instrument to have caused the head injuries, and the back injuries could have been caused by the dumping of the body on the floor.

The medical witnesses were agreed, therefore, that the injuries were caused during life. They disagreed almost entirely on the means by which they could possibly have been inflicted. This disagreement must have contributed greatly to the reasonable doubt which led the jury to acquit the prisoner.

Universities and Colleges

UNIVERSITY OF OXFORD

In a Congregation held on March 1 the following medical degrees were conferred:

D.M.—W. E. Gibb
B.M.—Elizabeth M. C. Dyke

UNIVERSITY OF CAMBRIDGE

The following candidates have been approved at the examination indicated:

M.Chir.—R. L. Canney, A. S. Till, W. W. Wiggins Davies.

Thomas Renton Elliott, M.D., F.R.S., Emeritus Professor of Medicine in the University of London, has been elected into an Honorary Fellowship of Trinity College.

The Linacre Lecture on "Man's Place Among the Primates," will be delivered by Prof. F. Wood Jones, F.R.S., in the anatomy school of the University on Tuesday, May 6, at 5 p.m.

Medical Notes in Parliament

SCOTTISH HEALTH SERVICE BILL

The Standing Committee on Scottish Bills considered on March 11 Clause 35 of the National Health Service (Scotland) Bill. This Clause deals with compensation for loss of the right to sell a medical practice.

Cmdr GALBRAITH proposed that compensation should be paid forthwith or as soon as practicable after the appointed day or the day on which the medical practitioner to whom it was payable was entered on a list of practitioners undertaking to provide general medical services. It was wrong that a person should not be compensated immediately for a realizable asset. Why should doctors be forbidden to receive compensation until they died or retired or until they fell into line with some circumstances which the Secretary of State would lay down in his regulations? The doctor might have borrowed money to buy the goodwill of his practice and might wish to repay the loan but he was not allowed to do so. So far as Cmdr Galbraith could understand the Clause the interest on the doctors' compensation would accumulate. He did not see why this interest should be withheld. A doctor who had purchased the goodwill of a practice and had practised for two or three years might want to specialize and might require something in his pocket to enable him to do this. Under the Clause that opportunity was taken away from him and from the doctor who wished to secure the payment for the purpose of educating his children or in order to accept a post in one of the big infirmaries.

Arrangements for Compensation

Mr BUCHANAN secured the approval of the Chairman for an enlargement of the discussion to cover a subsequent amendment to permit payment of the compensation when the practitioner reached the age of 65. Mr Buchanan said he could give a general outline of the proposed regulations. The English Act dealt with this exact question in regard to England. The British Medical Association was a body which dealt with the whole of Britain and negotiated for Britain as a whole. If an alteration were made in the terms of the Scottish Bill the Government would need to pass an amending Bill altering the English Act. If doctors particularly young doctors had bought their practices and incurred substantial debts the Government proposed to pay. The Bill covered the case of a doctor who sold his practice and decided to take a hospital appointment. If a doctor took a local authority appointment or became a works doctor the Government would also pay him. The only case in which it would not pay was that in which a doctor remained in practice. There was no hardship there. Where a doctor proposed to buy another practice he almost certainly would pay as much for the new practice as he would for the one he was quitting. So there was no hardship. In the case of retirement the Government proposed to pay, and the position of a doctor going overseas to practise would be the same. The only persons who would not get compensation would be the doctors who remained in practice. The Government had gone out of its way to meet all possible contingencies.

Col ELLIOT could not agree that a doctor moving from one practice to another would normally be exchanging like for like. A doctor in a large industrial practice looked forward to taking at a later stage of life a smaller practice in the country. That was a very old custom and Dr Johnson had referred to it. Did Mr Buchanan say that in such a case the doctor must surrender the unexhausted goodwill of the medical practice in the industrial area and be compensated when he finally retired on the basis of a small practice in a remote part of the country? He asked whether Mr Bevin was in negotiation with the medical profession on these points. The sale of practices was a matter to which the profession attached great importance and on which they looked forward to considerable concessions from the Minister. As Mr Buchanan had said the English Act and this Bill were closely linked and in any negotiations doctors in Scotland ought not to come off worse than doctors in England.

Mr BUCHANAN said Scottish doctors would be treated equally with English doctors. The Government would bear in mind the issue of semi-retirement. That was the only issue it had in mind.

Mr SOMERVILLE HASTINGS hoped Mr Bevin would look at this matter again. No doctor should enter the new Service with a sense of grievance. Many doctors had approached Mr Hastings on this matter of retirement and would in many cases rather have some ready money at once. Many doctors wished to take an easier job or to buy a smaller house and to have a sense of security knowing that they had this little

ouse when they retired Means should be found to enable doctors to claim their retirement money before the day on which they left the Service

Mr BUCHANAN said he wished that Mr Somerville Hastings could have done all this in connexion with the English Bill

Mr HASTINGS said he did try

Major LLOYD said every medical man knew there was a grave risk in the present state of the country that the value of the pound would fall materially before deferred compensation was paid In view of Mr Buchanan's statement Cmdr Galbraith withdrew his amendment and Clause 35 was ordered to stand part of the Bill Clause 36 was also ordered to stand part as was Clause 37 on which a drafting amendment was made

Pharmaceutical Services

On Clause 38 Mr REID raised the question of the transport of drugs and medicines from the manufacturers to the chemists shops He pointed out that ordinary transport organizations might not be able to undertake this work efficiently Mr BUCHANAN said that his Department was in consultation with the Ministry of Transport The interests of the chemists would be safeguarded

On Clause 39 Mr MCKIE suggested that subsection 1 would prevent the medical or dental practitioner from providing pharmaceutical services to any person to whom he rendered general services

Mr BUCHANAN said that in almost nine tenths of the cases in Scotland the chemist rather than the doctor did the dispensing Even in rural districts the chemists did most of the job except in the Highlands and Islands In rural areas where the circumstances were similar to those in the Highlands and Islands the Department proposed to make regulations whereby the doctor would be able to dispense as well as the chemist Medical skill should be utilized in the main for more important branches of work while the chemist carried out the dispensing Col ELLIOT said that although an orthodox practitioner, as a citizen he admitted that those who did not believe in orthodox medicine had the right to be provided for These persons wanted to be sure that the Clause would not preclude the making, for example, of a herbalist prescription He wanted to be assured that the homoeopathic system of medicine, in which he did not himself believe, would still be possible

Mr BUCHANAN said the answer was yes, provided everything was prescribed and dispensed by people with proper qualifications

Dr MORGAN said there was no such thing as a herbalist's prescription

Disqualification of Doctors

Clause 39 was ordered to stand part, and Clause 40, on supplementary ophthalmic services, was accepted without discussion On Clause 41 Cmdr GALBRAITH moved to leave out the words 'prejudicial to the services in question' in the subsection providing a tribunal for inquiry into the conduct of practitioners He proposed to substitute "detrimental to the interests of his patients" He said the words proposed to be left out were very wide If a practitioner was remiss in sending in his returns or sent them in wrongly made out, this would be prejudicial to the services but not to the interests of his patient It might be that he was treating his patient so well that he had not time to devote himself to compilation of the returns

Mr BUCHANAN said he had been attracted by the amendment but it was not easy of acceptance A doctor might be asked to render a service to another doctor in emergency, but might flatly refuse to help That would not be detrimental to his own patients, but would be against the well-being of the Service as a whole On the other hand Mr Buchanan did not want to have doctors 'kicked around' because they drove a motor car too fast or had a quarrel with a policeman A good deal of the wording of the section was from the National Health Insurance legislation, about which there had been no complaint He would look into the matter again before the Report Stage but could not agree to insert the words "his patients"

Mr REID suggested the words 'interests of those requiring his professional services' He remarked that it had been much easier for a doctor who had been turned out from the National Health Insurance scheme to make an alternative livelihood than it would be in the future A kind of medical law was being started and in law it was essential to have a specification of crimes and offences as well as a judge who would understand the position

Mr BUCHANAN agreed that any man charged must know specifically with what he was charged

Sir JOHN GRAHAM KERR thought there was great danger in the proposal of the Bill that representations against a doctor could be made by 'any other person' Such representations might be actuated by jealousy or other personal feeling

Mr BUCHANAN said he would look at that issue The Committee must remember that the Scottish Health Service would be linked inevitably with England Dismissal in one country carried with it dismissal in the other and it would be indefensible that conditions should differ in the two countries

Dr MORGAN said doctors had been penalized unnecessarily for offences which were social and personal and not professional The British Medical Association now had a committee discussing the whole question of these offences in relation to the General Medical Council Income tax inspectors had threatened to bring doctors before an insurance committee for not paying their taxes promptly

The amendment was withdrawn and Mr REID moved another amendment to challenge the provision that a man could be taken off the list for a particular area but left on the list for another district If his activities were injurious to district A, why were they not injurious to area B? There ought to be something short of removing a man completely from all lists He suggested some fine or suspension for a short period

Shape of Things to Come

Mr BUCHANAN could not accept the amendment In his local government experience he had known that it was a good practice to transfer a policeman from one district to another but not to sack him That might apply to doctors Doctors could get into bad company just as Members of Parliament could He was not keen on fines if these could be avoided To fine a doctor £50 or £100 might be disastrous to him A change from one district to another was the best way He had known a case where it was good for a sheriff when he was shifted back to a big city and was given harder work to do

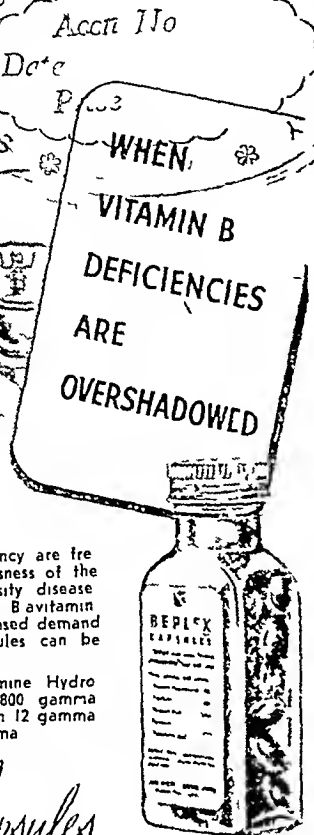
Col ELLIOT asked the Committee to note the length to which regimentation was inevitably carried under the Bill The mind of Mr Buchanan was running on the analogies of whole time service by the sheriff and the policeman in connexion with power to transfer from one place to another To Mr Buchanan he said, 'Do not interfere unless the offence is so grave that it would prejudice the chances of the patient being successfully treated' To say "this man is unpopular here but he would do well somewhere else" meant involvement in local squabbles and might stultify the practice of medicine

Dr MORGAN said the General Medical Council had now adopted a process by which a man was found guilty but was not struck off He was asked to come before them again in six months or a year with testimonials from consultants in the area

The amendment was withdrawn and Mr REID moved to delete the subsection dealing with appeals and to substitute a provision that any person aggrieved by a direction of the tribunal might appeal to the Court of Session, whereas the subsection proposed an appeal to the Secretary of State In recounting the previous stages before an appeal Mr Reid said he understood that if the tribunal acquitted the doctor the Secretary of State would then appeal to himself

Mr BUCHANAN said that if the tribunal acquitted a doctor the Secretary of State had no power whatever Mr REID said that in that case Mr Buchanan had thrown over Mr Bevan and the whole of the argument by which the English Minister sought to justify this Clause Mr Bevan had said 'I must have the last word in every case I must have it in my own hands to sack a doctor I cannot trust and I will not delegate that to any tribunal or court' To his credit Mr Buchanan had recognized that that was an impossible position If Mr Buchanan said that he was content to accept the judgment of the tribunal that the man was all right why could he not be content to accept the decision of the Court of Session?

Mr BUCHANAN said he did not know that Mr Bevan had made a speech on this subject He was not bound by some body else's speeches He had consulted the Lord Advocate and there seemed no doubt that there was no appeal by the Secretary of State against acquittal An aggrieved doctor had an appeal to the tribunal legal members of which were appointed by the Lord President of the Court of Session The chairman would be appointed by someone connected with the legal profession The Eighth Schedule of the Bill said this chairman was to be appointed by the Secretary of State, but the Government had an amendment down making it clear that the President of the Court of Session would do it The tribunal would examine not questions of law but questions of fact In his view the decision would be final and binding If on the other hand, an aggrieved doctor appealed to the Secretary of State he would have a further right of appeal to have his case taken up on the floor of the House of Commons This could be done by some unorthodox doctor who was raising wider issues At present doctors in Britain in private practice could be dismissed from National Health Insurance without any tribunal, but in fact this had rarely happened and the number



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of cases which the Secretary of State would have to decide would be so small that he would have to examine them with the greatest care. The amendment was rejected by 21 to 14 and the Committee adjourned.

Reasons for Disqualification

On March 12 Mr McKIE said Clause 41 offered many sources of danger to the medical profession. It placed too much power in the hands of the Secretary of State for Scotland and in the tribunal of three persons which it proposed to set up under the direction of the Secretary of State. The powers given to the tribunal were excessive and the Clause as at present drafted opened the door to snooping and to possible denunciation of a person who was innocent, particularly in the rural area where there was always much gossip.

Mr GALLACHER supported the Clause because under it doctors and dentists who felt a grievance could go to their Members of Parliament and get them to make a fight on their behalf.

Mr REID said the doctrine of an appeal through the House of Commons depended entirely upon bringing political considerations to bear. It was thoroughly wrong. Let the Committee avoid mixing up politics and a judiciary. The Clause did not confer the right of cross examination of hostile witnesses. He also asked whether reasons would be given when the decision of the tribunal was published. A judge always gave reasons and those who sat as judges should also do so.

Mr BUCHANAN said the right of cross examination would be strictly safeguarded. As to publication, he would look into that. It might be that the published reasons for a dismissal of a doctor might damage him even in his chances of getting any work abroad. Mr Buchanan thought that the doctor himself must receive the reasons. So must his legal representative. The case to be settled on an appeal was not a legal question but a question of fact. Such cases should not go to the Court of Session. He pointed out that more than 95% of the practising doctors in Scotland were concerned in National Health Insurance and in the past thirty five years only about a dozen cases concerning them passed through. Yet there were none of the safeguards for them which the Bill provided. When occasionally a man's dismissal had been raised in the House of Commons the subject was above ordinary political difference.

Cmdr HUTCHISON asked whether under the Crown Proceedings Bill which had been introduced in the House of Commons it would be possible for a doctor dismissed from the public service to sue for wrongful dismissal.

Mr BUCHANAN said he was told by the Lord Advocate that the answer was Yes. Clause 41 was then ordered to stand part of the Bill.

Powers of Secretary of State

On Clause 42 Mr REID moved to leave out the provision that the Secretary of State may dispense with any of the requirements of regulations made under this part of the Act so far as appears to him to be necessary to meet exceptional circumstances. Mr Reid said this was a wide and dangerous form of power.

Mr WESTWOOD said this was not a new power and would only be used in exceptional circumstances. It had been in operation under the National Health Insurance Acts since their inception.

Sir WILLIAM DARLING asked if the Secretary of State could give an example of an exceptional circumstance which he had in mind.

Mr WESTWOOD: I say quite frankly I cannot.

Col ELLIOT said these general powers had been in the possession of the Executive for a long time and should continue there. The fact that no Secretary of State had used these powers indicated that on the whole the medical system of treatment had worked out fairly well. What the Opposition felt uneasy about was the narrow point of the permission for the Secretary of State to dispense with the requirements of regulations. A modification of a regulation ought to be brought before Parliament. These powers which were intended for bringing the new Service into smooth action should have a time limit placed upon them.

Mr WESTWOOD promised to look into these points and Mr Reid's amendment was withdrawn. After further discussion Clause 42 was added to the Bill.

Charges and Disputes

Mr MCPHERSON moved an amendment to Clause 43 to make the regulations under this Clause mandatory. The Clause concerned the recovery of charges in respect of certain appliances and dental treatment.

Mr WESTWOOD said the Government proposed to have the highest standards in health and sight and in all the things that made life worth living. The amendment was withdrawn. A

similar amendment dealing with expensive forms of dental treatment was also withdrawn. The Clause was ordered to stand part of the Bill.

On Clause 45 Mr REID moved an amendment proposing that the Secretary of State, before deciding a dispute between an executive council and a person receiving or claiming services under the Act, should afford both parties an opportunity of appealing before someone appointed for the purpose by the Secretary of State. Mr Reid said this Clause dealt with all manner of complaints which members of the public might make about services from doctors, dentists, or opticians. If someone of experience in these matters was not to hear the complainants, they would write to their Members of Parliament and the Members would have to do the investigating.

Mr WESTWOOD gave an assurance that where a complaint was substantial and a person desired a hearing arrangements would be made for that hearing to take place. The amendment was withdrawn and Clause 45 was ordered to stand part of the Bill as was Clause 46.

Mental Defectives

On Clause 47 Col ELLIOT pointed out that under subsection 3 certain institutions were not to be brought in under the Bill. These were institutions established under subsection 1 of Section 28 of the Mental Deficiency and Lunacy (Scotland) Act, 1913 for defectives of dangerous or violent propensities. He asked Mr Westwood to name these institutions.

Mr WESTWOOD said the only existing institution of the kind was at Perth prison. That was the only exemption he had in mind at the moment.

Sir BASIL NEVEN-SPENCE referred to the provision in the Clause dealing with the duty of the Secretary of State to co-ordinate and supervise the administration of education authorities and local health authorities with regard to defectives. He said high grade mental defectives were provided for in special classes and special schools but the case of the lower grade defectives was not so happy. They were passed on to the public assistance authorities. Prof D. K. Henderson who was well informed on these problems, said the question was primarily a health one and that the health authorities should be responsible for looking after these children. Sir Basil was sorry that there was no reference at all in the Bill to ascertainment. That should be dealt with under Clause 47 which mentioned the Mental Deficiency and Lunacy Act. The duty of ascertainment of mental deficiency in children between the ages of 5 and 16 had been placed on the education authorities under the 1939 Act but these authorities had not carried out their duties. Another defect in the Clause was that it did not bring in the mental defectives under 5 years of age. The only action open to a local authority was to have such a child certified as a lunatic and sent to a mental hospital.

Mr WESTWOOD said the Clause did not go as wide as he would like it to do. The Bill did not seek to implement the recommendations made by the Russell Committee. The Government was going into that matter and a separate piece of legislation was required. Clause 47 was then ordered to stand part of the Bill. On Clause 48 Col ELLIOT moved an amendment in order to secure information in regard to the discharge of patients.

Mr BUCHANAN said at present there was a difference between the person who could pay for treatment and the person who became a pauper lunatic. The private patient could get out of an asylum or out of a place of detainment at the request of his own relatives provided that the superintendent of the institution certified that this discharge created no danger to the public. If that was good enough for the private patient then the person who was receiving poor law relief should have the same rights. If the superintendent thought that either of these was a danger in any way to the community he had the right to retain the patient. The second point was that a pauper could be returned on one doctor's certificate while a private patient must have two certificates. The Bill made two certificates requisite for both classes of patient. The Government was also making it the law that a local authority should be reasonably satisfied there was a proper place in which both classes of persons could be looked after.

Mr REID said his friends were delighted to hear of the change in regard to certification but he was not so happy about discharge. Mr Buchanan had said the last word was with the superintendent. Mr Reid had occasion to think that superintendents, no doubt owing to war circumstances were letting out too easily persons who had been convicted or had been found to be insane and had been put into asylums at the instance of the procurator fiscal.

Mr BUCHANAN said the Government was not interfering with the present law but asked that the treatment of persons under poor law relief should not differ from that of others.

SIR BASIL NEVEN-SPENCE said there were people who recovered and were released yet were a menace to the community. It was not the job of the medical superintendent to keep these people in an asylum if they recovered. Col ELLIOT withdrew the amendment.

SIR BASIL NEVEN-SPENCE said that at present there were fifteen poorhouses in Scotland in which 1,300 pauper lunatics were kept. This perpetuated an association of mental health with the poor law which should have been broken long ago and he was glad that subsection (b) of the Clause made it unlawful to retain lunatics in poorhouses. The Clause was ordered to stand part of the Bill, as was Clause 49.

Payments to Regional Boards

On March 15 Clause 50 was ordered to stand part of the Bill with a drafting amendment. The Committee also approved Clause 51, after accepting an amendment moved by Mr Buchanan.

On Clause 52 Mr REID asked for an assurance about the method of financing boards of management. He said the Clause provided that all money must be paid in the first instance to regional hospital boards.

Cmdr HUTCHISON pointed out that money could be provided for the expenses of a tribunal constituted under Clause 41. He asked whether that would cover expenses for a person who appeared before a tribunal.

Mr BUCHANAN said he would answer that on the Report stage. On the point raised by Mr Reid, the Government proposed that the management committee would make up a budget each year. It would pass that budget to the regional board which would make a gross budget, covering all the management committees and its own work, and would submit that to the Treasury.

SIR JOHN GRAHAM KERR asked whether there would be means of meeting exceptional hospital expenditure such as occurred when a member of the staff introduced a new method of treating an ailment, a method involving considerable expenditure on premises or appliances.

Mr BUCHANAN said in such a case there would be no difficulty in having a supplementary grant for that particular purpose. The Clause was ordered to stand part of the Bill as were Clauses 53, 54, 55, and 56, with a minor amendment on Clause 54.

Mr REID asked why the capital or income of any trust must under Clause 57 be paid to the regional hospital board for the area.

Mr BUCHANAN said the trustees would decide this matter themselves. They could either pay the money to the board of management or to the regional board. They might take the view that the money should be paid to the particular hospital or that it concerned not one hospital but a group of hospitals.

Denominational Hospitals

On Clause 58 Mr REID hoped that other hospitals with a special character would be entitled to preserve that character. He had in mind the homoeopathic hospital or one staffed and run entirely by women for women.

Mr BUCHANAN referring to the denominational hospitals, said he agreed with Mr Reid that there were other similar cases. There were the temperance people who ran a hospital. The Government would try to preserve the character of such hospitals and to get people competent to carry them on but he could not put in a clause to cover every kind of hospital. He refused to try to give a definition of "denomination." If any group of people who formed themselves into a religious body had a hospital then the Government would recognize it. The Clause was ordered to stand part of the Bill as were Clauses 59 to 62.

Mr REID said Clause 63 took power to make regulations on the remuneration and conditions of service of all Government employees. It also made regulations of the same character for all local authority servants employed by an authority as the health authority whether their job had anything to do with the Bill or not. He moved an amendment to make it possible for the Government to make regulations only about the conditions of service of people who performed the functions set up by the Bill.

Mr BUCHANAN said a dentist might be mainly but not entirely employed by the Government. The agreement with him was a national agreement. The Government wished to ensure that for the small proportion of time he worked for another authority he should not work for a different rate of wages. However, he would look into the matter again.

"Closed Shop"

Mr REID withdrew his amendment and moved to insert a proviso that it should not be made a condition of service for any officer that he should or should not belong to a trade

union. He recalled that Mr Bevan last autumn had done all he could to dissuade local authorities in places near London from attempting to enforce membership of trade unions on nurses and others. He said it would assist recruitment of nurses if Mr Buchanan would put into the Bill words to ensure that none of his successors would be entitled to amend the regulations by putting in a "closed shop" condition of this kind.

Dr MORGAN submitted that the proviso should not be put in an Act of Parliament. It should be left to the discretion of the local authority. The recent fight at Willesden was between two organizations—one a trade union and the other an association. Mr Reid's amendment would give local authorities power not only to say that a person should join or should not join a trade union but that they should or should not be a member of an association.

Mr MACPHERSON said it was customary for members of certain professions to belong to associations. The Bill provided that qualifications could be laid down by the Secretary of State but that was a different matter from membership of an association.

Mr BUCHANAN said this was a health Bill and to insert into it an amendment of this kind would do great disservice to the health services of Scotland. The great voluntary hospitals of Scotland could never have carried on if they had not had the financial assistance and enthusiasm engendered by the trade union movement. To single out this movement by an offensive amendment like this would be entirely wrong. The Scottish Health Department had recently communicated a circular to Scottish local authorities. This informed them that while the Secretary of State was anxious that doctors, nurses and members of similar professions should join a trade union or appropriate professional association he considered that the matter should not be determined by the unilateral action of local authorities.

The amendment was defeated by 25 to 11 and the Clause was ordered to stand part of the Bill.

On Clause 64 Mr BUCHANAN said the Government proposed to take over everybody who had a superannuation claim and to pay that claim but not to give more. If a man had a reasonable expectation of getting a pension the Government proposed to pay that pension, but it would not add anything. Replying to Dr Morgan, Mr Buchanan said he thought that officers due to retire on a pension at the age of 55 would be allowed to continue in service until the age of retirement under the new Insurance Act. Clause 64 was ordered to stand part of the Bill and the Committee adjourned.

Extra Rations for the Sick

Col STODDART SCOTT on March 10 raised the refusal of the Ministry of Food to grant extra rations to sick people when their doctors recommended that they should have them. During the last six months 235 such cases had been refused extra rations. He suggested the establishment of regional medical advisory committees appointed by the Minister of Food. He further suggested that extra food should be given not only for treatment or cure of disease but also to relieve suffering in cases of operation or in inoperable cases.

Mr SOMERVILLE HASTINGS said the public and the medical profession were satisfied with the arrangements in existence. These seemed to him to be working admirably. The position of the doctor in private practice was not easy and was much strengthened if in refusing a patient's request he could say that the case did not come within the confidential list of diseases for which extra nourishment could be authorized.

Dr SUMMERSKILL said it was not true that the incidence of disease had been greater during recent years while the country was rationed. The Ministry had to maintain a balance between the physiological needs of the community as a whole, and the medical necessities of those suffering from some pathological condition. It had to provide for the children under 5 for nursing and expectant mothers, and for young people up to 18. In regard to hospitals and in the case of invalids treated by a private doctor, the Ministry had to distinguish between medical comforts and medical foods needed for therapeutic reasons. The Food Rationing Special Diets Advisory Committee included men who were authorities in their particular fields and had a wealth of clinical experience. This committee did not pass judgment on treatment. It was in fact an appeal board and had performed its functions well. It was true that the Ministry relied on one or two members of the committee but these men were highly qualified and it would be difficult to refer each case to every member of the committee. The proposal for regional committees would involve the setting up of seventeen more committees of busy men and she opposed the suggestion at the moment. The Ministry was considering the matter carefully however.

No 9

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended March 1

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year for (a) England and Wales (London included) (b) London (c) Scotland (d) Eire (e) Northern Ireland

Figure (f) Deaths recorded under each infectious disease in England and Wales (including London) are for (g) The 16 principal towns in Scotland (d) (b) London (administrative county) (c) The 16 principal towns in Northern Ireland (e) The 13 principal towns in Eire (e) The 10 principal towns in Northern Ireland

A dash — denotes no cases a blank space denotes disease not notifiable or no return available

Disease	1947					1946 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever Deaths	74	9	29	2	1	70	12	28	1	3
Diphtheria Deaths	186	15	46	16	6	501	34	116	71	11
Dysentery Deaths	92	16	16	—	—	323	24	75	6	—
Encephalitis lethargica acute Deaths	2	—	—	—	—	3	—	—	—	—
Erysipelas Deaths	—	—	44	13	1	—	—	44	13	3
Infective enteritis or diarrhoea under 2 years Deaths	83	12	16	41	2	57	10	10	51	4
Measles* Deaths	13 337	656	255	30	194	1 583	372	292	60	1
Ophthalmia neonatorum Deaths	67	3	8	1	—	59	1	17	—	—
Paratyphoid fever Deaths	—	—	—	—	—	—	—	1(B)	—	1(B)
Pneumonia influenzal Deaths (from influenza)†	981	54	22	15	8	860	59	31	37	3
Pneumonia primary Deaths	121	32	6	2	1	123	14	12	3	1
Poliomyelitis acute Deaths	—	92	277	21	18	—	46	307	39	15
Poliomyelitis acute Deaths	2	—	—	—	—	1	—	—	—	—
Puerperal fever Deaths	8	—	2	4	—	7	—	1	1	—
Puerperal pyrexia‡ Deaths	—	1	11	—	—	—	—	10	—	—
Relapsing fever Deaths	109	12	8	1	4	126	4	12	3	—
Scarlet fever Deaths	—	—	—	—	—	—	—	—	—	—
Smallpox Deaths	1 167	84	228	30	38	1 232	86	176	22	29
Typhoid fever Deaths	5	—	—	—	—	8	—	—	—	—
Typhus fever Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough* Deaths	2 290	224	384	86	21	1 605	142	69	38	11
Deaths (0-1 year) Infant mortality rate (per 1 000 live births)	15	627	83	99	70	13	398	48	73	42
Deaths (excluding still births) Annual death rate (per 1 000 persons living)	8 352	1412	917	403	182	5 556	886	685	247	157
Live births Annual rate per 1 000 persons living	10 520	1706	1219	501	304	7 487	1032	945	396	273
Stillbirths Rate per 1 000 total births (including stillborn)	509	42	43	—	—	216	32	30	—	—

* Measles and whooping-cough are not notifiable in Scotland and the returns are therefore an approximation only

† Includes primary form for England and Wales London (administrative county) and Northern Ireland

‡ Includes puerperal fever for England and Wales and Eire Returns of births and deaths for Eire from week ended Oct 26 to week ended Feb 22 appear on p 409

EPIDEMIOLOGICAL NOTES

Neonatal Diarrhoea in Derby

At Derby City Hospital 2 premature infants, five days old developed diarrhoea on Feb 20. Further infants were affected on Feb 23, 24 (2), and 26 (2), and on March 1 2, 4 (3), and 8—a total of 13 cases. There were 6 premature infants and of these 4 died and the two others were seriously ill but are recovering, 2 out of 7 full-term infants have died. Clinically there was a period of one to two days of lethargy, anorexia and loss of weight followed by the sudden onset of fever (100°–103° F 37.8°–39.4° C), and watery diarrhoea. The colour of the stools varied from cream to green, orange stools were seen but were unusual. Dehydration followed and death occurred in most cases about the fourth day. Recovery with fall of temperature and the gradual return of the stools to normal took place usually towards the end of the first week in the milder cases.

The first 4 affected infants were delivered in the same labour ward within twenty six hours on Feb 15 and 16. They were distributed to the three maternity wards and later became the first cases in each ward. Subsequent cases may well have been infected from the primary cases owing to overcrowding and lack of staff. The maternity department was dealing with about double the pre-war number of admissions. There was no case of diarrhoea among the infants in the preceding six weeks. None of the affected infants had been wholly breast-fed. The onset in 4 cases followed the institution of artificial feeding breast-feeding having failed. No mother appears to have been affected. One nurse did suffer from diarrhoea, but on clinical grounds it seemed unlikely that she had any connexion with the outbreak. The steps taken to check the outbreak included closing the affected ward to new admissions, the discharge of healthy mothers and infants as soon as possible, the isolation of all proven and suspected cases, spacing the remaining healthy patients as widely as possible and vigorous overhaul of nursing technique with emphasis on the importance of breast-feeding without supplement.

Since March 9 one infant affected on Feb 24 has died and there have been 2 further return cases, one fatal. It seems probable that a few more cases will appear before the outbreak is finally controlled.

Discussion of Table

In England and Wales an increase was recorded in the notifications of scarlet fever 86 and whooping-cough 63 with a decrease in the incidence of measles 2,428, acute pneumonia 158 and diphtheria 31.

The changes in the local trends of scarlet fever and whooping-cough were small and no large variations occurred. A small decrease in the incidence of diphtheria was recorded throughout the country, 28% of all cases were notified in Lancashire.

The fall in cases of measles was mainly confined to the northern sections. The largest variations in the local returns were decreases in Lancashire 789, Warwickshire 371, Yorkshire West Riding 208, Middlesex 196, Northumberland 154, and Durham 133. There were increases in Surrey 106, Essex 101, and Southampton 86.

No further cases were reported from the outbreak of dysentery in Hertfordshire St Albans RD. Two new outbreaks were reported during the week, Middlesex, Southall MB 13 and Suffolk, Newmarket UD 10.

The one case of smallpox diagnosed in Stepney, London is linked to the outbreak in Grimsby, where 14 cases with 6 deaths have been reported.

In Scotland no further cases of dysentery were reported from Banff county, and the notifications for the whole country dropped to 16. With the exception of measles which fell by 45, the notifications of other diseases underwent little change.

In Eire the incidence of whooping cough declined by 22, but a fresh outbreak with 16 cases was notified in Westmeath, Coole RD. Notifications of diarrhoea and enteritis increased by 20.

In Northern Ireland the outbreak of measles in Belfast CB continued to decline, and 194 cases were notified during the week, a fall of 93.

Week Ending March 8

The notifications of infectious diseases in England and Wales during the week included scarlet fever 1217, whooping cough 2,461, diphtheria 182, measles 12,137, acute pneumonia 958, cerebrospinal fever 86, dysentery 69, acute poliomyelitis 10, smallpox 7, paratyphoid 4, typhoid 4. Deaths from influenza in the 126 great towns numbered 92.

Births and Deaths in Eire

The following table shows the figures for the 13 principal towns in Eire each week from the week ended Oct 26, 1946, to the week ended Feb 22 1947. During this period there were no deaths due to dysentery, scarlet fever, smallpox, or typhus.

Week ended	Births	Deaths		Deaths Caused by					
		All Ages	Under 1 Year	Diphtheria	Diarrhoea and Enteritis (Under 2 Years)	Meningitis	Influenza	Typhoid Fever	Whooping cough
Oct 26 1946	324	168	19	2	3				
Nov 2	333	189	28		8				
Nov 9	350	175	21	1	7				
Nov 16	336	167	19		7		1		
Nov 23	328	183	30		16				
Nov 30	402	198	41	1	9		1	1	2
Dec 7	462	216	45		13				
Dec 14	416	249	53	1	17	1			
Dec 21	389	184	34	1	11		2		
Dec 28	207	202	23		3		1		1
Jan 4 1947	510	297	49		16		1		3
Jan 11	467	290	55		13		1		2
Jan 18	404	277	39		8				1
Jan 25	356	263	41	1	9		1		2
Feb 1	376	326	42		11		12		3
Feb 8	361	408	44	1	2		4		7
Feb 15	481	366	47		10		7		3
Feb 22	397	398	49		5		4		4

Births and Deaths in the United States

The provisional report for 1946 puts the birth rate at 23.3 per 1,000, which is 8% higher than the wartime peak of 1943. The birth rate in 1943 was the highest recorded since 1924. The infant mortality was 36.1 per 1,000 live births, and was 1.4 below the rate for 1945. The general death rate was 10.1 per 1,000 compared with 10.6 in 1945.

Medical News

Lord Horder, who is Chairman of the Standing Committee on Nutrition of the Food and Agriculture Organization of the United Nations, left for Washington on March 15 and will be away until April 14.

A Clinico Pathological Meeting of the West London Medico-Chirurgical Society will be held at the West London Hospital to-day (Friday, March 21) at 8.45 p.m.

Dr J. A. V. Butler will deliver the last of his three Cantor Lectures on "Enzymes: Their Isolation, Structure, Mode of Action, and Place in Nature" before the Royal Society of Arts (John Adam Street, Adelphi, W.C.) on Monday, March 24, at 5 p.m. The first two lectures were given on March 10 and 17, and all three will appear in the Society's *Journal* in due course.

A meeting of the Nutrition Panel of the Society of Chemical Industry will be held at the Chemical Society's rooms (Burlington House, Piccadilly, W.) on Wednesday, March 26, at 6.30 p.m., when Dr Kenneth Mellanby will read a paper on "Human Water Requirements." A discussion will follow. All members of the Food Group are invited to attend the meeting.

A meeting of the Medico Legal Society will be held at 26, Portland Place, W., on Thursday, March 27, at 8.15 p.m., when a paper by Drs Charles E. Newman and Ronald H. Graveson on "The Education and Status of the Medical and Legal Professions" will be read.

The annual meeting of the Mental After Care Association will be held at Burlington House, Piccadilly, W., on Thursday, March 27, at 3 p.m., when Dr Henry Yellowlees and others will speak on the work of the association. All interested are invited to attend the meeting.

The first course for resettling Polish pharmacists under the Bill sponsored by the Government has opened at the Brighton School of Pharmacy. About sixty of those who can pass an examination like the one for foreign pharmacists under the Defence Regulations are to be temporarily registered here.

The Harveian Society of London announces that the Buckston Browne Prize for 1946 has been awarded to Michael Kelly, M.D., University of Melbourne, for his essay on "The Pathology and Treatment of Fibrositis."

Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Diphtheria Immunization

Q—Should diphtheria immunization in children be repeated in all cases after five years?

A—If a child receives its first course of artificial immunization at the age of 9 months to 1 year the resulting immunity will begin to wane after a few months, and two years later may have fallen to a very low level. Such a child, if exposed to the risk of infection may develop diphtheria which will not usually be severe since the diphtheria toxin will stimulate the sensitized antibody-producing cells into activity and in a few days' time enough antitoxin will have been formed to neutralize the toxin. The usual practice in this country is to give a child its first boosting dose at 5 years of age when it goes to school, but in an area where diphtheria is still prevalent it might be wiser to give this dose at 3 years of age. The effect of the boosting dose is to raise the antibodies to a high level and as a rule the fall in antibody titre takes place much more slowly than it does after the first immunization. Further, when the child goes to school and mixes freely with other children it may be exposed to small doses of diphtheria bacilli, which will help to maintain immunity. Alternatively the child may be given a second boosting dose of diphtheria prophylactic around the age of 10 years.

Diphtheritic Tonsillitis

Q—Should cases of diphtheritic tonsillitis be treated as diphtheria in infectious diseases hospitals or should they be treated at home as tonsillitis as their clinical course is invariably mild?

A—Throat infection with *C. diphtheriae* in those who have been artificially immunized or have acquired some natural immunity often presents a clinical picture of follicular tonsillitis with a patchy exudate that can easily be wiped off, and a more acute inflammatory reaction with a higher temperature than is usual with typical faucial diphtheria. As a rule these patients have little or no toxæmia, and the infection may be called diphtheritic tonsillitis. It is almost invariably associated with either *gravis* or *intermedius* types of *C. diphtheriae* which have a greater capacity for tissue invasion than has the *mitis* type and may therefore produce a local throat infection in those who have some antitoxic immunity. Although the clinical course is usually mild, post-diphtheritic paralysis does sometimes occur, and in the more severe infections antitoxin should certainly be given. However, the important point is that the patients are a potential danger to family or other close contacts and should therefore be isolated at home if the conditions are suitable, or, if not, in hospital. Practitioners should keep a sharp look out for this type of infection and obtain a bacteriological diagnosis whenever possible.

Diphtheria Treatment without Antitoxins

Q—Supposing that diphtheria antitoxin were not available how should one treat a case of diphtheria?

A—It is difficult to visualize circumstances where diphtheria antitoxin will not be available for the treatment of diphtheria. If the questioner has in mind an island or some outlandish place far from a hospital, the answer surely is that the prudent doctor will always carry antitoxin with him. Antitoxin is available free from the medical officer of health and kept even at room temperature retains most of its potency for some months. Moreover, the present refined enzyme digested antitoxin is so concentrated that an adequate dose for an early case may be contained in 1 to 2 ml, while the risk of serum reaction or anaphylaxis is minimal. There is no alternative treatment to antitoxin, although many patients with mild or moderate infections will doubtless recover without it, as happened in the pre antitoxin days. Penicillin or other chemotherapeutic drugs may

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1 JAMA 129 1080 Dec 15 1945
2 Illinois M.J. 88 85 August 1945



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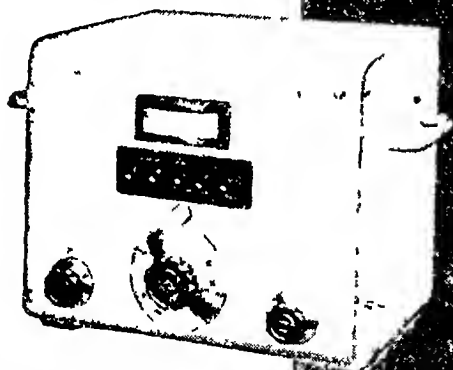
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destroy the organism but will not neutralize toxin that has already been produced. If diphtheria were an acute infection that could be diagnosed easily within twenty-four hours of onset penicillin therapy might be considered as a substitute for antitoxin, but unfortunately diphtheria is too often an insidious disease and a considerable amount of toxin has been formed, with damage to vital tissues, before the infection is diagnosed.

Sex Predetermination

Q—I saw recently a report that a programme of research could be laid down which over a short period of years would allow sex to be predetermined. Is it possible to indicate briefly what work is being pursued, what would be the type of research still to be undertaken, and what are the most recent authoritative papers on this subject?

A—There are two kinds of spermatozoa, distinguished one from the other in respect of their sex-chromosome content. One is male determining and the other female determining. To predetermine the sex of the child about to be conceived will therefore become possible when the two different kinds of spermatozoa can be separated one from the other in the ejaculate, that part containing one or the other kind being introduced into the female about the time of ovulation by the techniques of artificial insemination. Recent experimental work in this field has taken the form of so altering the chemical atmosphere of the vagina of the female by the application of lactic acid or, alternatively, of sodium bicarbonate that one form of spermatozoa is advantaged in its journeying towards the ovum. The results of such experimental work are not convincing, but the methods employed indicate the kind of investigations that need to be undertaken.

It is eminently possible that a team of biologists, biophysicists and biochemists adequate in numbers, interest, and knowledge could within a reasonable time elaborate techniques which would disclose knowledge yielding the power necessary for the separation of the two forms of spermatozoa. Such power could certainly be used with great advantage in the agricultural field—in the dairy industry, for example. In the case of the human subject any biological invention endows a human society with knowledge which in application can yield either human amelioration or distress and degradation. The power to predetermine sex in this way, misused by the irresponsible or by the tyrant, could seriously disturb the terrestrial destiny of mankind. The subject is extensively reviewed in the new edition of F. H. A. Marshall's *Physiology of Reproduction* which is shortly to be published. (See also *Journal*, Aug. 10, 1946, p. 216.)

Sensitivity to Hair Dyes

Q—A patient of mine had dermatitis of the scalp thought to be due to the application of a hair dye. Does this happen often? What factor in hair dyes is responsible and what is the usual character of the dermatitis? In this case there was severe oedema and desquamation.

A—Certain types of hair dyes generally contain para- or meta-phenylenediamine, or both, or some allied chemical. There is probably an incidence in the general population of idiosyncrasy towards such chemicals of about 4%. Such individuals may react to a first application of the dye by an acute contact dermatitis with redness and oedema, sometimes weeping, and scaling and scabbing of the head and face. This may extend further by direct spread or from absorption through the blood stream. Other individuals may develop sensitivity after a number of applications. Tests to ascertain whether the patient is sensitive or not are not very satisfactory, and reactions may not occur for twenty-four days or longer after the tests. The response to treatment is naturally variable, depending on the patient, on the circumstances, and on possible complications.

R. M. B. MacKenna (*Journal* 1930, 1, 899) discusses para-phenylenediamine dyes and he suggests that on oxidation they give rise to quinone diimine and water, Bandowsky's base, which has caused dermatitis in people wearing furs dyed with it, is a substituted quinone diimine. MacKenna describes the toxic effects of para-phenylenediamine as being local and general. Locally there may be acute erythematous dermatitis of the scalp, face, and neck, with oedema. There may also

be headache, nausea, vomiting, diarrhoea, fever, and in acute cases albuminuria. Other easily consulted papers are by Percival (*Lancet* 1931, 2, 417), H. W. Nott (*Journal* 1924, 1, 421), A. Gautier (*Ibid.* 1909, 2, 812) and W. J. Close (*Austral Med J.* 1932, 1, 53). Generally speaking some persons are susceptible to the toxic action while others, the large majority, are not. Susceptible cases are likely to suffer mildly or severely, though severe reactions are of course much rarer than mild ones.

Housewife's Dermatitis

Q—Many housewives' hands show signs of dermatitis with dryness and hardness of the palms and a tendency to fissuring of the skin at the nail margins. It is useless to tell these women to keep their hands out of soap and water and rubber gloves are in short supply. I have tried lanolin and glycerin as local applications but without much success. Is there any better treatment?

A—It is essential to impress upon patients that the control of household dermatitis depends ultimately upon their co-operation in the matter of avoiding contact with wet alkaline irritants. When immersion is unavoidable, care should be taken to rinse the alkali from the hands to dry them thoroughly, and to dress with one of the following emollients.

R	Eucerin	oz (15 g)
	Aq. rosac	ad 3j (28.3 g)
	Et. crem	
R	Calamin	gr xl (2.7 g)
	Lanolin	gr xxx (2 g)
	Ol. oliv	oz (15 g)
	Paraff. moll	ad 3j (28.3 g)
	Et. crem	
R	Acid. borac	gr xx (1.3 g)
	Acid. salicyl	gr x (0.65 g)
	Zinc oxid	} aa gr lx (4 g)
	Amylum	
	Paraff. moll	ad 3j (28.3 g)
	Et. crem	

It is necessary first to clear the dermatitis, and for this fractional doses of rays, Lassus's paste (with or without tar), and sedative-tonic measures internally should be employed. Sometimes creams with unsaturated fatty acids (e.g., linoleic) are helpful. It must be stressed that most of these patients are eczema-prone and that a disturbance of physical or nervous health is present and requires attention. Rubber gloves, if obtainable, are sometimes troublesome to such patients, but if the dermatitis has been cleared appropriate barrier creams may help in protecting the hands from household irritants. It should be noted that household dermatitis affects chiefly the backs of the fingers and hands and finger clefts. The palms are more often affected in constitutional eczema.

Pregnanediol Test for Pregnancy

Q—What is the technique of the pregnanediol excretion test for pregnancy and threatened abortion?

A—The pregnanediol test for pregnancy is based on the fact that this excretion product of progesterone appears in the urine in greater quantities during pregnancy than in most other circumstances. Threatened abortion is presumably sometimes due to a progesterone deficiency, and a low excretion level of pregnanediol in such cases is therefore an indication for progesterone therapy, whereas if the excretion is up to average another cause for the abortion should be sought. A gravimetric method of assay of pregnanediol which is extracted from the urine in the form of sodium pregnanediol glucuronidate was described by Venning (*J. Biol. Chem.* 1937, 119, 473) and has been used by many workers, including Hain and Robertson (*Lancet* 1939, 1, 1324) in this country, as a means of diagnosing pregnancy. The references should be consulted for details of the method, which is complicated and laborious, requiring a litre of a twenty-four-hour specimen of urine and taking three days to complete. A few years later Guterman (*J. Clin. Endocrinol.* 1944, 4, 262, 1945, 5, 407) described the test which bears his name. It is carried out on 100 ml of a first morning specimen of urine, and after a more simple

extraction process a rough assay of the pregnanediol content is made by noting the colour which develops on the addition of concentrated sulphuric acid. It is economical and requires only three hours to complete, but it is less accurate and reliable and is suitable only for crude quantitative work unless a spectrophotometer is employed. The technical details are to be found in Guterman's papers and in a recent article by McCormack (*Amer J Obstet Gynec* 1946, 51, 722). The special value of the test in cases of threatened abortion is dealt with by Guterman (*J Amer med Ass* 1946, 131, 378).

Lymphoedema of the Legs

Q—A woman aged 38 has a history of swollen legs since she was 15. The oedema pits and the left leg is worse than the right. A sister has had a similar complaint since the same age but three other sisters are normal. Does this rule out Milroy's disease and if so what is the cause of this condition?

Q—A young woman of 25 has swollen legs which pit only slightly. None of the usual causes of oedema can be elicited and correction of pes planus has not been effective. Can you suggest diagnosis, prognosis and treatment?

Q—A young woman aged 32 complains of intermittent swelling in the ankles affecting the anterior aspect of the joints which began four years ago. It is worse on the right side and is accompanied by a dull ache relieved by resting. Some subcutaneous thickening is present. Urine, heart and veins are normal. She has carried out foot exercises but with out result. Suggestions as to cause and treatment would be welcomed.

A—All these are cases of lymphoedema due to thrombosis of the lymphatics—probably the result of an infective lymphangitis which in most cases, but not in all, passes unnoticed by the patient. Tinea of the toe clefts is blamed by some, and this should always be looked for and treated thoroughly. The disease is 99% a female one, and this is held by some to be in line with the greater incidence of venous thrombosis in the female, by others it is attributed to the difference in the clothing protection of the legs in the two sexes. A few cases are due to pelvic disease, and this should be looked for in every case. The prognosis is very variable. The worst cases go on to elephantiasis; in the mildest the oedema remains a minor nuisance and confined to one leg. The treatment in all cases is the same—sleeping on an inclined bed to drain the legs at night and wearing by day a support adequate to control the oedema. In very advanced cases operations of the Kondoleon type are indicated.

INCOME TAX

All inquiries will receive an authoritative reply but only a selection can be published.

Schedule E Liability—Expenses

G receives a mileage allowance for the use of a car which is essential for his work. The allowance is considered insufficient for the partial use of the car for such purposes. Can he claim for the excess? The maid who is kept for domestic reasons often takes telephone calls arising from his work, can anything be claimed for the cost of the maid?

* **G** can claim for the excess of the cost over the mileage allowance, and in doing so can include depreciation allowances or the cost of renewal of the car. It should be understood, however, that it is only the necessary cost that is allowable—or rather the proportion of that cost as compared with the total private and official use of the car—and that where a special expenditure such as a renewal of the car is incurred, the Revenue may contend that it should be spread over, say, three or four years.

As regards the telephone calls, the circumstances seem to be such that the proportion of the maid's time spent in answering calls is so small as to render such a claim valueless.

There is no publication giving general advice to medical men which is now available.

Examination Fees

J E inquires whether any relief can be claimed for examination fees.

* **No**. They are in the nature of capital outlay, and are not regarded as expenses incurred in carrying out the duties of an appointment.

Letters and Notes

Nocturnal Diuresis

Dr N J W THOMPSON (St Helens) writes. I read with interest the letters from **Dr B E Read** (Jan 25, p 168) and **Dr S D Sturton** (Feb 15, p 283) on the subject of nocturnal diuresis among prisoners of war and internees in the Far East. I was a prisoner of war in Nagasaki, No 14 Camp, where also nocturnal frequency was a very common complaint.

I am not prepared to surmise as to how much the condition was due to a rice diet *per se* or to nervous strain, but in my opinion an important causative factor was a large fluid intake in the diet. The latter consisted mainly of a cereal (rice, barley, and millet). The cereal was cooked by soaking in water and steaming. During this process, it swelled to more than three times its original bulk, so that it contained at least 70% water. In addition a bowl of soup was provided consisting almost entirely of coloured water. After consuming the above evening meal most of the men still felt the pains of hunger. To alleviate this and contrary to medical advice, they were in the habit of drinking large quantities of tepid water under the impression that by filling up with something they would feel better. I estimate that many had a fluid intake of more than 3 to 4 pints (1.7-2.3 litres) after 7 p.m. It is little wonder that they had nocturnal frequency.

Dermatitis Herpetiformis

Dr R MILTON (Haslemere) writes. Referring to the inquiry under 'Any Questions?' (Feb 15, p 281) on the treatment of dermatitis herpetiformis, your correspondent may care to try 'benadryl' capsules. One recent case (male aged 62), previously controlled by arsenic suffered a relapse after withdrawal of this drug due to hyperkeratosis and colitis. This relapse was adequately cleared up by the use of 'benadryl' capsules 50 mg, 1 t.d.s. This dose had to be reduced to one capsule twice daily owing to tiredness. He has been nearly free of symptoms and has continued the drug for the past five or six months. It would seem therefore that 'benadryl' is purely symptomatic in its effect, and I would like to know what contraindications there are for its continued use.

Dr T H K MacLAUGHLIN (Leicester) writes. Having suffered from this distressing complaint myself may I suggest that before resorting to any severe treatment the following be given a trial:

- (1) Ung atropinae B.P.C. 1 dr (4 g) Ung glycerin plumb subacet 1 oz (30 g)
- (2) Tab phenobarb 1 gr (65 mg) unam nocte

This was the only treatment which afforded me any relief over 20 years ago, and I have had no recurrence.

Treatment of Post operative Thrombophlebitis

Mr HAROLD DODD (London W) writes. May I suggest another treatment alternative to that recommended in 'Any Questions?' (Feb 8, p 243)? It is: (1) The early ligation and division of the femoral vein above the thrombosis with injection of a carbolic acid sclerosant into the lower segment. (2) The administration of dicoumarol orally. (3) Getting patients up for toilet, meals, and bed making. (4) The application of pads of wool and elastic bandages from the toes to the groins. If after this there is still pain then more wool and another bandage is put on over these. A further part of the remedy is that of prevention as by placing a pillow under the patient's knees during the operation, this raises the calves off the hard table, the pressure of which encourages thrombosis in the veins of the posterior tibial muscles. Shortly after recovery from the anaesthetic patients are sat up with the legs over the side of the bed and 24 hours later they sit out of bed on to a hard chair morning and evening. The practice of treatment in bed for 4-8 weeks for phlebitis can safely be superseded by firm bandaging, getting about, and doing their lighter usual duties. Septic foci, especially apical dental sepsis and cholecystitis are always watched for in phlebitis and before operations.

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LONDON SATURDAY MARCH 29 1947

MARROW BIOPSY

PREPARATION AND USE OF PARAFFIN SECTIONS FROM STERNAL-PUNCTURE MATERIAL

BY

D F CAPPELL, MD H E HUTCHISON, MB

AND

G HARVEY SMITH, MB

(From the Pathology Departments of the Western Infirmary Glasgow and Royal Infirmary, Dundee)

[WITH PHOTOGRAVURE PLATE]

The value of sternal puncture as a diagnostic measure in disorders of the haemopoietic system is now widely accepted by haematologists, and the procedure is generally recognized as being safe and causing little or no discomfort to the patient. The usual method of dealing with the biopsy material consists in the microscopical examination of marrow smears stained by one of the Romanowsky stains, a differential count of the nucleated cells, and an estimation of the leucocytogenic-erythrocytic ratio. Other workers carry out total nucleated cell counts, and supravital preparations may be made if desired. These procedures, while of great value cytologically, do not always give a true picture of the marrow as a whole and give no indication of its architectural arrangement. A simple method of preparing good histological sections from sternal-biopsy marrow would be of great service and the sections would yield valuable additional information about the architecture of the marrow, especially in cases of hypoplasia or aplasia which may be difficult to assess from the smears alone. Many pathologists and clinical haematologists to whom we have shown our preparations have expressed surprise that such valuable information can be obtained so simply, since the technique for preparing satisfactory marrow sections from sternal-puncture material does not appear to be widely practised, this paper purposes to give a short account of the method adopted, after many trials, in our laboratories.

Method

After adequate local anaesthesia has been obtained and with due aseptic precautions marrow is aspirated from the sternum through a needle of the Salah type into a 10 ml. Record or all glass syringe which must have a tightly fitting piston. Sterile saline should be applied when the marrow cavity is entered in order to aspirate actual fragments of the tissue and to avoid undue admixture with blood which tends to spoil the films. No more than 5-10 ml. need be aspirated. Two or three dozen or more thin films are made by spreading a minute drop of the marrow on microscope slides without attempting to select marrow fragments and the remainder of the marrow is ejected into a 500 ml. Erlenmeyer flask containing the modified Zenker formol which we have found to give the best results. This is prepared immediately before use according to the following formula:

Zenker's fluid (minus acetic acid)	45 ml
40% formaldehyde solution	5 ml
Formol saline 10%	50 ml

Fixation is adequate in 20 to 30 minutes, and the marrow fragments must not be left for more than 30 minutes in the fixative, otherwise too much shrinkage will occur and subsequent staining will be poor. We have experimented with numerous fixatives and varied the length of fixation, but the best results were

obtained by the use of this half-strength Zenker-formol solution. When the marrow has been in the fixative for the above time 400 ml. of distilled water is added and thoroughly mixed, the tiny marrow fragments quickly settle to the bottom of the flask. The supernatant fluid is then siphoned off without loss of marrow fragments, using a Pasteur pipette with upturned point and a water pump. When the fixative is diluted the blood proteins precipitated remain as a flocculent suspension and are removed in the supernatant fluid. A further 100 ml. of distilled water is then added to the flask which is now agitated gently a few times and allowed to stand until the marrow fragments have again settled to the bottom, the supernatant fluid is then siphoned off. A final washing in distilled water is carried out, and after standing for about 10 minutes the water is siphoned off and 100 ml. of 60% spirit is added.

The marrow should not be left for more than 15 minutes in 60% spirit, as maceration will occur, but this step is useful as it allows practically all of the protein precipitate to be discarded and only marrow fragments should now remain. The next step is to pass the material through a series of graded alcohols in the same way—that is siphon off the supernatant fluid and add 20 ml. of the appropriate strength, 70% spirit for 15 minutes, followed by 80% then 96% for 15 minutes each before final dehydration in absolute alcohol two changes for 15 minutes each. The absolute alcohol is replaced by toluol and left for 10 to 20 minutes until cleared, the fragments are then transferred by a pipette to a small widely conical vessel with a flat bottom. The toluol is pipetted off replaced by molten paraffin wax (melting-point 54°C) and the vessel is then put in the paraffin oven for 2 hours, the molten paraffin wax being changed twice during this time. The marrow fragments, after the final change of paraffin, are allowed to settle by gravity and so gather into the small base, consequently if the wax is now hardened *in situ* the block for the microtome has the important material within a small compass. For occasional use a 2-inch (5 cm) porcelain or silica crucible may suffice but difficulty may be experienced in removing the paraffin block. Usually the block is removed from the vessel by running a hot knife round the edge and then tapping the crucible smartly on the bench. It must not be heated to melt the paraffin, as the marrow fragments lie directly on the flat base and are easily spoiled by overheating. For regular use we have found it convenient to employ a brass crucible with a detachable apex so that by unscrewing the apex the block is exposed and may be easily removed. The marrow fragments lie close to the paraffin surface and are ready for immediate cutting, trimming of the block should be avoided in case the minute fragments are lost.

At the 70% spirit stage the specimen may be safely kept for a day or two, and, in fact, may be sent to a laboratory by post if the necessary apparatus for embedding and sectioning is not available. For economy the alcohols are used repeatedly by filtering back into stock bottles through fine filter-paper to remove any marrow fragments.

Sections are stained by the ordinary methods such as haematoxylin and eosin for rapid reports, but a more detailed

study of the marrow is made on sections stained by Maximow's eosin-azure method or by one of the Romanowsky methods. Special stains can, of course, be used for example we have found Mallory's aniline-blue method of value in the recognition of Gaucher cells in sternal marrow. Microchemical tests for the presence of iron can be applied. Zenker-formol fixative does not prevent the application of the prussian-blue method if brief treatment with warm hydrochloric acid is used (Mallory).

Excellent histological preparations of marrow are obtained which show the general architecture, the proportion of fat and cellular tissue, and the relationship of leucopoietic and erythropoietic tissue to one another and to the supporting framework. The number and disposition of the megakaryocytes are readily assessed, and the presence of abnormal elements is more easily detected than in the smear preparations. We have found that unless large numbers of smears are examined a true impression of the marrow may not be obtained, especially in regard to the megakaryocytes, which are not usually evenly dispersed. Abnormal elements, such as myeloma cells, Gaucher cells, and possibly tumour cells, may be recognized in the sections, and confusion due to admixture of blood does not arise. In a case of aplastic anaemia the marrow sections remove all doubt as to whether the lack of haemopoietic elements in smears is due to failure to obtain a true sample of the marrow. These points are illustrated in the accompanying photomicrographs (see Plate).

Summary

For the interpretation of alterations in bone marrow architecture the value of histological sections is emphasized as a supplement to the usual smear technique. A simple method is described for the preparation of paraffin sections from sternal-puncture biopsy performed with the ordinary type of needle. Representative photomicrographs illustrate the results obtained.

PAROTIDECTOMY: INDICATIONS AND RESULTS

BY

HAMILTON BAILEY, FRCS Eng, FACS, FICS
FRSE

Surgeon Royal Northern Hospital London General Surgeon,
Metropolitan Ear Nose and Throat Hospital

[WITH PHOTOGRAVURE PLATE]

To most general practitioners and to many surgeons, the mere mention of complete parotidectomy (Fig 1, Special Plate) conjures up an apparition with a hideous facial deformity. Superficial lobectomy (Fig 2, Special Plate) is a far more desirable term than subtotal parotidectomy, but until it is generally conceded that the anatomical classics are inaccurate in their description of the facial nerve—that the facial nerve does not plunge into the main body of the gland and there divide within the parenchyma—the term lobectomy in connexion with the parotid gland is meaningless. To clear up misunderstandings concerning the relationship of the facial nerve, to beg contemporary anatomists to revise their teaching and alter their textbooks in this respect, is only one of the tasks that I have set myself. It is my ambition to dispel deep-rooted beliefs concerning parotid tumours, beliefs almost amounting to old wives' tales.

The Bogy of Facial Palsy

"Leave it alone! If you have it cut out you will probably get paralysis of the face." This was the advice given to the brother of one of my nursing sisters by a comparatively

young North of England practitioner, as a result, the patient adamantly refuses to submit to operation. Similar advice was given to another patient by a middle aged doctor practising on the Welsh border. I mention these examples because most of my patients come from London or the Home Counties, where advice such as this seems to be the rule. Further inquiry convinces me that this attitude

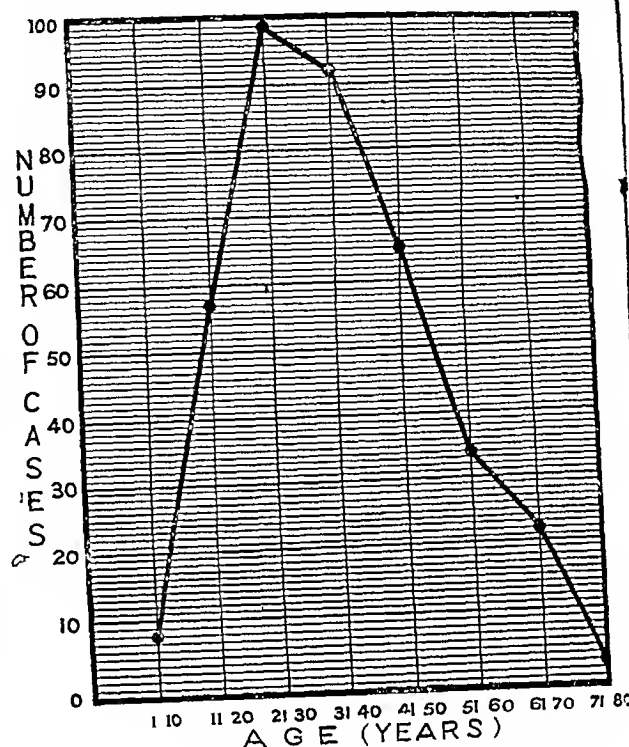


FIG A—Ages at which mixed tumours of the parotid gland first appeared (J. McFarland's statistics)

towards operation is adopted by the majority of practitioners throughout the world. Amazingly enough, the profession does not realize that it is only a matter of time before the seventh nerve becomes implicated by the tumour and that this is a far more frequent happening than facial palsy resulting from the surgeon's knife. Furthermore, when a neoplasm has advanced so far as to cause facial paralysis, it is unlikely that the tumour can be removed *in toto*.

Joseph McFarland,* who held the chair of pathology at Philadelphia, studied parotid tumours for thirty years. Unlike most pathologists, in addition to studying the macroscopical and microscopical characters of the specimens, he investigated the clinical histories of the patients. As a result he pronounced the recurrence rate to be much higher in the case of removal of small as opposed to larger tumours. Kennon, of Liverpool, substantiated this observation. Presumably as the outcome of these well-founded observations there started the pernicious practice of waiting until the tumour got larger. How large has never been stipulated, that has been left to the patient or his doctor to decide. In this connexion it is important to point out that clinically I myself have found it difficult to be sure that a given tumour is small. Some of these swellings feel definitely circumscribed and are movable on the deeper structures, yet when they are displayed to the light of day they prove to be veritable icebergs—four-fifths being

*Joseph McFarland died in September, 1945. His daughter, Dr. Helen McFarland Woodbridge, is carrying on her father's collective study of parotid tumours at the School of Dentistry, University of Pennsylvania.

beneath the surface. Again, some of my biggest specimens originated deep in the gland and consequently did not produce the largest excrescences. Therefore a pre-operative clinical photograph does not necessarily reveal the magnitude of the neoplasm.

It is generally conceded that the earlier a malignant tumour is removed, the better. Why in the world should a tumour of the parotid gland be an exception to this rule? The reason is that other misconceptions, notably the illusion of enucleation and the myth of the ugly scar, have vitiated the dictates of common sense.

The Illusion of Enucleation

"I have sometimes seen little tumours the size of peas or little pins' heads in close juxtaposition to the larger, easily recognized tumour" (McFarland). Here is one explanation of the frequency of recurrences, and a strong argument for performing subtotal or total parotidectomy in all cases of mixed parotid tumours. Important as is McFarland's observation, I am convinced that most recurrences are due to incomplete removal of the mother tumour, and my explanation accounts for the well-established fact that small tumours are followed by the early and frequent (30% or more) recurrences. Let us see how this occurs. Through a limited transverse incision the surgeon endeavours to expose the surface of the tumour. The cheek is so richly supplied with blood that, in spite of the application of numerous haemostats, the parotid gland cannot be seen clearly in the depths of the wound. The surgeon therefore largely relies on palpation to define the limits of the swelling. The incision into the gland substance having been deepened, still more bleeding is encountered, and he may or may not define the capsule of the tumour. The smaller the tumour the more likely is this step to prove unsatisfactory. The capsule is opened and an attempt is made to enucleate the tumour with the finger, in much the same manner as an adenomatous prostate gland is enucleated suprapubically. In some large and moderate sized firm, solid tumours this procedure is accomplished with a sense of satisfaction. In other cases, particularly in small friable tumours and those in which cystic degeneration has occurred, the contents of the capsule are fragmented, or a jelly-like material escapes. It should be evident that even if one cell is spilled in the wound recurrence is possible. Having "enucleated" the tumour, the surgeon who has devoted attention to surgical pathology, and knows that some tumour cells may still be adherent to the interior of the capsule, proceeds to remove the capsule. The smaller the capsule the more difficult is this procedure, especially in a bloody field. The capsule is liable to tear when traction is applied to it. Moreover, the most adherent part of the capsule is its deep aspect. Here the bugbear of injury to a branch of the seventh nerve is often the final deterrent to good intentions. I submit that malignant cells spilled during intracapsular enucleation or cells left in the interior of a portion of the capsule that has not been entirely removed, account for 90% of recurrences.

Operative Details

Operations on parotid tumours are usually undertaken through transverse incisions. 'The smaller the incision the better the cosmetic result' is an uppermost thought in the surgeon's mind. Furthermore fearing injury to the facial nerve, the surgeon likes to feel that his incision into the gland runs parallel to branches of the seventh nerve. Limited transverse incisions for removing parotid tumours should be abandoned, because it is impossible to determine what type of operation is necessary until the whole gland has been displayed, and any operation that has for its

objective complete ablation of the tumour requires full exposure of the whole gland.

The Incision Advised—The surgeon transfixes the lobule of the ear with Lane's forceps, and retracts the lobule suitably. The assistant stretches the skin of the cheek with the flat of his hand, while a J-shaped incision is made, beginning at the level of the zygomatic arch and proceeding down the side of the face as close as possible to the pinna, curving round the root of the lobule to end on the tip of the mastoid process (Fig 1, Special Plate). A large flap of skin is reflected by undercutting. If the whole parotid gland is not in view (the gland is a variable structure) the incision must be enlarged still further by extending it down the neck from the tip of the mastoid process, along the anterior border of the sternomastoid. Contrary to what may be thought this formidable incision leaves a surprisingly inconspicuous scar.

Operation—No attempt should be made to remove any parotid tumour until the whole gland is in full view. Only then or even after an extracapsular resection (Fig 3, Special Plate) has been begun, is it possible to tell how deeply the tumour plunges into the gland. Ligation of the external carotid considerably minimizes the bleeding that otherwise obscures a dissection of the branches of the seventh nerve. The temporofacial division is seen clearly once the superficial lobe has been mobilized. In extracapsular resection sufficient parotid tissue should be removed to ensure that the tumour capsule is not encroached upon. If the tumour is found to extend deeply, rather than risk cutting the branches of the facial nerve this operation should be abandoned in favour of superficial lobectomy. In all operations on parotid tumours the wound should be kept moist with 60% alcohol to shrivel up stray tumour cells that might be spilt inadvertently.

With amazement I discovered it is possible to resect large portions of the parotid gland regularly without the development of the much feared salivary fistula. In my whole series of operations, which has included 33 total or subtotal parotidectomies and about an equal number of extracapsular resections, in only one instance has a fistula resulted, and that was a tiny fistula which did not cause the patient much inconvenience. This healed within a year and remains healed.

Surgical Anatomy

There can be no doubt that surgical enterprise in the parotid region has been stultified by the instruction that surgeons have received, and are receiving, from anatomists

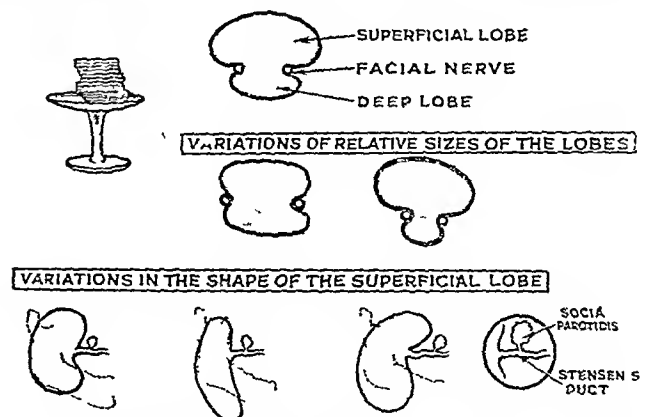


FIG B—For purposes of surgical anatomy the facial nerve may be likened to the meat within a parotid sandwich.

In 1938, after accidentally coming across the superficial lobe of the parotid gland in the course of an operation, and subsequently being inspired by the anatomical studies of McWhorter (1917), I endeavoured to popularize the conception that the parotid gland is a bilobed structure possessed of a large superficial and a small deep lobe connected by an isthmus. I likened the facial nerve to the meat within a parotid sandwich (Fig B).



FIG C—A comparatively early case of parotid tumour showing the typical location

In the anatomical department of the University of Chicago (1945) a medical student, L. J. McCormack, working with Dr. E. W. Cauldwell under the direction of Prof. B. J. Anson, dissected, described, and illustrated the true anatomy of the parotid gland and its relationship to the facial nerve in such a clear and convincing manner that their description is bound to become a classic. Every surgeon undertaking operations on the parotid gland should study this article.

It is, of course, possible for a neoplasm to arise in any part of the parotid gland, nevertheless, most mixed parotid tumours have their beginning in a comparatively circumscribed area—a little in front of and above the angle of the jaw (Fig C). So constant is this finding that it may be described as the typical location of this neoplasm.

The only other common starting point (and it is very much less common than the foregoing) is in the region immediately in front of the tragus. Here the differential diagnosis between an enlarged pre-auricular lymphatic gland and a mixed parotid tumour is, at the first examination, impossible unless some cause for an enlarged lymphatic gland can be discovered. When such a "gland" does not subside—or, alternatively, if it slowly becomes larger—it is wise to vote for a parotid tumour.

The Pseudocyst

"Mixed tumours are so mixed that their substance may be so soft as to lead the surgeon to suppose that he is removing a cyst" (McFarland). Because the lump feels cystic it is often assumed that the swelling is innocuous. In a few instances the advice has been given to massage the face. One can only assume that those giving this advice envisaged the swelling being caused by obstruction to a branch of the parotid tree, but the patients' histories do not indicate that sialography had been employed to support this hypothesis. True cysts of the parotid are exceedingly rare. In approximately 100 cases of non-inflammatory

swellings of the parotid gland that have passed through my hands I have encountered one example only, by sialography this was proved to be due to blocking of a large branch of the parotid tree by a stone. It should be noted that adenolymphomata (papillary cystadenoma lymphomatosum), which are cystic tumours probably arising from the lymphoid conglomerate that surrounds the first branchial cleft, are definitely benign. Such tumours are exceedingly rare, and it is quite impossible to distinguish them from degenerating mixed parotid tumours. It therefore follows that, if such a diagnosis implies that less radical treatment than that for mixed parotid tumours is indicated then unless the condition is bilateral it is dangerous to attempt to diagnose papillary cystadenoma lymphomatosum clinically.

Irrational Radiotherapy

Numbers of surgeons, I feel sure, are not cognizant of the fact that nearly all parotid tumours are completely radio-resistant. On numerous occasions I have seen patients with parotid tumours who have been steeped in the facial palsy boggy. On hearing of the proposed operation the patients have sought a second opinion—in some instances a greatly respected opinion. In all but one instance radiotherapy has been advised. Accumulated evidence has convinced me that radiotherapy is without the slightest beneficial effect on parotid tumours, except in very occasional cases that are possibly examples of adenolymphoma. McFarland followed up patients with parotid tumours treated by radiotherapy in fifteen hospitals by twenty radiologists; he was unable to find that any benefit accrued from this treatment. Janes, of Toronto, who has studied this subject, knows of no instance where a cure has been accomplished by radiotherapy, but he has observed deep, penetrating radium ulcers and intolerable pain resulting from this treatment. More such evidence is available but to bring it forward here seems superfluous.

LEGENDS TO SPECIAL PLATE

FIG 1—Low power view of the whole collection of marrow fragments from a case of hypochromic microcytic anaemia. Note the general hyperplasia of the cellular marrow, but the persistence of small fat spaces indicates that maximal cellularity has not been attained $\times 15$.

FIG 2—High power view of a megaloblastic marrow from a case of Addison's anaemia. Masses of primitive haemocytoblast cells are seen together with later nucleated red cells. There is maximal cellularity with total loss of fat $\times 800$.

FIG 3—Marrow fragment from a case of aplastic anaemia. The diagnosis from examination of the peripheral blood was uncertain between refractory megaloblastic anaemia following pregnancy and marrow aplasia. The condition proved to be completely refractory to treatment and death occurred from exhaustion following haemorrhages and sepsis $\times 330$.

FIG 4—Marrow showing clumps of Gaucher cells. The case was one of splenomegaly and anaemia with thrombocytopenic purpura in a young woman. Gaucher's disease was suspected on account of the yellowish brown pigmentation of the skin of the forehead, cheeks and conjunctivae (pingueculae), and sections of the marrow confirmed the diagnosis. Gaucher cells were not detected with certainty in the marrow smears.

FIGS 5 and 6—From an obscure case of reticulosis, apparently of the type of giant follicular lymphoblastoma. The low power view (Fig 5, $\times 50$) shows a small fragment of denser, more darkly staining cells than the surrounding marrow fragments and the high power (Fig 6, $\times 250$) shows clearly that the neoplastic tissue is replacing the marrow in foci. The marrow smears showed merely an increase in mononuclear cells but an opinion would not be given whether these cells were diffusely mingled with the marrow elements or were derived from metastatic foci of the lymphoid neoplasm.

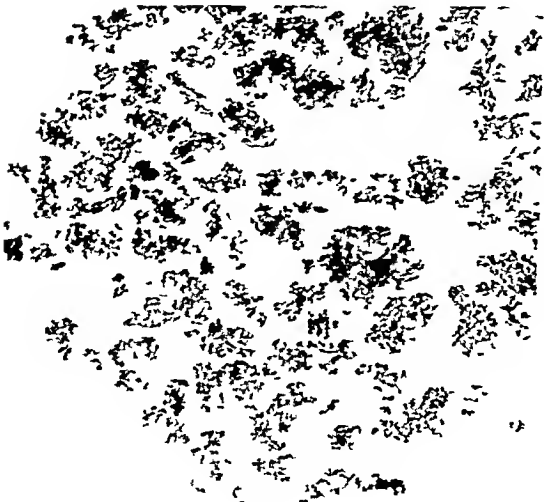


FIG 1

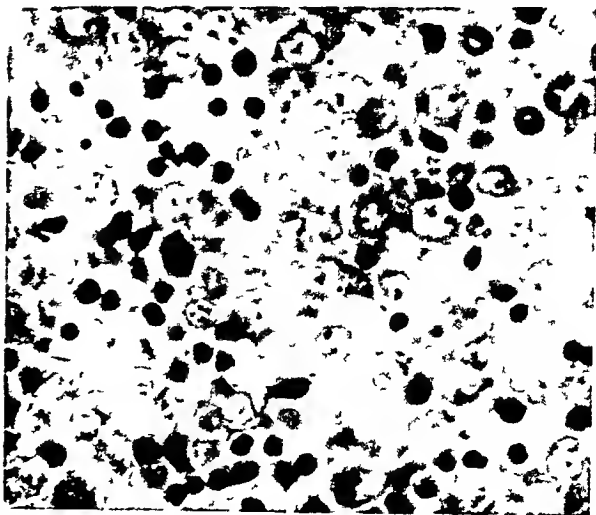


FIG 2



FIG 3

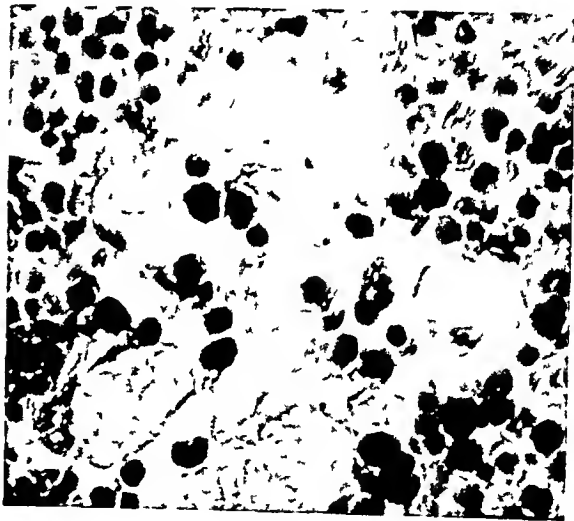


FIG 4



FIG 5

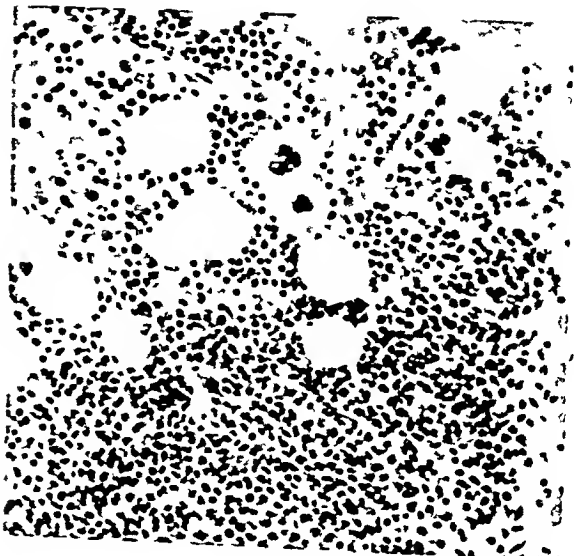


FIG 6

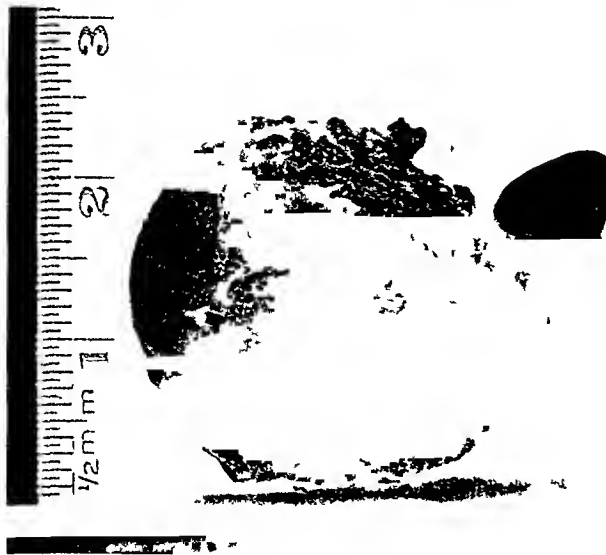


FIG 1—Neurofibroma

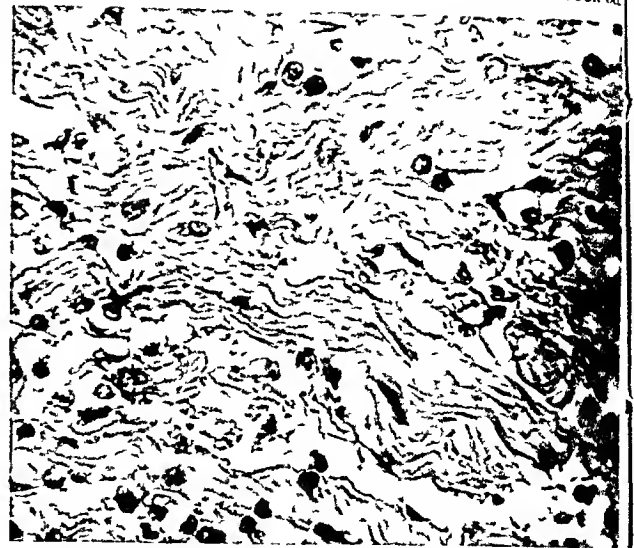


FIG 2—Section showing lymphocytic infiltration

BASAL-CELL CARCINOMA AT SITE OF TRAUMA—T G REAH



FIG 1—Photomicrograph ($\times 40$)

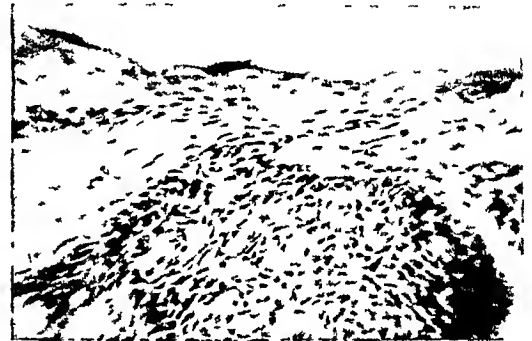


FIG 2—Photomicrograph ($\times 160$)

TERATOMA OF TESTIS SPONTANEOUS DISAPPEARANCE OF LUNG METASTASES—J EWART SCHOFIELD

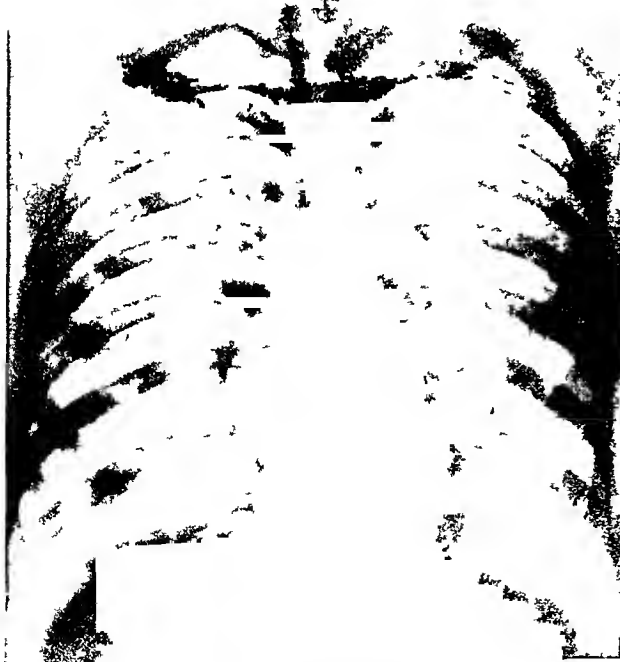


FIG 1—September, 1941

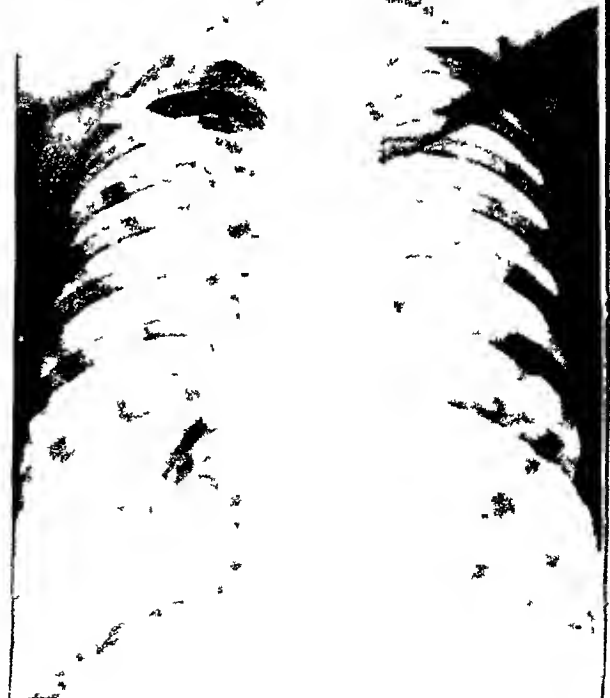


FIG 2—March, 1946

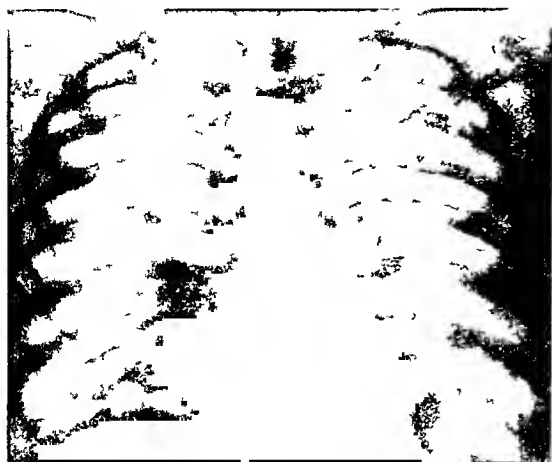


FIG 1—On first admission (July, 1945)



FIG 2—Shortly before death (May, 1946)

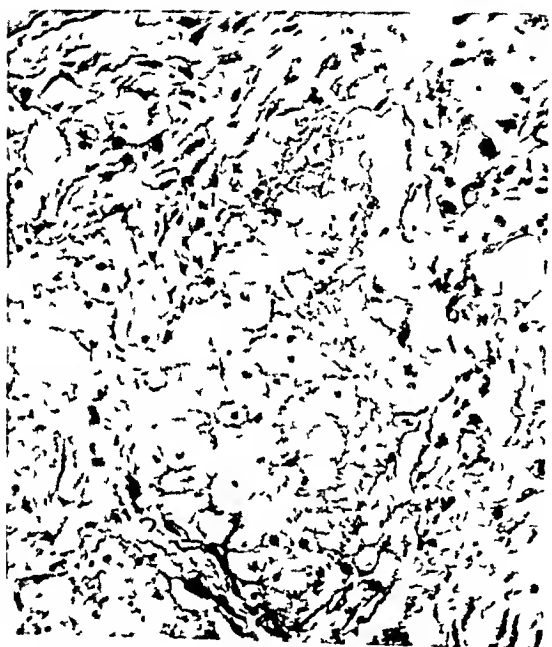


FIG 3—Lung ($\times 250$) showing foamy macrophages in alveolus

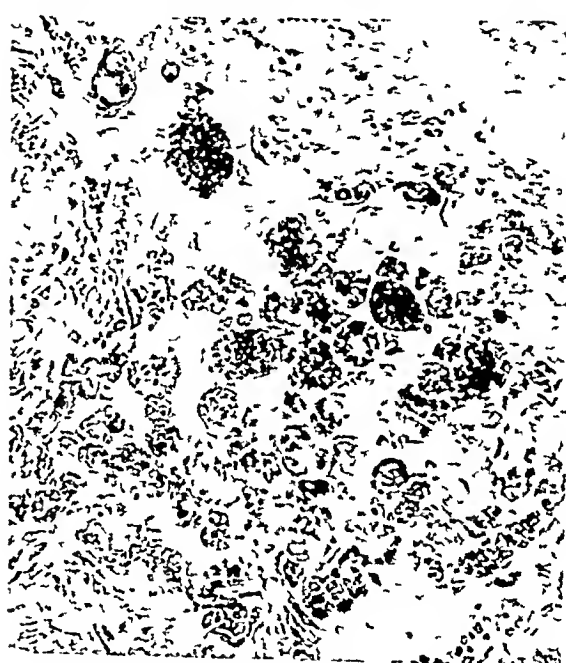


FIG 4—Lung ($\times 250$), stained with Scharlach R, showing fat globules within the macrophages

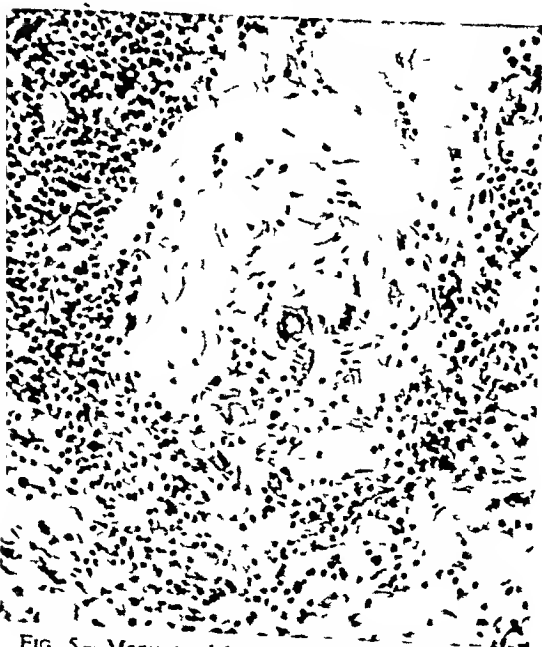


FIG 5—Mediastinal lymph node ($\times 250$) showing area of fibrosis with "foreign body" giant cells

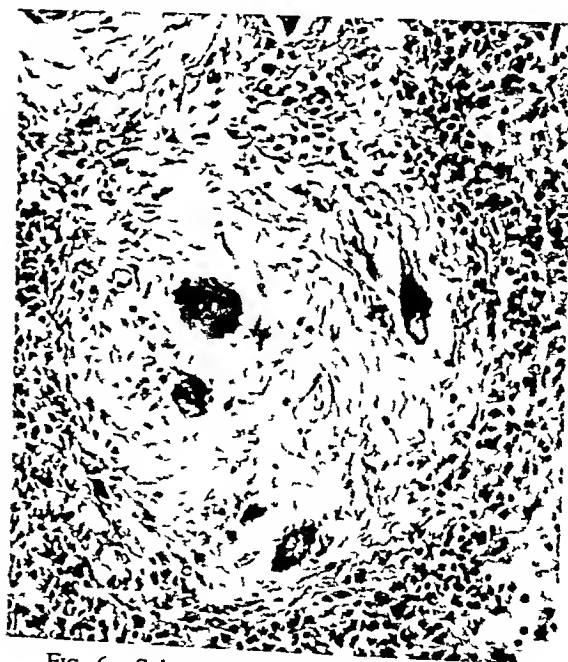


FIG 6—Spleen ($\times 250$) showing area of fibrosis as in Fig 5

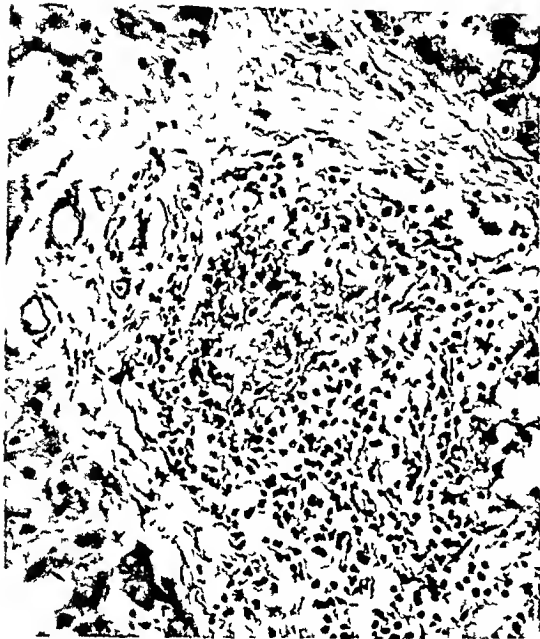


FIG 7 —Liver ($\times 250$) showing area of fibrosis as in Figs 5 and 6



FIG 1

FIG 1 —Exposure of the whole gland and ligation of the external carotid artery

FIG 2 —Excision of the superficial lobe Note the temporo-facial division of the seventh nerve

FIG 3 —Extracapsular resection of a tumour in the superficial lobe of the parotid gland

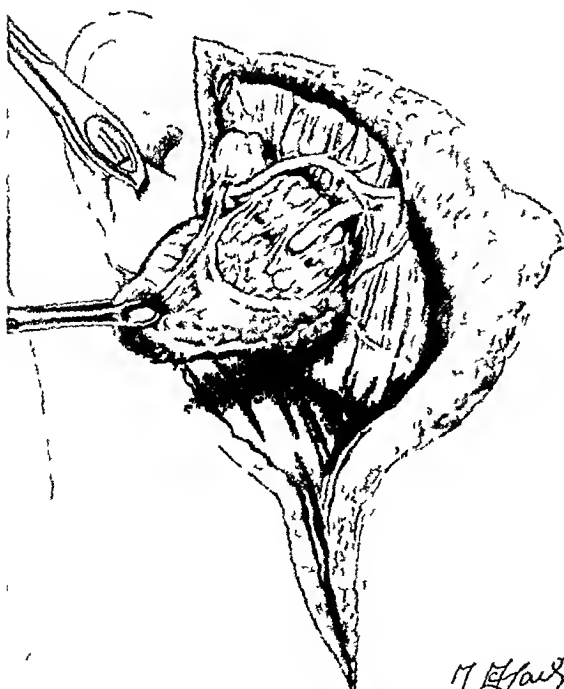


FIG 2



FIG 3

Prognosis and Treatment of Facial Palsy

After operations upon the parotid gland that involve dissection of the seventh nerve and the free use of 60% alcohol in the wound, a major degree of facial palsy always occurs this may persist for weeks or months. In the early stages Pickerill and Pickerill's method of supporting the facial musculature by strips of adhesive plaster cannot be bettered. Later, in cases where drooping of the mouth persists, Dahlberg's internal splint, which is a dental prosthesis, is superior to the hook and chain commonly employed. In four cases where I have known that I have cut a primary division of the facial nerve, the patients, instead of haunting me as I expected, have eventually either completely recovered or recovered to such a degree that they are unaware that the nerve is not functioning fully. This was the second pleasant surprise that I experienced in my sally into this field of surgery, and it equalled my amazement at the non-development of a fistula following lobectomy.

Since studying McCormack, Cauldwell, and Anson's description of the anatomy of the facial nerve, I have verified in the living the anastomotic twigs connecting the temporo-facial and cervico-facial divisions of the seventh nerve anterior to the parotid isthmus (Fig D). I believe

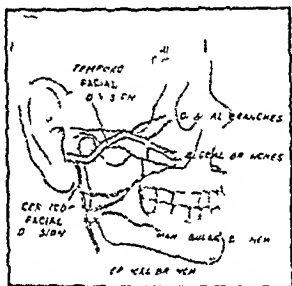


FIG D—Showing the anastomotic twigs between the cervico-facial and temporo-facial divisions of the facial nerve. Note that the temporo-facial division is more than twice the size of the cervico-facial division (after McCormack, Cauldwell, and Anson).

that it is the existence of these communications that accounts for the eventual restitution of function of the seventh nerve when one of its primary divisions is known to have been severed.

Even if the main trunk of the facial nerve is cut by accident or design (and I think the former is unlikely given reasonable skill) this is not an occasion to join the melancholy band at the wailing wall. I only wish that all the tragedies of life were as remediable as facial palsy. Certainly my experience of it has been small, but I have found that in the only two examples in which I employed it Lodge's operation of inserting a strip of fascia subcutaneously is most effective. J B Brown, by suturing the free fascial grafts to the temporal muscle, claims to mobilize as well as to rectify the drooping of the face. Sheehan's method of utilizing tantalum wire subcutaneously is reported to give results equal to those obtainable by fascial grafting. I repeat that such operations as these are necessary only when the main trunk of the facial nerve has been cut. In my experience this should be a most exceptional occurrence indeed if Janes's excellent suggestion is followed and the greater part of the mastoid process is temporarily resected in order to give access to the stylomastoid foramen, the main trunk of the facial nerve can often be found early in the course of the dissection even when the tumour is wedged between the mandible and the skull.

Perhaps what is more to be feared, when nerves in and around the parotid salivary gland have been damaged, is

not the muscular palsy but the much less-known auriculo-temporal (Frey's) syndrome. In Frey's syndrome when the patient eats the cheek becomes red, hot, and painful, and beads of perspiration appear upon it. There is also hyperaesthesia of the face, especially during shaving.

Conclusion

As an experienced teacher I am convinced that in the whole realm of clinical surgery there is not a condition that approaches mixed parotid tumours for misconceptions. Here is a neoplasm that remains supremely curable for years, sometimes for a decade or more. Yet because of misconceptions concerning its behaviour and its treatment it is allowed to pass from curability to incurable malignancy. Worse still, while it is yet small and encapsulated, malignant cells, previously locked up by Nature, are let loose by surgical interference (a revolting term beloved of bygone physicians, which in this instance may be used to some purpose).

If these misconceptions can be swept aside and if general surgeons will devote even one-quarter of the time and attention to parotidectomy that they have expended in acquiring the skill to perform such operations as oesophagectomy and total gastrectomy, I believe that Cinderella Tumor Mistus Parotidis, an unadopted child of ultra-surgical specialization, will take her rightful place in a category where our conception of surgical pathology tells us she belongs—absolute curability.

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At the Fourth Annual Conference of the American Group Therapy Association, held on Jan 10-11, Dr George E Gardner co-director of the Judge Baker Guidance Centre of Boston, suggesting that child guidance clinics in the future would employ treatment groups extensively for young children and their parents said that the children's group permitted expression of drives in a setting with flexible but definite limitations, where support for ego growth and development was supplied as well as sympathetic and impartial dealing with the children. In the parents' group the therapist served as a catalytic agent in the discussions. She gave authoritative opinions when requested, controlled the outpouring of emotionally charged material, and helped relieve guilt and anxiety in the group members. Both therapists kept in the background except when situations arose that demanded intervention. Dr Hyman Spotnitz, of the Jewish Board of Guardians found that through the analysis of the group interviews two trends or forces could be discerned, the reproductive constellation of forces and the inadequacy constellation of forces. These were in constant opposition. The drive to become parents, and better parents than their own was in opposition to the girls' feelings of inadequacy to achieve these aims. When the former constellation was ascendant the girls were functioning harmoniously as a group when the inadequacy constellation was ascendant the drives became disruptive and tended to break up the group.

A PLEA FOR LATERAL ORBITOTOMY (KRONLEIN'S OPERATION)

BY

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Eye Surgeon St Bartholomew's Hospital

[WITH PHOTOGRAPHIC PLATE]

There has been of late a trend to advise exploration of all orbital tumours through the transfrontal route. Such an operation is of course in the province of the neurosurgeon. Perhaps one reason for this is the statement of so eminent a neurosurgeon as W E Dandy (1943) that in his experience in 75 to 80% of cases both the orbit and the cranial cavity are involved in a neoplasm which causes unilateral proptosis. Another reason is the reluctance and timidity of some eye surgeons to undertake the surgical approach through the lateral wall of the orbit (lateral orbitotomy—Kronlein's operation)—a route in my opinion fully justifiable, and one to be preferred to the transfrontal approach in the case of a neoplasm the physical signs of which show to be entirely within the orbital cavity. Increasing hyperopia may well be diagnostic of a tumour limited to the orbit. Good stereoscopic radiographs of the orbital walls and optic foramina and canals are helpful in excluding extraorbital extension.

Dandy made the following comment about orbital tumours: "As a matter of fact it is rarely possible before operation to be certain whether or not the tumour also lies within the cranial chamber as so many of them do." Harvey Jackson (1945) cannot agree with this statement, and he writes: "In fact my experience is that by careful clinical examination, by judicious radiography and by suitable application of laboratory investigation, not only is the diagnosis of tumour to be reached, but its ramifications regularly revealed and not infrequently its pathological nature surmised." Nevertheless, in discussing treatment he writes: "My opinion concurs absolutely with that of Dr Dandy in that the transfrontal route is preferable in every way. Through a frontal osteoplastic flap a more direct and more adequate exposure is obtainable, any extension intra-cranially is approachable, less interference with ocular motility ensues, and there remains no visible and ugly scar. As for the replacement of a prominent eye by one that in addition pulsates, this is untrue."

I think a more direct and more adequate exposure is obtained by lateral orbitotomy in cases where it is known that the neoplasm is limited to the orbit. The suggestion that after lateral orbitotomy the patient has an ugly scar is untrue. By suturing the incision carefully in two layers, by using for the skin a plastic hook, No. 4 eye atraumatic needles, with 00 black silk, and by placing the sutures 3 mm apart and 2 mm from the edges of the incision, the scar is reduced to a thin line which is not obvious.

The case report given below illustrates failure to remove an orbital tumour by the transfrontal route in July, 1945, and its successful excision through the lateral orbital approach in February, 1946. Incidentally Maurice Drell (1944) also reports a case in which the neurosurgeon failed to find a tumour of the orbit through the transfrontal route. In the following case I came upon the neoplasm quite easily after temporarily removing the lateral wall of the orbit and retracting the external rectus muscle upwards. The neoplasm was dissected from the optic nerve and the eyeball. I do not think the access could have been more direct, and the exposure was certainly adequate. The note made on July 10, 1945, after left transfrontal craniotomy was: no neoplasm visible in the orbit.

Case Report

A woman aged 33 was referred to me by Dr M O Lavin on Dec 7 1945. She had left proptosis which she first noticed in August 1944. About June 1945, the temporal field of the left eye was lost. She was examined in July and all investigations were negative. Radiographs of the left optic foramen and canal showed no abnormality. At Oxford exploratory craniotomy was done through the left transfrontal approach. The prechiasmal part of the left optic nerve was normal. The roof of the orbit was removed and no neoplasm was seen in the orbit.

On examination on Dec 7 1945 she showed café au lait patches and soft raised swellings affecting the right arm, back, chest, anterior abdominal wall and left leg. The left eye was proptosed forwards and upwards, and on looking to the left ocular movements were limited—upwards downwards, and directly left. Her refraction had been 5.5D myopia and was 1D hypermetropia. The optic disk was oedematous prominent and appeared to be pushed forward into the eye. The physiological cup was filled by oedema. There were some highly refractile spots on the nasal side of the optic disk and some streaks extended from its temporal edge into the papillo-macular bundle. The macular area was deeply crimson and surrounded by pigmentary disturbance. Visual acuity was reduced to hand movements. Visual field loss was severe in the lower part of the field and on the temporal side. In the lower temporal quadrant the defect reached to 3° from the fixation point. She had been advised to have the left eye excised and the orbit partially exenterated.

A diagnosis of neurofibromatosis was made. The clinical findings suggested that the neoplasm in the left orbit lay inside the muscle cone and below the optic nerve possibly invading either its sheaths or the nerve itself. Radiographs of the optic foramen and canal showed no abnormality. The right eye and right visual field were normal. It seemed justifiable to explore the left orbit through its lateral wall and to remove the tumour by this route sparing the eye if possible.

On Feb 7 1946, lateral orbitotomy was done. A curved incision was made 5 mm behind the lateral margin of the orbit and coinciding with its curve. From the centre of this a horizontal incision was made posteriorly for 4 cm. These incisions were deepened to the periosteum of the malar bone and the temporal fascia. The flaps thus formed were undermined in the plane of the periosteum and temporal fascia upwards and downwards and reflected. An incision was made through the periosteum along the lateral orbital margin and this was carefully stripped from the orbital aspect of the lateral wall of the orbit. The space between the periosteum and the bone was temporarily packed with ribbon gauze. The temporal fascia was then incised along the posterior margin of the frontal process of the malar bone, and with a blunt dissector the temporal muscle was stripped from the bone. The space between the muscle and the bone was packed with gauze. The periosteum over the malar bone was incised in line with the inferior orbital margin and reflected for 4 to 5 mm. The same was done 5 mm above the external angular process. The gauze packs were now removed from the temporal fossa and from the space between the orbital periosteum and the bone and into the latter a metal guard was inserted. About 1 cm behind and in the same plane as the incision through the periosteum above the external angular process the point of an Archimedean drill was placed on the temporal side of the lateral wall of the orbit. The drill had a stop 5 mm from its tip. A hole was bored in the lateral orbital wall adequate in size to admit the looped end of Gigli's saw which was caught on the orbital side of the bone and drawn through and forwards. A saw cut was made forwards and it was completed in the line of the periosteal incision. A loop of Gigli's saw was then passed through the anterior end of the inferior orbital fissure and a cut made through the bone in a plane with the floor of the orbit emerging in the periosteal incision in the malar bone. The bone joining the drill hole with the inferior orbital fissure was then divided with a chisel cut the quadrilateral piece of the lateral orbital wall was held in bone forceps removed and placed in a bowl of warm sterile saline.

The orbital periosteum was then incised postero-anteriorly along the lower margin of the external rectus muscle from the level of the bony floor of the temporal fossa to within 5 mm

of the orbital rim. The external rectus belly and the periosteum were retracted upwards and with a blunt dissector the orbital fat was gently separated to expose the neoplasm which lay within the muscle cone below the optic nerve and mainly on its temporal side. The optic nerve was stretched over the neoplasm and displaced upwards and inwards. The neoplasm was greyish blue, had a smooth surface, was not attached to the globe and tapered posteriorly towards the apex of the orbit. It was defined by gentle blunt dissection mainly with the gloved forefinger. There was some difficulty in freeing its posterior extremity. Fig 1 (Special Plate) is a photograph of the neoplasm.

The lateral wall of the orbit was now replaced by a non touch technique holding the bone in forceps. The orbital periosteum and temporal muscle fell back into their normal positions. A split rubber drain was passed into the orbit at the junction of the lateral wall and the floor and another was laid over the temporal fascia parallel to the horizontal incision and emerging from its posterior extremity. The incision was repaired in two layers, the fat and subcutaneous tissues being sewn up with interrupted catgut sutures and the skin edges with interrupted sutures of number 00 black silk placed 2 mm from the edge of the incision and 3 mm apart. Vaseline gauze covered the wound and a pressure dressing was applied over this.

Pathological Report—The neoplasm measured 30 by 23 by 16 mm. After removal it was yellowish white in colour and had a smooth glistening surface and a rubbery consistence. Dr H F Brewer's histological report was as follows. The specimen was a circumscribed tumour of firm consistence and of oval shape 30 mm in its longest diameter by 23 mm by 16 mm. The approximate weight was 5.5 g (Fig 1). It was enclosed in a fibrous capsule which appeared to have ruptured at one point. The cut surface had a yellowish white translucent appearance. Section shows that the tumour consists of a loosely woven tissue in which spindle shaped cells the nuclei of which are narrow and slightly curved run in an irregular interlacing fashion. In the central part there is extensive collagenous change in the stroma, in another small area the tumour is very cellular but not of a degree to suggest a sarcomatous change. There is a scattered infiltration by small lymphocytes and the tumour is surrounded by a capsule. No nerve elements are recognizable but the histological and clinical features point to the tumour being a neurofibroma (Fig 2 Special Plate).

Post operative Course—The drainage tubes were removed 48 hours after operation. The wound healed by first intention and the lateral wall of the orbit united to adjacent bones in its normal position. The scar of the incision is scarcely visible. Papilloedema was subsiding on the fourth day after operation and had disappeared by the tenth day. Proptosis subsided but the left eye has remained higher than the right possibly the transfrontal craniotomy and the removal of the orbital roof may be factors in causing this. There remains slight limitation of action of the external rectus but all other ocular movements are normal. There is some dusky crimson discoloration around the left macula. Left vision has recovered to 6/6 with -5.25D sphere and the visual field has improved by 35° in the lower half where the main defect was present before operation.

Summary and Conclusion

A case is described of unilateral proptosis due to a neurofibroma 30 by 23 by 16 mm situated within the cone of the recti muscles and beneath the optic nerve. Transfrontal craniotomy had failed to reveal the neoplasm which was removed six months later after temporary removal of the lateral orbital wall. Vision recovered from hand movements to 6/6 and the visual field defect improved by 35°.

This case illustrates the value of exploration of the orbit in cases where a neoplasm is suspected as the cause of unilateral proptosis. It shows also that when the neoplasm is limited to the orbital contents and lies behind the eye the orbit may be effectively explored after temporary removal of the lateral orbital wall. I think this approach route is preferable to transfrontal craniotomy.

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LIPOID PNEUMONIA: A PITFALL IN DIAGNOSIS

BY

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(WITH PHOTOGRAPHURE PLATE)

Changes in the lung produced by the introduction of oils appear to have been investigated first by Gueysson-Pellissier (1920), who injected olive oil into the trachea of the dog and the rabbit and found it to be removed from the alveoli by phagocytes without leaving any trace. The process was hastened if tubercle bacilli were ground up in the oil. Corper and Freed (1922) in an investigation of oils then commonly applied to the upper respiratory tract for therapeutic purposes, found that "proliferative broncho-pneumonia" followed the introduction of chaulmoogra oil, olive oil, or petrolatum into the lung of the rabbit. Laughlen (1925) reported three cases with the lesions now known to be typical of lipoid pneumonia—two infants receiving liquid paraffin as nasal drops and a man of 37 with 'multiple paralyses' taking it by mouth. He attempted to reproduce the condition experimentally, but killed his animals (rabbits) while the lesions were still in their early stages. Pinkerton (1927) reported similar cases, and in 1928 he published the results of experiments designed to discover an oil suitable as a base for the introduction of radio-opaque substances into the lungs. In the course of these experiments he made a thorough investigation of the ill-effects produced by some. He found that when vegetable oils were introduced they produced no tissue reaction and were expectorated in a few days leaving no trace. Animal oils, however, were first emulsified *in situ* and later attacked by phagocytes. Some of these reached the lymph nodes where fibrosis was set up after two or three months, but others remained in the lumina of the alveoli where the same process occurred. Foreign-body giant cells arose in both sites. Fatty acids produced by hydrolysis were the irritative agents, the total damage that resulted depending on the proportion of free fatty acids present in the original oil and on the rate of its hydrolysis. Chaulmoogra oil was unique in producing acute tissue necrosis from the start. Mineral oils were not hydrolysed; they produced an immediate phagocyte response in the alveolus and were rapidly emulsified. The droplets were transferred to the lymph nodes but here and in the alveoli fibrous tissue reaction followed far more slowly than with animal oils. In contradistinction to vegetable oils, however, the formation of fibrous tissue was inevitable eventually.

Since these studies several series of cases have been described (Ikeda, 1937, Paterson, 1938, Graef, 1939, Young Applebaum, and Wasserman, 1939, and Pinkerton and Moragues 1940). All these except one occurred in infants or in debilitated, aged, or paralysed people who were taking animal or mineral oil by mouth or as nasal drops. The exception was an apparently healthy young woman who was taking cod-liver oil by mouth (Young Applebaum and Wasserman 1939). It is noticeable that only the series of Paterson seems to have been reported in this country, which is surprising in view of the fact that he found as many as eight cases in 813 consecutive necropsies at a general hospital.

The gross lesions reported in the lungs vary from a generalized consolidation by greasy material resembling red hepatization to local areas of fibrosis surrounding a mass

of necrotic tissue and oil which ranges in size from a milium to a 'paraffinoma' several centimetres across. Several observers record fibrotic nodules resembling milia in other organs—for example, in liver, lung, and spleen by Pinkerton and Moragues, and in kidneys, adrenals, and ovaries by Young, Applebaum, and Wasserman. These last observers found the fibrosis to be so extensive as to produce arteritis and periarteritis in the kidney, with considerable glomerular damage. In nearly all these cases the diagnosis was unsuspected during life. Where trouble in the chest was suspected (Graef, 1939), radiographs showed shadows near the hilus of the posterior dependent parts, and these did not alter in appearance over some months. Most of the cases were discovered at necropsy, and the cause of death had generally been considered on clinical grounds to be due to other causes. In many the lipoid pneumonia may well have been of only minor importance.

The following case, showing many of the typical features described above, occurred in a healthy young woman from whom no history of the ingestion or aspiration of an oil was ever obtained, and it emphasizes the difficulties in the diagnosis of such a case.

Case Report

The patient was a healthy and intelligent member of the Women's Land Army, aged 19 at the time of death. She was admitted to hospital on July 4, 1945, with an acute febrile illness resembling rheumatic fever with erythema nodosum. Nothing abnormal was found on clinical examination of the chest, cardiovascular system, or the abdomen. The temperature was 100.2° F (37.9° C), the pulse 120 and the respirations 22. The fauces were injected, and there were raised red patches on the legs. She did not complain of cough.

A radiograph of the chest (Fig 1, Special Plate) showed a collapsed right middle lobe and enlarged mediastinal lymph nodes. The patient recovered quickly from her acute episode, and the patches on the legs cleared up. The blood picture was normal, the radiographic appearances were unlike tubercle, and the sputum was repeatedly 'negative,' and so, by exclusion, a diagnosis of Hodgkin's disease was made, a reticulo endotheliosis being the only plausible explanation that could be found for enlarged mediastinal lymph nodes in a young woman without changes in the lung fields. Two courses of deep therapy were given without producing any marked change in the mediastinal shadows.

The patient was readmitted on April 30, 1946. She was dyspnoeic with enlarged neck veins and shallow respirations. The percussion note over both upper zones of the chest was impaired and bronchial breathing was heard there. Radiographs showed an increased mediastinal shadow and infiltrations near the lung roots (Fig 2, Special Plate). She died on May 12.

Findings at Necropsy—Recent fibrinous exudate extended all over the pericardial surfaces and a little excess of fluid was present in loculi among this. The air-passages were all acutely inflamed. A small quantity of clear fluid was free in each pleural sac, but the serous surfaces were normal. All the mediastinal lymph nodes were enlarged, forming a dense mass which surrounded the main bronchi and compressed them to a moderate degree. The nodes were discrete, but bound together by much fibrous tissue. Their substance was firm quite uniform in consistency and appearance, and of a definite pinkish tinge. No normal lymphoid tissue appeared to remain at all. The lungs were firm and solid especially in the upper lobes. No discrete nodules appeared on their surfaces. On gross section the upper lobes were seen to be infiltrated extensively by firm pinkish material which was most abundant near the hilum and appeared to spread out in tentacles through the upper lobes. Its cut surface was quite dry, was certainly not greasy, and showed no sign of breaking down or of surrounding inflammation. Many circumscribed patches of the same appearance lay in the lower lobes. The intervening lung substance revealed oedema but no obvious bronchopneumonia; there were no areas of collapse and no abscesses. The spleen showed prominent follicles but no obvious infiltration. The liver showed only chronic

passive congestion. The uterus was menstruating. No other abnormalities were found in any system.

Histological Appearances—Sections of the lungs prepared from material embedded in paraffin revealed an intense histiocytic activity throughout the alveoli. Many macrophages lay free in the lumina, the cytoplasm of the majority being distended and of a foamy appearance. The endothelium of the alveoli had been shed and fibrous tissue surrounded the macrophages in the lumina, but the extent to which this had taken place varied much throughout the sections. Fig 3 (Special Plate) shows a typical area. In frozen section the macrophages were seen to be distended with fat globules which stained with scarlet red (Fig 4, Special Plate). Unfortunately the true nature of the condition was not understood at necropsy, so that sufficient material to identify the fat by differential staining was not saved. In the mediastinal lymph nodes the fat globules were again obvious in frozen sections. Intense histiocytic activity and formation of fibrous tissue were evident and giant cells of the 'foreign body' type were numerous (Fig 5, Special Plate). Very similar areas were seen in the spleen and liver. These were small, and superficially they resembled tuberculous milia, but on close examination they were seen to contain phagocytes instead of epithelioid cells and the giant cells were once more of the foreign body type (Figs 6 and 7, Special Plate).

Discussion

Origin of the Oil—Careful inquiries were made of the patient's family, friends, employers, and medical attendants to discover whether or not she had come into contact with any oil either as nasal drops, or by mouth, or as a spray in connexion with her work, but no evidence whatsoever was obtained that she had used any such substance.

The Differential Diagnosis—The diagnosis of lipoid pneumonia would be difficult in the absence of an obvious history of ingestion or inhalation of an oil or fat, especially in a healthy adult. In the above case the early enlargement of the mediastinal lymph nodes in the absence of lung shadows was highly suggestive of Hodgkin's disease, especially with a normal blood picture. As the response to treatment with radiation was so poor, this diagnosis might have been reconsidered, but few alternatives presented themselves, and none with a better prognosis.

The Genesis of the Lesions—In the above case the great outpouring of phagocytes into the alveoli would seem to indicate that the condition was due to a mineral oil, as found by Pinkerton (1928) and quoted above. The fibrous tissue present in the lung was more abundant than in Pinkerton's cases of this type, but it may well have been due to the deep therapy. However, such fibrosis did develop in his cases eventually. Although developed in response to a chemical irritant, this fibrous tissue has none of the specific character as is seen, for example, in silicosis. The degree of fibrosis developed in other tissues would not seem to depend so much on the nature of the irritant. It is noteworthy that similar lesions may arise in lymph nodes where excess of fat is present from causes other than inhalation. Thus Hill (1937) and Glynn and Rosenheim (1938) found fibrosis and foreign-body giant cells round masses of fat accumulated in the abdominal lymph nodes in steatorrhoea, while Vaux (1943) found foamy macrophages in what may have been earlier lesions of the same nature. It is evident, then, that such irritation may accompany the presence of fat in lymph nodes and may be responsible for the lymphatic obstruction in the sprue syndrome. It may be part of a vicious circle in which more and more fibrosis would lead to the progressive accumulation of fat.

Summary

A case of lipoid pneumonia in a young woman is described. The origin of the inhaled oil is uncertain. The condition is more common than is often supposed and should be considered

as a diagnosis in any case where chronic infiltration of the lung fails to respond to treatment

The pathology is that of a chronic response to irritation and is produced by animal or mineral oils. In the former case hydrolysis of the oil to fatty acids leads to more rapid development of fibrosis than in the latter. Similar appearances may be seen in the lymph nodes of this condition and of sprue and it is suggested that they may be of similar origin

I have to thank Dr W Lindsay Locke for the radiographs Mr J F Carter Brune, Dr Locke, and Dr P R C Evans for permission to publish the clinical notes, and Messrs Ilfords for the photographs

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TERATOMA OF TESTIS

SPONTANEOUS DISAPPEARANCE OF LUNG METASTASES

By

J EWART SCHOFIELD, FRCS

Swindon Wilts

[WITH PHOTOGRAPHIC PLATE]

The following report of a case which showed evidence of the spontaneous disappearance of lung metastases will be of interest.

Case Report

In September, 1941 a youth aged 16 was referred to me by Dr A Gibson with a swelling of the right testicle. It was the size of a Jaffa orange heavy, painless, but slightly tender. The cord was thickened. There was an indefinite swelling in the upper abdomen. The Wassermann reaction was negative. The radiologist's report on an x-ray examination of the chest read as follows: Multiple, circular sharply defined opacities in both lungs. They are of varying sizes, and are largest and most numerous in the lower zones. Intermediate sizes are seen in the mid zones. There is no surrounding lung reaction around these opacities, the appearance of which is typical of secondary malignant deposits. There is no evidence of tuberculosis. The mediastinal glands are not enlarged. (Plate Fig 1) A diagnosis of malignant testicular tumour with abdominal and lung metastases was made and, in view of the metastases the boy's parents were told that operation was not advised and that the expectation of life was only a few months.

In July, 1945 almost four years later, he was referred to me again by Dr Gibson who wished to know why the patient was still alive. Indeed I was extremely surprised to see him myself and so far as I could remember, his general appearance had improved. Dr Gibson stated that during the last four years the testicular tumour had varied considerably in size from that of a duck's egg to a Jaffa orange. The tumour of the right testis felt softer was slightly fluctuant and was a little larger than in 1941. An indefinite abdominal mass could still be felt. The x-ray appearance of the lungs was rather startling. The radiologist reported: The only abnormality seen is a small round opacity in the left lower zone. In view of the previous x-ray appearance this shadow should be presumed to be a metastasis. The complete disappearance of all the other metastases is remarkable.

It was now considered justifiable to advise surgical treatment and a right orchidectomy was performed, the cord being divided at the internal abdominal ring. Under the anaesthetic

a definite mass of abdominal glands was palpated. Macroscopically the testicle had the appearance of a breaking down tumour, yellowish in colour, with many cysts and cartilaginous nodules. The report of the pathologist on a microscopical section of the tumour read: The tumour appears to be a teratoma of the testicle, surrounded by a fairly dense fibrous capsule. The structure includes various tissues, the most prominent being cyst like spaces of various sizes lined with columnar or flattened epithelium. Nodules of cartilage are also present, embedded in the stroma, which is composed of loose fibrous tissue containing fibres of smooth and striped muscle. There are some masses of undifferentiated cells suggestive of a malignant element which is common in this type of tumour. It is considered, moreover, that all such testicular teratomata are potentially malignant and should be treated accordingly.

The operation and convalescence passed off without incident after which the patient's general condition improved, with increase of appetite and weight. The last report of the radiologist on a recent skiagram of the chest states that there is no evidence of abnormality. (Plate Fig 2) Despite frequent examination of the abdomen it is difficult to say whether the abdominal mass has completely disappeared.

The unorthodox course of the disease led me to inquire carefully into the patient's habits occupation diet etc after I first saw him in 1941 and pronounced the case inoperable. It appears that he was employed in a bakery until February 1942 after which he obtained work in an aeroplane factory for twelve months. Here he breathed an atmosphere containing duralumin dust. From January, 1943 until July 1945 he did casual work on a farm. He had no peculiar habits or liking for any particular article of diet.

Discussion

It is not intended here to expound on the subject of teratoma of the testis, for the literature on the subject is voluminous. The salient feature of the case described is that the lung metastases disappeared spontaneously. One hears from time to time of the spontaneous disappearance of malignant tumours, but the disappearance of secondary deposits in the lungs must be a rare occurrence. Saleeby (1944) quotes two cases of teratoma of the testis with metastases which recovered, but only after treatment. The treatment consisted of removal of both testicles for Saleeby wondered if there was a relation between sex hormones and cancer and thought that some carcinogenic agent is influenced by removal of both testes. One case his own was a patient who had a teratoma of the left testis with a large metastatic retroperitoneal mass. He was treated by bilateral orchidectomy, supplemented by deep x-ray therapy. The patient was well after fourteen months, and the retroperitoneal mass had disappeared. The other case quoted by Saleeby was Dr McClelland's in which lumbar and lung metastases disappeared within twelve months of bilateral orchidectomy. This treatment was followed up by Harrison (1944), who treated three more cases of teratoma of the testis by bilateral orchidectomy and deep x-ray therapy. Reporting these cases he stated that two of these patients died and the third was rapidly approaching dissolution. Harrison sums up by saying that "there is no clinical evidence to show that the course of the disease was affected by the operation."

In my own case it will be noted that the lung metastases disappeared before the primary growth was removed, and that deep x-ray therapy was not given—in fact, there was no treatment of any description. It was only after observing the disappearance of lung metastases that it was decided to remove the tumour of the testicle.

In discussing this subject one cannot fail to draw a comparison with chorio-epithelioma. In this disease a number of cases are known in which lung metastases have disappeared, but only after removal of the primary growth by hysterectomy. Teacher (1935) mentions cases in which

chorio epithelioma with pelvic extensions has spontaneously disappeared, but does not quote a case of disappearance of lung metastases except after hysterectomy. Comparison with chorio-epithelioma is interesting, as teratoma of the testis can contain chorio-epithelioma, although none was seen in the slide of my case.

I should like to thank Dr Paul Cave for his reading of the x ray films and Col F R Coppinger for his opinion on the pathology of the tumour.

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BASAL-CELL CARCINOMA AT SITE OF TRAUMA

BY

T G REAH, MD, MRCP

Late Lieut-Col R A M C

[WITH PHOTOGRAVURE PLATE]

Schrek (1941) in a review of 296 cases found that in five instances patients suffering from a basal cell carcinoma gave a history of the growth developing on the basis of an old scar. In one case the carcinoma appeared about 15 years after a burn of the forehead, in another it occurred two years after a burn of the hand, while in a third the growth developed 30 years after an avulsion of the scalp. No interval is stated in the remaining two cases, in one of which the growth appeared in a scar on the nose and in the other in scars of the legs following Roentgen-ray burns. Aitken (1944) stated that it is unusual to obtain any history of injury in cases of rodent ulcer, and cited one case where the history was certainly suggestive.

In the following case the history suggests the development of a basal-cell carcinoma immediately after a superficial cannon-shell wound. It should be remembered, however, that in the Middle East the incidence of secondary infection was high and delayed healing of superficial wounds common, and it is therefore impossible to determine the time of onset of malignancy.

Case Report

A regular soldier aged 31 with 13 years service was admitted to a military hospital in West Africa on Feb 11 1946 suffering from a short-term fever. He had served in the Middle East from 1935 to 1944 and in November 1942, was struck on the



Photograph showing lesions on right temple

right temple by fragments of a cannon-shell from an enemy aeroplane. The injury was superficial consisting of an abrasion about 1 cm in diameter and after the application of a dressing

he returned to duty. This abrasion did not heal. In August 1943 he noticed a sharp edge projecting just above the site of the abrasion, and a spicule of metal about 0.5 cm long was removed by the regimental medical officer. The puncture hole also did not heal thereafter both this lesion and the original abrasion slowly increased in size and bled freely if the surfaces were rubbed.

Midway between the outer canthus and the right ear was an ovoid slightly depressed area 3.5 by 1.7 cm with a finely nodular base covered by pale epithelium except for the posterior 0.75 cm where the surface was slightly scaly. Immediately above this lesion was another 1.7 by 1 cm with an irregular outline covered by a crust and with no characteristic edge (see photograph). There was no clinical evidence of metastases. There were three pigmented naevi up to 0.5 cm in diameter on the face, numerous pigmented naevi up to 0.3 cm in diameter on the trunk and limbs and four pedunculated pigmented warts on the trunk, all of which the patient stated had been present for years. A piece of the upper lesion was removed by Lieut Col D H Mackay and Major A F Mohun reported that it was a typical basal cell carcinoma (Special Plate Figs 1 and 2). I am grateful to them for their assistance.

My thanks are due to Major G M Ardran for the photograph of the patient, to L/Cpl D Winks for the photomicrographs, and to the D G, A M S and Col W R D Hamilton for permission to publish this case.

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FOLIC ACID IN PERNICIOUS ANAEMIA ITS EFFECT AS SHOWN BY SERIAL STERNAL PUNCTURES

BY

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In bone-marrow films of three cases of pernicious anaemia Davidson *et al* (1942) observed a considerable decrease in the proportion of early megaloblasts only six to ten hours after a single intramuscular injection of anahaemin or reticulogen. It seemed of interest to investigate the rate of bone-marrow changes following a single oral dose of 50 mg of folic acid.

In order to present figures comparable with those of Davidson *et al* the classification of nucleated red blood cells adopted by these authors (cf explanation to Table I) was used, but cells in mitosis were not differentiated into the various groups. This classification admittedly makes no attempt to differentiate between cells derived from megaloblasts and those developing along normal lines. As stated by those authors, "a certain arbitrary judgment is sometimes necessary for the classification of a given cell which falls on the borderline between groups." A further difficulty is the fact that changes in cell size, in haemoglobinization of cytoplasm, and in nuclear structure proceed during the repair stage of pernicious anaemia at different rates. For instance, after treatment a not inconsiderable proportion of deeply basophilic cells of under 11 μ diameter are found which have a nucleus similar to cells of Type II before treatment; this cell type is characteristic for all conditions in which there is abnormally intense erythropoiesis.

Pernicious anaemia in a man aged 63 was first diagnosed on his admission to Bethnal Green Hospital in December 1936; this responded promptly to liver treatment. He was followed up and treated as an out-patient until November 1937 but failed to attend after that date and has not since had any treatment with liver or stomach extracts. He was readmitted on Aug 23 1946 with pernicious anaemia in relapse and with gross

symptoms and signs of subacute combined degeneration of the cord Haemoglobin 947 g per 100 ml, red cells, 2 130,000, MCV, 128 μ , reticulocytes 3%, white cells 6,300 (neutrophil polymorphs 2,331, eosinophil polymorphs 378, basophil polymorphs, 63 lymphocytes 3 402 monocytes, 126)

TABLE I—Sternal Marrow Counts representing Percentage of 500 Nucleated Red Blood Cells in Each Film

	Type				Mitoses
	I	II	III	IV	
Before folic acid	46.0	22.8	12.4	17.0	1.8
6 hours after	22.8	27.2	31.2	14.6	2.2
12	10.0	18.4	43.4	20.4	2.8
24	7.0	17.4	56.6	16.8	2.2
48	8.4	19.0	45.0	26.2	1.4
Davidson <i>et al</i>					
Case 1 { Before anahaemin	42.0	28.3	24.0	5.7	9.0
6 hours after	25.7	38.5	25.5	10.3	12.4
Case 2 { Before anahaemin	46.2	30.4	9.8	13.6	10.2
10 hours after	35.8	44.2	13.8	6.2	18.4
32	8.4	53.6	30.8	7.2	24.3
Case 3 { Before anahaemin	40.2	38.4	15.0	6.4	14.4
8 hours after	19.8	51.7	19.7	8.8	11.5

Type I Cell of average 18 μ diameter pale nucleus with fine lattice of chromatin sometimes with nucleoli Type II Average 14.2 μ diameter nucleus more deeply staining and coarser chromatin pattern Type III Average 11 μ diameter cytoplasm basophilic polychromatic or orthochromatic deeply staining nucleus with lumpy masses of chromatin Type IV Average 9 μ diameter polychromatic or orthochromatic with pyknotic nucleus Mitotic erythroblasts Characterized by deeply staining chromosomes (cf LaCour 1944) For the cases of Davidson *et al* mitotic cells are listed separately but are also included in the figures under Types I-IV

It is thus seen that folic acid by mouth effected as rapid and extensive a decrease in Type I cells as did intramuscular refined liver extract The increase in Type III erythroblasts following folic acid as compared with Type II in the series of Davidson *et al* may be due to a difference in assessment rather than in quality of response

The rapidity of the change in the bone marrow from a megaloblastic to a normoblastic picture was thought by Davidson *et al* to support the view 'that normoblasts can be derived directly from megaloblasts' and 'that megaloblasts and normoblasts belong to one developmental series Table II shows, however, that the proportion of nucleated red blood cells with deeply basophilic—that is, non-haemoglobinized—cytoplasm is considerably larger six hours after treatment than it was before treatment, the basophilic cells belonging to Types I to III I have in the past observed the same phenomenon in all cases of pernicious anaemia in which I have examined sternal-marrow films before and shortly after liver treatment

TABLE II

	Basophilic	Polychromatic	Orthochromatic
Before folic acid	24.8	59.4	15.8
6 hours after	57.6	32.2	10.2
12	43.4	40.6	16.0
24	57.4	34.0	8.6
48	45.8	43.0	11.2

Percentages represent 500 nucleated red cells

The objection that the figures in Table II do not necessarily indicate an absolute increase in the number of basophilic erythroblasts seems refuted by Table III, which shows a probably significant rise, and in any case not a fall in the erythroblast population

TABLE III—Myelo erythroblastic Ratio

	Cells of Myeloid and Lymphoid Series	Nucleated Red Blood Corpuscles
Before folic acid	363	137
6 hours after	340	160
12	350	150
24	337	163
48	294	206

As it seems scarcely possible that a partly or fully haemoglobinized megaloblast should lose all its haemo-

globin during its further development this finding shows that repair in pernicious anaemia is effected by newly produced cells of a non-megaloblastic series Naegeli (1931) described as late megaloblasts fully or nearly fully haemoglobinized large oval-shaped rather than spherical cells, with an eccentric rather than central, deeply staining more or less pyknotic nucleus, Israels (1939) and Wilson (1942) reached the same conclusion The number of these cells in the films after treatment is quite consistent with the view that they are the cells derived from the early, partly or not yet haemoglobinized megaloblasts of the untreated marrow and that they play quantitatively no material part in the repair of pernicious anaemia

The disturbance of granulopoiesis characterized by the presence in large numbers of giant metamyelocytes and giant band-shaped granulocytes—due according to LaCour (1944), to nucleic acid shortage of the promyelocytes producing incomplete spiralization of the r chromosomes—showed no appreciable change in the four marrow films made after the administration of folic acid This is in agreement with previous personal observations on marrow films examined one to two days after the beginning of liver treatment, and with the findings of Zuelzer and Ogden (1946) in cases of megaloblastic anaemia in infancy treated with folic acid in which they observed its disappearance only after two to four weeks, whereas in at least one of their cases the megaloblastic pattern had disappeared two days after parenteral folic acid treatment

I wish to thank Dr H A Ash for the peripheral blood examinations and Dr I Doniach for his criticism

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Medical Memoranda

A Rare Form of Tuberculous Meningitis

Four cases of an unusual variety of tuberculous meningitis occurred in adults in Singapore during the period 1938-42. Each case presented the following features: a period of pyrexia; a period in which spinal symptoms predominated, and a period of meningism passing on to coma and death. Each period lasted about a week.

CLINICAL FEATURES

Pyrexial Period—There were no pronounced distinguishing features during this time. Three cases were admitted for routine investigation for fever of unknown origin and the fourth Col Rogers' case for fever associated with diarrhoea. The pyrexia was of a regular remittent type, not rising much above 102° F (38.9° C). It was associated with a mild leucocytosis up to 12 000 (80% polymorphs).

Spinal Symptoms—These were the first symptoms of major importance which distinguished the illness from the run of tropical fevers undergoing routine investigation. The first manifestation in all cases was difficulty in passing urine leading to retention. This was followed within 24 hours by a paresis of the lower extremities which gradually deepened but never became complete. There was diminution of muscle tone, loss of superficial and deep reflexes and an absent or equivocal Babinski sign. These findings were associated with a rising sensory level which was peculiar in that it was patchy and extremely difficult to determine precisely. Sensory loss was most marked to pin-prick, hot and cold, postural sensibility, vibration sense.

and touch were little affected. The calves were not unduly tender. There were no root prisms. From a consideration of the Chinese cases alone this might have been beriberi occurring during the course of tuberculous meningitis, in which disease early bladder symptoms are common, particularly as pyramidal release was never demonstrated. The fact, however, that a case occurred in a Sikh and a British soldier practically rules out this possibility. Lumbar punctures performed at various periods during the second week showed spinal block, a yellowish fluid more green than is usual in Froin's syndrome, and an excess of cells, mainly lymphocytes, up to 500. The protein rose as high as 900 mg per 100 ml. The tubercle bacillus was never found. In three cases radiology of the spine revealed no pathological change.

Period of Meningism.—This period lasted up to 10 days. It was associated with headache and as this disappeared the patient became confused. Brudzinkis neck sign was usually not markedly present until well on in the second week—that is, after the spinal symptoms had been in evidence for some days.

PATHOLOGY

A full necropsy was performed on two cases, in two the brain and spinal cord alone were available. Both cases in which necropsy was made revealed subclinical fibroid phthisis without cavitation. The appearance of the spinal cord was characteristic. It looked as if a yellow jelly had been poured into the subarachnoid space and had been allowed to set but that this had been incomplete in the lower cervical areas. A few tubercles could be found in the meninges of the cord. The brain showed typical small tubercles in the arachnoid, in which acid fast bacilli were demonstrated. The fluid in the basal cistern was relatively clear. It contained considerably less protein and fewer cells. Section of the cord showed very little save peripheral commencing degeneration of myelin round the full circumference of the cord (osmic acid) to the depth of about 2 mm.

COMMENT

This syndrome is recorded mainly because, though known to occur its features are not referred to in standard works. On this account the first case caused considerable difficulty in fact it was not diagnosed correctly until the necropsy. Since that time we have not seen an exactly similar case, though Dr Purdon Martin recently had one at Queen Square, in which the cerebrospinal fluid findings early on tallied with the above. Dr Greenfield, in discussing this case, remarked that in his experience when the cerebrospinal fluid protein was very high he has been unable to demonstrate tubercle bacilli. In view of the necropsy findings cisternal fluid might be more productive. It is worthy of comment that Lieut.-Col. J. M. Rogan, to whom our thanks are due, correctly diagnosed the British case during the period of the spinal phase from his knowledge of the Asiatic cases.

G. A. RANSOME
E. S. MONTIERO

Nicotinamide and Diabetes Mellitus

The water-soluble vitamins have been shown to play a part in enzyme systems involved in the oxidation and fermentation of glucose, and the beneficial action of yeast in the treatment of diabetes mellitus has been recognized for over 50 years. Dienst in 1939 reported the results of experiments on six human diabetics: his patients were given diets of known carbohydrate, protein, and fat content, and after stabilization and control over a period of several weeks the diets were supplemented with vitamin B (whole group) and ascorbic acid. He reported that the sugar tolerance in all cases was much improved thereby and concluded that this was due to the action of thiamine and ascorbic acid. In 1937 Martin had shown that the existence of a multiple vitamin deficiency increased the insulin requirements of depancreatized dogs, but did not form any definite conclusion as to the precise role of the vitamins in treatment. Gaebler and Ciszewski (1945) fed three depancreatized dogs on a standard diet with added pancreatic enzymes and yeast. The minimal dose of insulin necessary to control glycosuria was inadequate when yeast was removed from the diet, and glycosuria was abolished after 12 days when the

ingestion of yeast was resumed. The effects of yeast be produced with thiamine, riboflavin, nicotinic acid, inositol, pyridoxine, pantothenic acid and para-aminobenzoic acid. In one animal no relation between the insulin requirements and the water-soluble vitamin intake could be demonstrated and in the other two dogs thiamine, riboflavin, and nicotinic acid given together only delayed the onset of glycosuria. From this it may be concluded that although yeast prevents glycosuria in depancreatized dogs under the conditions of this experiment it is not possible to state which component of yeast is solely responsible. They were unable to confirm Dienst's view that an excess of ascorbic acid was beneficial in reducing the insulin requirements.

PRESENT INVESTIGATION

There is then some clinical and experimental evidence that yeast and the water-soluble vitamins can reduce the insulin requirements in human diabetes but there still exists considerable doubt not only as to the active principle concerned but also as to its mode of action. The case described by Gordon in a recent letter of a male diabetic aged 40 not on insulin, who seemed to have his tolerance for sugar increased by large doses of nicotinamide (1,200 mg daily for one month) is therefore of considerable interest in this connexion. We decided to investigate further the effect of nicotinamide on diabetics under control conditions in hospital. Accordingly six adult diabetics who were adequately stabilized without insulin on a fixed diet of 1,800 calories were chosen. They fell in the age group 40-65. Sugar tolerance estimation was performed after a few days' observation, and nicotinamide in a dose of 600 mg t.i.d. was given by mouth for 14 days. Sugar tolerance estimation was repeated at the end of this period and meanwhile daily blood sugar estimations had been performed. Surprisingly few side reactions were observed from this large dose of nicotinamide, the most constant being a general feeling of warmth and occasional severe flushing and tingling of the skin, face, and extremities. In no case did the sugar tolerance curve improve on this therapy, and the daily blood sugar levels were consistently steady throughout. As an example one case will be described in more detail.

CASE REPORT

This was a married woman aged 52, with no family history of diabetes, who had been a known diabetic for 12 months. She was admitted to the Manchester Royal Infirmary, under the care of Prof. T. H. Oliver, from the diabetic clinic. The sugar tolerance on July 4, 1946, was as follows:

Fasting blood sugar	216 mg per 100 ml
Blood sugar 1/2 hour after 50 g glucose	340
1	320
1 1/2 hours	340
2	310
2 1/2	255

Sugar was present in the urine throughout. She received 1,800 mg nicotinamide daily for 14 days with only slight flushing of the face and occasional tingling of the hands and feet. A sugar tolerance test was repeated on July 18, with the following result:

Fasting blood sugar	226 mg per 100 ml
Blood sugar 1/2 hour after 50 g glucose	300
1	335
1 1/2 hours	365
2	350
2 1/2	315

She has been seen on subsequent occasions in the out-patient clinic and there has been no change in her diabetic condition.

COMMENT

Although it is realized that the findings in six cases are inadequate for definite conclusions, there is no evidence that nicotinamide alone does influence the sugar tolerance or improve the diabetic condition.

I am indebted to Prof. T. H. Oliver for his help and co-operation.

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Reviews

BIBLIOGRAPHIC INDEX OF LEPROSY

Índice Bibliográfico de Lepra 1500-1943 Volume I A-H
By Luiza Keffer (Pp 674 No price given). Brazil São Paulo,
Rua Conde de Sarzedas, 38

Luiza Keffer and the other members of the staff of the library of the Leprosy Prevention Department of the State of São Paulo, Brazil, have rendered a great service to leprologists all over the world by their ten years' labours in preparing this monumental *Bibliographic Index of Leprosy*, the first volume of which has now appeared. All the works and papers included in their library, but it is much more than a catalogue of papers, for the contents of each have been entered on card indexes, and all the more important points which amount to even in a sample mentioned in an explanatory preface in French and English, are separately entered. For example under 'Diagnosico' twenty-five double column pages, with a number of subheadings, repeat the full references to papers which also appear under the authors' names. This multiplication of entries of each paper adds much to the convenience of reference, although it also greatly increases the bulk and accounts for the first volume of 674 pages covering the ground only from A to H. The completeness of the entries of all publications or several decades back is shown by eleven columns being devoted to the publications of the Brazilian authority H. C. S. Araújo and five to the writings of R. G. Cochrane. Again, fifty-two columns are devoted to the heading of chaulmoogra.

The entries are not limited to purely medical publications, but include those dealing with juridical, social, and literary points of view. Yet the author modestly writes of this 'unpretentious work'. On testing its completeness we have found only a few omissions of works of seventy or more years ago, such as those of L. Hillis Brouse, and Hildebrand, which have doubtless long been out of print and so are not available to the great Brazilian library. This work should find a place in every medical library, including those of leprologists engaged in investigations on a subject which is attracting the ever-increasing attention of the medical profession and of sociologists.

LEONARD ROGERS

MIND AND NERVE

Éléments de Psycho-Physiologie By Henri Roger (Pp 428 350 francs) Paris: Masson et Cie 1946

This is an important account of the relation between the study of the physiology of the nervous system and of psychology. The author believes with Claude Bernard that psychology should be regarded as a chapter in the book of physiology, though he allows that this chapter is of such significance that it may overshadow the rest of the book. His philosophical outlook is deterministic though not bigoted. Man's behaviour is determined by a conflict between the impulses of his innate instincts and the code of action imposed upon him by his environment (cf. the Freudian id and superego). Sometimes one is in the ascendancy and sometimes the other, but Dr Roger scarcely admits that the individual himself has any share in determining the result.

The book begins with a historical survey, followed by a description of methods of study of psychophysiology. The essential data are instincts and intelligence; the author does not think that there is any essential difference between the two. If the subject is studied from the evolutionary and phylogenetic viewpoint it is possible to trace the development of instinctive response to environmental stimuli progressing *pari passu* with brain development up to the diencephalon, and then with the appearance of the cortex, the emergence of intellectual response to similar or analogous stimuli. For example, Roger claims that it is possible to trace progress from the instinct to eat to the art of cooking and the science of dietetics, from the herd instinct to the social services and the organization of human family life, and so on. He recounts such knowledge as we possess of the cerebral function which underlies intelligent behaviour, as well as emotional mani-

festations and the formation of the sentiments. In the last part the more difficult psychological problems such as free will, sleep, dreams, and conscious and unconscious behaviour are dealt with along the same lines. While many psychologists think that any attempt to correlate their studies with physiological processes is an undue curb on their ideas and many physiologists consider that psychological correlations are often unscientific and nothing but 'viewy' theories, the psychiatrist and the medical practitioner must glean what they can from both camps. Roger's attempt to yoke psychology to physiology repays study.

MATERIA MEDICA

Materia Medica for Nurses By Lois Oakes, S.R.N., D.N., and Arnold Bennett M.P.S. Second edition (Pp 354 7s 6d, plus 6d postage) Edinburgh: E and S Livingstone 1947
Repertorium Pharmazeutischer Spezialpräparate Sera und Impfstoffe By Dr Herbert Ludwig (Pp 1308 48 Swiss francs) Basle: Verlagsgesellschaft Beobachter A.G.

The first is a textbook of suitable size for nurses and can be recommended. It is well printed and easy to read, and the diligent student who masters its teaching will one day be a ward sister of great competence. The brief description of the uses of different drugs is not always accurate (for example strophanthus is said to have an antipyretic action), and the authors would be well advised, when preparing the next edition, to check their statements by reference to a standard work such as *Pharmacology* by J. H. Gaddum.

The other is a book of reference, prepared in Switzerland, of all kinds of pharmaceutical specialties made by firms in every country. It should be of value to those who are asked by a patient for some new foreign medicine. He has heard of the different preparations are given in alphabetical order—the name of the firm, the components, though not the amounts, the indications for prescribing the preparation (too briefly), the size of packings and the price, the dose, the date when the preparation was introduced. It is written in German and is a tome of 1,300 pages, so the list of preparations should be fairly complete.

J. H. BURN

ELECTROCARDIOGRAPHY

Electrocardiography Including an Atlas of Electrocardiograms By Louis N. Katz, M.D. F.A.C.P. Second edition thoroughly revised (Pp 883, 525 engravings, including over 1,000 electrocardiograms 60s) London: Henry Kimpton 1946

Exercises in Electrocardiographic Interpretation By Louis N. Katz, M.D. F.A.C.P. Second edition, thoroughly revised (Pp 288, 141 engravings, containing 166 electrocardiograms 30s) London: Henry Kimpton 1946

New editions of these two companion volumes, by Dr Louis N. Katz, have appeared four years after the first publication of this work. Extensive revision, a considerable increase in size and the addition of more than a hundred illustrations to *Electrocardiography* indicate the growth of this subject.

In electrocardiography to-day attention is being focused on the chest leads. The author now employs CF, CF₁, and CF₂ as a routine. In these leads the left leg is paired with electrodes placed in turn just to the left of the sternum, in the mid-clavicular line, and in the anterior axillary line. He rightly insists that the addition of one chest lead, say CF₁, to the limb leads is not an adequate procedure. However, omission of any one of the six chest leads may result in failure to demonstrate an infarction of the heart, though in practice it is hardly feasible to take all six leads in every case of heart pain or suspected myocardial disease. The problem therefore becomes one of deciding which chest leads are most appropriate as a routine and in particular cases. In Britain chest leads are more usually paired with the right arm, and most workers here would agree that CR₁ or CR₂, with CR₃ and CR₄, are those most likely to give useful information. With regard to variations of the normal, Dr Katz shares the experience of others in finding that previous standards of normality were rather too rigid; this adjustment of outlook is the result of combined cardiographic and radioscopic observations of large numbers of normal recruits for military service.

The volume of exercises in interpretation has undergone modification and substitution of records in conformity with the

revision of the main work which remains one of the standard books on the subject and one to which great care and exhaustive study have manifestly been given at every stage in its production

SPECIAL SURGERY

Spezielle Chirurgische Therapie für Studierende und Ärzte By Dr Max Spegessci (Pp 884 illustrated 80 francs) Berne Medizinischer Verlag Hans-Huber

The best part of this book is the illustrations, the worst is the binding, the copy sent to us being already partly disintegrated despite careful handling. This may be the result of present conditions but it is regrettable for the quality of print and paper, like the illustrations, is good. The whole field of general surgery is covered—eye, ear nose and throat and gynaecological operations being excluded. There are special articles on tetanus and shock and haemorrhage, but the book is essentially a practical guide to operative surgery. The text is written in German and lavishly illustrated by line drawings a type of illustration which is particularly suitable for works of this character and could be more often used with advantage in English textbooks.

For the most part the pen and ink sketches interspersed among the lines of text are accurate but Fig 10 page 20 shows the cervicofacial division of the facial nerve at too high a level and an incision at the angle of the jaw which would almost certainly divide it. Although facio hypoglossal and facio spinal accessory anastomosis are briefly mentioned in the section on facial palsy correction of the condition by fascial slings is the only method illustrated. A relatively long article on the treatment of trigeminal neuralgia emphasizes electrocoagulation of the gasserian ganglion, a procedure widely popular on the Continent but not in favour in this country. Methods of injecting the ganglion are illustrated but not the surgical approach to the root or tract. The sections on intestinal and genito urinary surgery are perhaps the fullest and best from which we suspect that here may lie the chief interest of the *Privatdozent*. Figs 141, p 446 and 142, p 449 are identical and there would appear to be no need for the repetition. The least elaborated part of the book is that dealing with the surgery of the nervous system, particularly in comparison with the detail devoted to other systems. On the whole the field of surgery is fairly well and evenly covered and as a textbook for students and practitioners it may be said to live up to its title.

PHYSICAL METHODS IN PSYCHIATRY

Shock Treatments and other Somatic Procedures in Psychiatry By Lothar B Kalinowsky, M.D., and Paul H Hoch, M.D. Foreword by Nolan D C Lewis M.D. (Pp 294 21s) London William Heinemann Medical Books 1946

This book by American authors covers the same ground as the much smaller book in which Sargent and Slater two years ago presented the new physical methods of treatment in psychiatry. Treatment by insulin coma and by artificially induced convulsions—still unfortunately misnamed shock treatments—are discussed in great detail. Other physical procedures are recorded in a more perfunctory manner the chapter on prefrontal leucotomy obviously suffers from the limited personal experience of the authors. The introduction of physical methods on a purely empirical basis has provoked not only many fairly well substantiated claims of success but also a flood of theoretical papers—many of them absurd or fantastic.

Unfortunately the authors do not provide much guidance through the international literary jungle catalogued in 37 pages of bibliography. They have much personal experience of the two main therapeutic methods and are critical in evaluating their own results but they frequently succumb to obsolete or hypothetical interpretations, and in presenting the techniques they put the unessential and fanciful side by side with the important and practical. It is too often left to the reader to sift the chaff from the wheat and the book is therefore unsuited to the beginner. The more experienced student will find it a serviceable compilation of facts but will look in vain for a leading idea behind the review of opinions. Even in the concluding chapter on theories the authors do not risk adopting a theory of their own and carefully avoid any partiality.

BOOKS RECEIVED

[Review is not precluded by notice here of books recently received]

1946 Year Book of General Surgery Edited by E A Grahert A.B., M.D. (Pp 679 21s) London H K Lewis 1947

Penicillin in acute appendicitis is discussed and there are articles on the surgical significance of accessory spleens, cerebral abscess and peritoneal or skin grafts fixed with fibrin to prevent leakage after intestinal anastomosis.

The Irish Medical Directory Ninth edition (Pp 358 15s 6d) Dublin Parkside Press 1946

This directory includes articles on penicillin and sulphonamides in surgery.

Charles Edouard Brown Sequard By J M D Olmsted M.A., Ph.D. D.Sc. (Pp 253 \$3.00) Baltimore Johns Hopkins Press 1946

Three biographical lectures on the great neurologist with a bibliography in English.

Die Hormonalen Aspekte Des Fortpflanzungsprozesses By Dr Jules Samuels (Pp 152 No price) Amsterdam Holdert 1946

An account of the relation between hormones and the reproductive cells in German with an English summary.

Medicaments et Medications By H Harnot (Pp 133 No price) Paris Presses Universitaires de France 1947

A short account of materia medica with a chapter on physiotherapy.

Who's Who in Parliament Compiled by Carol Bunker (Pp 176 6s paper covered 7s 6d cloth covered) London St Botolph Publishing Company 1947

Summarized biographical details of members of the present Parliament.

Total War at Haverington By Josephine Bull (Pp 336 10s 6d) London Longmans, Green 1947

A novel whose setting is an imaginary small town in the Thames valley in wartime.

Rezeptierkunde By Prof T Gordonoff (Pp 112 7.50 Swiss francs) Berne Medizinischer Verlag Hans Huber 1947

A short guide to the writing and compounding of prescriptions.

For Doctors Only By Hugh Selwyn (Pp 64 5s) Ipswich Harrison 1947

An amusing account of crises in medical practice.

The Middlesex Hospital Medical School Collected Papers Papers on a variety of topics from the Middlesex Hospital.

Psychiatric Interviews with Children By various contributors Edited by Helen L Witmer (Pp 443 25s 6d) London Geoffrey Cumberlege New York The Commonwealth Fund 1946

Collected records of psychiatric treatment of children in American child guidance clinics with comments by the editor. Intended for students and practitioners of child psychiatry.

Health Insurance in the United States By N Sinai, Dr P H O W Anderson and M L Dollar (Pp 115 8s 6d) New York The Commonwealth Fund 1946

A discussion of the history and organization of voluntary health insurance in the United States.

Health Reform in New Zealand By Douglas Robb M.D. Ch.M., F.R.C.S., F.R.A.C.S. (Pp 103 No price) London Whitcombe and Tombs 1947

An account of the public health services in New Zealand, with suggestions for their improvement.

The Fighting Irish Doctor By E F St John Lyburn B.Ch. BAO M.B. (Pp 199 8s 6d) Dublin Morris 1947

An autobiography by a doctor who is a fighter with gloves and with words.

The Earth's Green Carpet By Louise E Howard (Pp 219 8s 6d) London Faber and Faber 1947

A simple exposition of Sir Albert Howard's ideas on agriculture by his wife with particular reference to soil fertility.

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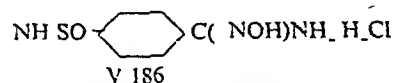
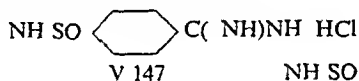
BRITISH WARTIME INVESTIGATIONS OF
TYPHUS

Louse-borne typhus has in the past often been one of the most dreaded accompaniments of war. In 1938 it had already appeared in Spain as a sequel to the civil war. It is therefore not surprising that early in the war of 1939-45 organizations were set up both in the USA and in Great Britain to inquire into the best means of preventing and treating a disease which might so readily have caused havoc throughout Europe. In Britain a team of workers drawn from the staff of the National Institute for Medical Research and from the personnel of the R A M C carried out extensive researches in the laboratory and in the field.¹ While the war continued much of this work was naturally regarded as highly secret, and only now has it been possible to publish a comprehensive account of it. The increased efficacy of rickettsial vaccines, which, though they may not always prevent infection undoubtedly decrease the severity of the disease, and the immense value of the newer insecticides in destroying lice are already well known. Less has been heard of the energetic efforts made to find chemotherapeutic remedies for rickettsial infections, which are scarcely affected by antibiotics or by the better-known sulphonamides.

A convenient method of testing the antirickettsial activity of large numbers of chemical compounds was to inoculate mice intranasally with dilute suspensions of typhus rickettsiae, such mice when killed seven days later show discrete greyish lesions on the surface of their lungs, and these lesions can be counted. Intranasal inoculation of mice is a highly dangerous proceeding to laboratory workers, unless special precautions are taken. Indeed, following infection of workers in other laboratories in this country, all five of those engaged in using this method at Hampstead contracted an infection fortunately not with epidemic but with murine typhus. Those who have suffered from a murine infection, however, will agree that it is not entirely a pleasant experience: it does, however, give a solid immunity against louse borne infection. A special inoculation box was designed at the National Institute for Medical Research (van den Ende²) for the safer handling of mice and other animals used for intranasal inoculation, and in the ensuing two and a half years after 1943 only one other laboratory infection occurred though many fresh workers assisted in typhus studies. At the Army Emergency Vaccine Laboratory at Everleigh nine infections occurred before the introduction of a satisfactory inoculation box none afterwards.

When the chemotherapeutic experiments were carried out on mice infected intranasally with rickettsiae the maximal dose for each drug was determined by intraperitoneal injection, and that dose was then administered in 0.5 ml of saline daily for four days, the first intraperitoneal dose being given two hours before infection with typhus. In all, some 238 drugs were tested for activity against experimental typhus infection in mice. Results were completely negative till V 147 (*p*-sulphonamidobenzamidine hydrochloride) was reached, this compound strikingly reduced the numbers of lesions on the lungs of mice. It was found, however, that V 147 was very rapidly excreted and better curative results were achieved by giving it twice daily. When this was done it became possible to suppress entirely the development of lesions in mice given a dose of rickettsiae producing some 150 foci in the lungs of untreated mice. In later tests, including a series of compounds related to V 147, the drugs were injected six times in all once before infecting the mice twice daily on each of the two following days, and once on the morning of the third following day.

Of twelve related compounds, V 186 *p*-sulphonamidobenzamidoxime hydrochloride, the amidoxime corresponding to V 147, was found to be equal to it in activity or perhaps a little better.



Any considerable modification in the molecule invariably destroyed chemotherapeutic activity (Andrewes, King, and Walker³). V 186 did not appear to have any antirickettsial activity *in vitro*, but in the mouse inoculated intranasally, it showed activity in a dose of 2 mg twice daily, or one-twelfth of the maximum tolerated dose of 24 mg. Subcutaneous injections of the drug gave much the same results as intraperitoneal injections, the compound could also be mixed in the food, when about the same dosage was effective as with parenteral injections, provided the compound was given in the food in two divided instalments. Most activity was observed when V 186 or V 147 were given before or soon after infection, but a definite action was still produced when treatment was delayed for 42 hours after infection. The two compounds were effective against both murine and epidemic strains of rickettsiae. In order to test the activity of these compounds in man a team left for North Africa and Naples where typhus was epidemic. To assess correctly the chemotherapeutic activity of the two compounds a thorough clinical and pathological study of the disease was necessary in patients receiving only the usual supportive treatment. One section of the report therefore gives a full account, with illustrative cases, of epidemic typhus as it was seen during the war years in Algiers and Naples. This account of the clinical symptoms and pathological changes is of considerable value apart from the chemotherapeutic trials which rendered it necessary.

It was an intense disappointment when it became evident that neither compound had any specific action in modifying the course of the disease in man. The reason why

¹ Van den Ende M, Stuart Harris C H, Fulton F, Niven J S F, Andrewes C H, Bege A M, Elford W J, Gleeson White M H, Hawley W L, Mills K C, Hamilton F and Thomas C C. Chemotherapeutic and Other Studies of Typhus. Med Res Cncl Sp Rep Ser No 265 London H M Stationery Office 1946.
² J Hyg Camb 1943 43 189

³ Brit J Pharmacol 1946 1 15

compounds should be active in one species and inactive in another is of considerable theoretical interest but is so far unexplained. A most striking example is optochin, ethylhydrocupreine, which is quite active in treating pneumococcal infections in mice but is useless in pneumonia in man. It is noticeable that in mice neither V 147 nor V 186 was inhibited by *p* aminobenzoic acid, nor, when tested by the intranasal method, was it possible to show that *p*-aminobenzoic acid had any activity against rickettsiae. It was, however, possible to confirm the observations of Snyder Maier, and Anderson⁴ that *p*-aminobenzoic acid has some action when given by mouth to typhus-infected mice. This compound has now been shown to have an inhibitory effect on many species of rickettsiae, while in man it is of value in many varieties of rickettsial infection.

The last three sections of the report deal with the elaboration of a quantitative test for neutralizing antibodies against typhus rickettsiae, a comparison of typhus vaccines in the laboratory, and a study of the antigenic structure of murine and epidemic typhus rickettsiae. The quantitative test for rickettsial antibodies makes use of the number of foci produced in the mouse lung when mice are inoculated intranasally with rickettsial suspensions mixed with progressive dilutions of anti-serum. Qualitatively the intranasal test gives similar results to the intradermal rabbit test devised by Giroud⁵ in 1938, but quantitatively the mouse test is the more satisfactory. For assessing the potency of typhus vaccines it was concluded that the most satisfactory test is the capacity of the vaccine to protect mice against the toxicity of rickettsiae injected intravenously. Studies on the antigenic structure of murine and epidemic typhus rickettsiae show that both murine and epidemic strains have surface antigens, some of which are similar. Unfortunately no fresh light is thrown on the question, so important for an accurate knowledge of the epidemiology of typhus, whether murine typhus rickettsiae can ever so mutate that their antigens become identical with those of epidemic strains. The OX 19 antibody of rabbit rickettsial antisera, however, is shown to be quite distinct from the antibodies produced by the undegraded surface antigens of the rickettsiae: it is apparently a fraction of the group of antibodies which reacts with rickettsiae degraded by boiling.

NUTRITION AND WOUNDS

The term "wound phthisis" has been aptly used to describe the wasting which accompanies sepsis. Cuthbertson^{6,7} has drawn attention to the nature and the magnitude of the nutritional problem in these cases and particularly in the patient with extensive burns. In a recent paper Dunphy, Hoerr, Dimmler, and White⁸ have described the post-operative regime at the Fifth General Hospital of the United States Army for battle casualties of the Normandy campaign who had abdominal wounds of a character which rendered evacuation to the United Kingdom impossible. Their patients were selected for transfer to a special unit because of their poor general condition, and they represent

the more complicated cases of a total of about 150. All of the 16 cases treated had multiple injuries and had varying degrees of anaemia and hypoproteinaemia when they were received. Retroperitoneal, peritoneal, or wound infection was a major complication in 12 cases and was the cause of the two deaths in the group, one from rapidly progressing peritonitis and the other from extensive retroperitoneal abscesses. Intestinal obstruction developed in 11 cases and required a second operation in two of them. There were 7 cases of jaundice.

It must be recognized that the perfect parenteral food substitute has not yet been found. The main difficulty is to secure an adequate calorie intake which will prevent amino acids which are necessary for tissue building from being deflected to meet energy requirements. In general Dunphy and his colleagues employed 500 ml physiological saline to replace salt loss, with 2,500 ml 5% glucose in distilled water to replace the loss of water and to supply some 500 calories. Variable volumes of 5% glucose in saline (200 calories per litre) replaced the salt and fluid loss from gastric suction, ileostomy, fistula, etc., and 1,000 ml of plasma or whole blood (all whole blood if the haemoglobin was below 80%) provided some 50 g protein (200 calories). Liver extract and some vitamins were also given. This regime was not ideal but was dictated by the available supplies. (This type of case is one which should respond well to a safe and nutritionally adequate preparation of glucose and amino acids provided it could be administered in not too large a volume, though the report by Madden, Woods, Shull and Whipple⁹ that partial hydrolysates of protein are more efficient nutritionally than completely hydrolysed proteins or amino-acids makes further investigation necessary.) The fluids described were additional to the whole blood or plasma given pre-operatively to treat blood and fluid loss. Owing to the impracticability of repeating intravenous injections of concentrated solutions of glucose, it was necessary to rely on small supplemental oral feeds, usually in the form of sweetened milk, which were often begun before all evidence of peritonitis or intraperitoneal infection had subsided. These American workers agree that whenever possible matched blood or type-specific plasma should be transfused. Although Type O whole blood and plasma were used, there was some evidence that a haemolytic anaemia might be produced if high-titre blood was employed. Their regime appears effectively to have restored the levels of haemoglobin and serum protein in the patients in an average of seven to ten days.

The excessive catabolism of body protein which normally follows moderate or severe injuries may lead to a severe degree of malnutrition, particularly if there is infection. Residual abscesses must therefore be promptly drained. This recent experience emphasizes that external fistulae add a serious burden to the patient with abdominal wounds and that open ileostomies should be avoided where possible. On the other hand associated infection is even more deleterious to the patient's condition, for when the infection is controlled the fistula generally heals.

⁴ Report to the Division of Medical Sciences National Research Council Dec 26 1942

⁵ Bull Soc Path exot 1938 31 245

⁶ Brit med Bull 1944 2 207

⁷ Ibid 1945 3 96

⁸ New Engl J Med 1946 234 545

MARROW BIOPSY IN DIAGNOSIS

It is recorded that Schilling once rebuked a questioner who had asked about changes in the bone-marrow with the words, "Sir, I am a peripheral haematologist." The day of the peripheral haematologist has closed, and bone-marrow examination is now as commonplace as blood counts were twenty-five years ago, but the search for a completely satisfactory technique continues. Sternal puncture with examination of films made from the aspirated material and stained by one of the Romanowsky methods is the routine, but its shortcomings have always been obvious. It does not give any exact indication of the bone-marrow's cellularity, it shows no changes in the marrow's architecture, and the aspirated fluid consists of bone-marrow and blood mixed in proportions varying roughly with the volume withdrawn. For these reasons Seyfarth's method of sternal trephining has always had its adherents. It is, however, a far more ambitious procedure than sternal puncture, entailing considerable discomfort to the patient and all the panoply of a surgical operation.

A method is required which will provide material for fixed sections of bone-marrow as well as for films which allow study of cytological detail, while subjecting the patient to no more inconvenience than sternal puncture. Many haematologists have been accustomed, after making films, to allow the residue of the aspirated material to clot. This clot is fixed and embedded, in sections cut from it fragments of intact bone-marrow tissue can be seen. Ampino and Penati (1935) were the pioneers of this method, modifications of which were used by Rohr (1937) and many others. Such sections are not always satisfactory and the fragments of marrow may be scanty. Cappell, Hutchison, and Smith describe a technique in this number of the *Journal* which has the advantages of concentrating the fragments of bone-marrow obtained by sternal aspiration, while removing the admixed blood. It merits a careful trial by all interested in marrow biopsy. A possible disadvantage is the need for aspirating 0.5-1.0 ml of fluid such a volume results in films of low cellularity which may be tedious to examine. Nevertheless their method is clearly superior to those in common use, and perhaps at last the answer to the haematologist's prayer for a means of combining the advantages of sternal trephining with those of sternal puncture.

SURGICAL EXPLORATION OF THE ORBIT

Space-occupying lesions of the orbit usually present an awkward surgical problem, partly because of difficulties in diagnosis and partly because a decision on the best surgical approach is not always easy. It is true that a pre-operative diagnosis of the nature of a tumour is often possible, but it frequently happens that despite the fullest exploitation of clinical and laboratory methods, including a search for signs of systemic disease (as in the case of neurofibromatosis described by H. B. Stallard in this issue of the *Journal*), stereoscopic radiography (by demonstrating the tumour itself in shadow or revealing thickening, rarefactions or dilatations of the orbital wall), piezometry to determine its consistency, and rhinological, nasopharyngeal, and neurological examination the diagnosis can be only tentative and must wait for surgical exploration. The surgical approach chosen should depend on the location—or the probable location—of the tumour. Apart from radiographic findings and the easy case where the tumour is anteriorly situated and is itself palpable, the direction of the proptosis, the degree of immobility, and the visual disturbances may provide valuable clues. As a general rule tumours at the apex of the orbit or within the muscle-cone produce an axial proptosis with retention of ocular

movements and early ophthalmoscopic and visual disturbances, tumours outside this or associated with the orbital walls or encroaching upon them from outside are associated with eccentric proptosis, restricted mobility particularly in one direction, and retention of vision. As a general rule, also, early immobility of the eye is suggestive of malignancy, while marked proptosis with retained mobility is more characteristic of benign growths.

In the literature of the last fifteen years there has arisen a considerable controversy as to the best surgical approach for lesions of this type, and claims have been made for the universal applicability of one or other technique. This has arisen since advances in cranial surgery have rendered the transfrontal approach through the cranial cavity with removal of the orbital roof a relatively safe procedure, it has been popularized particularly in America in the expert hands of such surgeons as Naffziger and Dandy. Nothing however, could be more unwise than to press the claim of universality for any single technique in a problem of this type. Five are available, and for all five there is a place. Lateral osteoplastic orbitotomy (Kronlein's operation), whereby the lateral bony wall is temporarily removed, is an excellent operation provided the tumour is entirely intraorbital and is laterally situated, it is frequently unnecessary if the tumour is small, but is probably most advisable when its size and location are unknown. The transfrontal route probably provides the freest access to the apex of the orbit, and is certainly the method of choice whenever an intracranial extension is suspected or feared (as in the common meningioma). On the other hand, subperiosteal tumours or those invading the orbit from the paranasal sinuses are usually best dealt with by entering the subperiosteal space through an incision parallel to the superior orbital margin and displacing the orbital contents (anterior external orbitotomy). Through the same incision, by displacement of the globe and orbital contents and incision of the periosteum, the majority of tumours of the soft tissues of the upper and inner parts of the orbit outside the muscle cone can be removed after digital exploration. An anterior transconjunctival route either nasally or temporally, wherein the conjunctiva is incised at the fornices to the vertical meridian above and below, a canthotomy made, the appropriate horizontal rectus temporarily detached, and the globe strongly rotated, provides access back as far as the optic nerve. Finally, when the nasal sinuses are also involved the most effective approach may be made through them. In the choice each case should be considered individually and that route chosen which is most appropriate to the lesion in question and best adapted to the technique of the surgeon.

TREATMENT OF DELINQUENCY

Fifty years ago Samuel Butler's suggestion that society would eventually consign its criminals to hospital and its sick to prison was considered outrageously paradoxical and at the beginning of Queen Victoria's reign more than 200 offences were punishable by death. About thirty-five years ago Norwood East started psychotherapeutic interviews with adolescent and adult men charged with attempting suicide and other offences. To-day the scientific investigation and treatment of the causes of delinquency are still in the pioneering stage, though the attention devoted to it both conforms with the present trend of social legislation and follows the far older tradition of humanitarianism. There are various causes of the comparative neglect that this branch of study suffers from. As Dr Edward Glover points out on page 421 of this issue, the layman often adopts an "attitude of moral reprobation" towards the criminal, and the depth of feeling behind it is sometimes

revealed in discussions and letters to the Press on such topics as capital and corporal punishment. Man jealously guards his social relationships and reacts with instinctive violence to attempts at their disruption, just as ants will seize and kill an intruder from a neighbouring colony. The attitude of society as a whole to a problem cannot be dissociated from its investigation, particularly in the early stages, if only for the reason that pioneers must often rely on voluntary financial support.

The Institute for the Scientific Treatment of Delinquency was founded after publication of the MRC report¹ in 1932 on the psychology of delinquency. Grace Pailthorpe then expressed the basic problem in these words: "The so-called criminal is not a person who suddenly crystallizes out as a criminal. His asocial behaviour is traceable back to his childhood days." The criminal's attitude towards society is regarded as a development of his childhood attitude towards his family. The surprising feature of Dr Glover's experience at the Institute is that the results, in skilled hands, of treating psychopathic delinquents are more successful than those obtained with neurotic delinquents, and "even the 'old lag' is more amenable to psychological handling than the schizoid character."

It is to be hoped that the support from the general public asked for in a letter to *The Times* (March 12) from the Archbishop of Canterbury, Lord Horder, Sir Cyril Burt, Dr Glover, and Mr John Watson will be forthcoming. The work carried out at the Institute and elsewhere has established the value of psychotherapy for delinquents. In 1939 Norwood East and Hubert² wrote: "Psychotherapy as an adjunct to an ordinary prison sentence appears to be effective in preventing, or in reducing the chance of, future antisocial behaviour provided the cases are carefully selected." It should no longer be necessary to have to appeal for funds to carry on work of proved worth—work, moreover, that should diminish the country's expenditure on criminals.

REACTION TO OILS AND FATS

The parenteral introduction of oily or fatty material of animal or mineral origin always provokes a typical and severe reaction. Pathologists are most familiar with this when sebaceous or dermoid cysts rupture, and in fat necrosis there is an intense giant-cell reaction around crystals, or macrophages which appear foamy in paraffin sections. Such a reaction, however, is often a sequence to suppuration, instead of a complete resolution. Lipoid substances appear to be concentrated and cause a similar reaction. This is particularly the case in the lung. In the neighbourhood of new growths and of bronchiectatic cavities a condition once wrongly described as "unresolved pneumonia" is commonly found: the alveoli are packed with foam cells as a rule without foreign-body giant cell reaction.

Oils and fats are often deliberately introduced for therapeutic purposes, by no means always with harmful results. Penicillin and other drugs are to-day administered in wax and vegetable oils, and for radiographic purposes iodized poppy-seed oil is introduced into the bronchus, apparently without any ill result, although the oil remains for many months in the bronchi. On the other hand, mineral oils injected subcutaneously cause severe reactions as many beauty seekers know to their cost. Lanoline injected into the peritoneum produces a foreign-body-reaction tumour within a few days. And there is no doubt that the inhalation of mineral oils may induce severe and sometimes fatal

reactions in the lung—a condition usually described as lipoid pneumonia. Many oily medicaments for treating sinusitis are on the market, and their use is probably wide. They are bland, as the rather eighteenth-century terminology has it, and cause no cough reflex. The majority of recorded cases of lipoid pneumonia have been, however, in patients who were very young, very old, comatose, or with paralysis of the muscles of deglutition. Paterson discovered 8 cases in 813 necropsies at University College Hospital, London, a surprisingly large number in view of the small total number in the literature. R. E. Rewell contributes in this number a further case, which is in many ways unusual. The patient was a previously healthy young woman, and there was no history of administration of oily substances in any form. There are undoubtedly cells containing macrophages in the alveoli, and these contain fat. The nodules in the spleen and liver are also most exceptional in lipoid pneumonia. As the author says, however, the case is a pretty problem in differential diagnosis. Some pathologists might prefer to look upon the condition as granulomatous and the lipoid-containing cells as representing the non-specific reaction, commonly seen in the lung, to which we have referred.

Though vegetable oils are inert in the human organism it is well to remember that animal fats even of homologous origin cause foreign-body reaction. Mineral oils, being emulsified, are exceedingly dangerous in the wrong place, and especially in the lung.

A CONTRIBUTION TO THE DAIN FUND

Insurance practitioners throughout the country will after April 1 receive something over £3,500,000 as a final settlement for the year 1946. In stating this fact in the *Supplement* of March 15 Drs H. M. Golding and W. Woolley proposed that a small share of this "windfall" should be devoted to charitable purposes. They recorded a resolution unanimously passed by the Bristol Local Medical and Panel Committee, the gist of which was that all insurance practitioners should give to the Dain Fund 1% of the lump sum they will receive in settlement of the final increase of 3s for the year 1946. This proposal was backed up in the *Supplement* of March 22 by Dr Janet Aitken as Chairman of the Charities Committee of the B.M.A. Dr Aitken pointed out that the resources of the Dain Fund are now strained and that the trustees have recently been unable to give help where help was needed. Even though times are hard and expenses heavy it is hoped that insurance practitioners will express in this desirable manner their gratitude to the Insurance Acts Committee for securing this increase in the capitation fee.

The Dain Fund, it may be recalled, was inaugurated in 1936 in honour of Dr H. Guy Dain for his outstanding services to the profession. The Fund was completed in 1939 when it amounted to over £4,500, but owing to the war it was not presented until the Panel Conference Dinner in November of last year. Dr Dain had already intimated that he wished the fund to be devoted to the education of doctors' sons and daughters in need of financial help. The trustees reported last October that 8 out of 18 applicants had been assisted with substantial grants, but lack of resources had compelled them to forgo help to others in only slightly less urgent need. Those who wish to follow the excellent example of Bristol should send their contributions to the Secretary of the Dain Fund at B.M.A. House, Tavistock Square, London, W.C.1.

We announce with regret the death on March 21 of Sir Joseph Barcroft, F.R.S., formerly professor of physiology at Cambridge University.

¹ Pailthorpe, Grace W. *Studies in the Psychology of Delinquency*. Medical Research Council, H.M.S.O. London, 1932.

² East, W. Norwood and Hubert, W. H. de B. *The Psychological Treatment of Crime*. H.M.S.O. London, 1939.

THE INVESTIGATION AND TREATMENT OF DELINQUENCY

By

EDWARD GLOVER, MD

Director of the Psychopathic Clinic Chairman of the Scientific Committee of the Institute for the Scientific Treatment of Delinquency

Looking back over the development of clinical psychology during the past quarter of a century it is now perfectly clear that our understanding of ego-disorders has lagged woefully behind that of the neuroses and other varieties of encapsulated symptom formation using this term to convey that a given symptom does not infiltrate the normal layers of the patient's ego. Freud was often reproached for inferring the nature of normal function from a study of the abnormal, but we now know that the normal ego is infinitely more difficult to comprehend and consequently to modify, than those abnormal formations which may, as it were, attach themselves to it.

But granted that the ego and its disorders are more refractory to analysis than the disorders of instinct it is still remarkable that the particular group of ego-disorders described as delinquent has been the last to stimulate the curiosity of the psychopathologist. Actually we know more about the mechanisms of the psychoses than we do of the causes of crime. No doubt this neglect is due in part to the same deep prejudices that are responsible for the attitude of moral reprobation with which most laymen greet criminal behaviour, for the view, in short that sinful conduct must not be 'condoned' by the discovery that it is frequently a sign of illness. Anyhow, it is significant that in psychiatric clinics the diagnosis and treatment of delinquency is still regarded as rather an esoteric interest. Even in child guidance clinics where it is freely recognized that delinquent behaviour is a common sign of abnormal development it is not yet fully appreciated that this group of ego disorders deserves and requires the attention of specially trained investigators.

It was this latter consideration that led to the formation of the Institute for the Scientific Treatment of Delinquency, a title which may now appear cumbersome and tendentious but at the time described precisely a current need. Indeed there seems to be little question that as medical psychology expands it will inevitably create a number of specialties corresponding to the specialties of organic medicine. Each of these will be concerned with the investigation and treatment of conditions that are at present merely regarded as types of mental disorder.

Already the work of the Institute has indicated the focal point at which the energies of a future generation of trained workers must be directed. For although study of representative samples of case material has established the incidence of different types of delinquency—e.g. neurotic, psychotic, psychopathic, mentally defective, organic etc.—it is in the psychopathic group that most of the unresolved problems of delinquency lie. Naturally the term psychopathy like its congener schizophrenia is one of these omnibus labels that serve to conceal a regrettable lack of understanding. But like schizophrenia psychopathy represents a well defined clinical group with recognizable subdivisions. The delinquent psychopath, for example is frequently also a sexual pervert even if this abnormality has not been marked enough to lead to the commission of detectable sexual offences. Admittedly the constitution of delinquent groups is influenced by the penal codes sanctioned by the community. A large proportion of the cases seen at the Institute are charged with exhibitionism and homosexual offences. But even excluding such cases the proportion of delinquents diagnosed as psychopathic is a high one. It is no exaggeration to say that the investigation of psychopathy will shed more light on the normal development of the ego and of that remarkable instrument the super-ego (unconscious conscience) than any other clinical entity with the possible exceptions of schizophrenia and manic-depression.

Equal importance attaches to the therapeutic experience gathered at the Institute. In some respects the results obtained are contrary to psychotherapeutic expectation. It had always

been supposed that neurotic types of delinquency would respond readily and allowing for the fact that the patient commences his treatment in a state of 'negative transference' this supposition has proved well founded. The contrary assumption—namely that the psychopathic delinquent would be harder to treat—has not proved to be accurate. He certainly calls for more skilled handling but given this skill, the results are even more striking than in neurotic types. Even without any formal attempt at psychotherapy the effect of mobilizing the interest of a number of "supporting figures (psychologist, psychiatrist, social worker, probation officer, teacher, employer, foster-parent etc.) is quite remarkable. Allowing for the fact that neurotic types will also improve under such conditions, still the psychopath clearly demonstrates his amenability to manipulation of his psychic situation. Even the 'old lag' is more amenable to psychological handling than the schizoid character.

It is clear that progress in the field of delinquency calls for research on every variety of delinquent or pre-delinquent conduct. And this is not within the scope of the ordinary psychiatric clinic. The case for special centres for the investigation and treatment of delinquency has been proved up to the hilt. Only when a number of centres or special departments are established throughout the country and linked up with an international organization can we hope to put the problem of anti-social conduct on a thoroughly scientific basis. Only in this way can we hope to secure full recognition of the authority of medical psychology by the judiciary.

Interestingly enough the difficulties that beset the London Institute have not been clinical difficulties. For reasons already indicated projects for treating delinquents have little popular appeal yet like all pioneer efforts, they are bound to depend in the first instance on voluntary support. Even with the most rigid of State organizations pioneer work on social problems is likely to come from extramural centres. Despite exiguous finances and consequent shortage of staff the Institute survived the war. It is to be hoped that it will survive the austerities of peace.

LIVERPOOL MEDICAL SCHOOL

In 1847 the annual report of Liverpool Royal Infirmary recorded the completion of a medical school. So began the Royal Infirmary School of Medicine, the direct descendant of the present medical faculty of the University of Liverpool. Medical teaching had been going on in Liverpool some time before 1847. There is a record of lectures given in 1811 and it seems reasonable to suppose that at least a large number of the 634 candidates examined by the medical board of the Infirmary between 1789 and 1807 were trained in the city. Liverpool was involved in body-snatching before the Anatomy Act of 1832 and cadavers were sent from there to the medical schools in Edinburgh.

Students at the Liverpool Infirmary Medical School took the examinations of London University, and the University College Liverpool, was created because in 1876 practical physics became compulsory for the London first M.B. examination. The need for an endowment for a chair in physics led to the formation of the University College which in 1903 was incorporated as the University of Liverpool. In 1865 the number of students at the Liverpool medical school was 28. There are now 528 undergraduates and 304 postgraduate students. Liverpool, true to the traditions of Hugh Owen Thomas and Sir Robert Jones has established a specialist postgraduate degree in orthopaedics; there are also courses for the D.P.H. and mastership in radiology.

Notable names connected with the Liverpool medical school include W. H. Duncan, the world's first medical officer of health who was lecturer in medical jurisprudence at Liverpool and Sir Charles Sherrington. Frank Thomas Paul, inventor of Paul's tube, was dean of the medical faculty for seven years. The present Dean is Prof. T. B. Davie, M.D., F.R.C.P.

A Gerontological Unit under Dr. N. Shock is to investigate kidney diseases in Baltimore City Hospital, USA. A group of healthy subjects aged from 30 to 90 will undergo tests at intervals of 1 to 5 years.

Correspondence

A Gift to the RMBF

SIR,—I am anxious to acknowledge through your columns the receipt of a donation of £647 18s 10d from Messrs Burroughs Wellcome and Co (the Wellcome Foundation Ltd). This gift has been made by the very kind and generous thought of their directors in transferring the payments for the 1946 issue of the Wellcome Medical Diary to this fund. On behalf of my committee I desire to express our warmest thanks to Messrs Burroughs Wellcome and Co and also to assure all who made payments for the diary that this gift of £647 18s 10d will be the means of bringing some extra measure of comfort and ease to many of our beneficiaries—I am, etc,

London SW 15

C LUTHER BATTESON,
Hon Treasurer

The "Costoclavicular Syndrome"

SIR—The instructive article by Prof E D Telford and Mr S Mottershead (March 15, p 325) on the costoclavicular syndrome prompts me to mention a cause of paraesthesia in the arms and hands of middle aged men to which I have not seen any reference. Two cases have come to my notice in the last few years. The paraesthesia is caused by wearing a shirt of thick material with the sleeves rolled up to the axilla. From the causation it will be apparent that the symptoms are worse in cold weather and out of doors—i.e., when a thick overcoat is worn in addition. The mechanism is similar to that of the fakir's trick of stuffing a handkerchief into his armpit and stopping his radial pulse at will by pressing his arm closely to his side.

An interesting point in my two cases is that neither man would wear his shirt sleeves unrolled. When seen a year or so later they were free from symptoms, but each informed me that he could not bear long shirt sleeves and had cut them off—I am, etc,

Preston Lanes

R SLATER

SIR—Amidst a mass of inconclusive literature on pain in the arm the article by Prof E D Telford and Mr S Mottershead (March 15, p 325) stands as a beacon of clear thinking founded on careful experiment and is only equalled by the summary of the literature in your editorial. It would appear from these articles that the key to the condition lies in the spasm of the scalene muscles, and it has long been held by the osteopaths that this spasm is initiated reflexly from a subluxed cervical joint. The strain of the cervical joint is maintained by, and is secondary to, a subluxation in the upper dorsal area. This may result from single or multiple trauma with the neck in side-bending rotation, such as may follow from a blow, or lifting bulky articles off a shelf above the head.

Manipulation of the cervical area frequently relieves the symptoms, but it is essential to obtain good movement of the upper dorsal subluxation in order to produce a permanent result. While a compression of the median nerve at the wrist may be a factor in certain cases it is felt that most of these lesions are central in origin—I am, etc

London NW 1

W HARGRAVE-WILSON

Spirillum (Abacterial) Pyuria

SIR—I was very interested to note in the article on 'Abacterial Pyuria' by Drs W E Coutts and R Vargas-Zalazar (Dec 28, 1946, p 982) that a spirillum had been found in the centrifuged urinary deposit of the five cases presented.

During the last month I have had the opportunity of seeing a further case of abacterial pyuria. A centrifuged sample of the urine was examined under dark-ground illumination and was seen to contain numerous spirillum-like bodies 5-10 per field, among the pus cells, length 5 μ all of a similar shape, containing one or two regular curves along their length. This spirillum was also observed by a medical colleague and our sergeant special treatment orderly. The patient had no obvious dental sepsis or infected teeth. There was no radiological evidence of

a tuberculous focus in either lungs or renal tract. An intra venous pyelogram revealed no abnormality of the renal tract. Treatment was commenced with the following course of neoarsphenamine on Feb 7 9, 11, 0.3 g NAB and on Feb 19, 0.6 g NAB (total, 1.5 g). There was an immediate diminution in the urinary frequency. After the second NAB the urinary frequency was normal. On Feb 17 the urine had almost cleared and on Feb 19 the urine was perfectly clear—I am, etc,

CMF

A B FIELDSEND
Major R A M C

Congenital Malaria

SIR,—With reference to the correspondence in the columns of the *British Medical Journal* during the early part of 1946 concerning congenital malaria I should like to draw your attention to my article in the October–November, 1942, issue of the *East African Medical Journal*, 19 223 and 247, in which I gave figures of infants who were found to be suffering from malaria at birth. The blood was taken from the baby's finger on three consecutive days following its birth, and out of 700 patients examined 40 mothers were found to have malaria parasites in the placental blood, and 2 infants.

These figures are by no means so impressive as those quoted by Dr R R McKay in the *East African Medical Journal* in 1933 10, 246, or in a communication published in 1936 entitled 'An Account of an Investigation into Malaria at Dares Salaam,' p 17—I am, etc,

Nairobi Kenya

P G PRESTON

Haematological Heresy

SIR—Unfortunately I have only recently been able to read Dr R R Bomford's most stimulating article (Dec 28 1946 p 996) and I wonder if I might be permitted to make a few inexperienced comments. Should the haemosiderosis, the hyperbilirubinaemia and urobilinuria, and the histological evidence of active phagocytosis be regarded as conclusive proof of haemolysis? The latter surely can be found in the normal subject if it is looked for. The others could, I think, be adequately explained by the excess of formed and perhaps partially formed, haemoglobin now having "nowhere to go" because of the maturation arrest at the haemoglobinizing stage in haematopoiesis. There is seldom an iron lack in pernicious anaemia as in normal erythropoiesis iron is neither excreted nor deposited but enters the haemoglobin molecule. In an erythropoietic upset, however, the iron cannot be utilized and it becomes deposited and increases the iron store. Hence the haemosiderosis.

Hyperbilirubinaemia and urobilinuria go hand in hand and are constant findings in the haemolytic anaemias. Their presence alone, however, does not, I think, justify the haemolytic theory. Again, bearing in mind the fact that there is no deficiency of iron and that there is every stimulus for the formation of haemoglobin from the tissue iron, anaemia consequent upon the low red cell count, it is not difficult to imagine non-utilized haemoglobin being (a) broken down to haematin and hence to bilirubin, or (b) itself having a maturation arrest in its synthesis, and possibly the porphyrin III being diverted into bilirubin or some such similar pathological metabolism occurring. This would still explain the raised excretion of porphyrin in pernicious anaemia, as the stimulus for haemoglobin formation is still there and the synthesis, or para-synthesis still occurs—perhaps even in excess. Nevertheless the porphyrins are being utilized and therefore the faecal coproporphyrin I would be raised if the call for haemoglobin is increased.

Another aspect of the hyperbilirubinaemia is the question of liver damage. I think Rich excised somewhere in the region of 90% of a normal dog's liver before he managed to produce jaundice. Reversing this statement it would mean that the destruction of red cells would need to be nine times greater than normal at least before jaundice developed. The life of a red cell must vary tremendously and Lichtwitz states that it should not be measured in time but in actions—'oxygen carries' as he calls them. It has been stated that an average figure is a "life" of 50 days. Normal destruction would then be roughly 1/50 cell per day, or in total 100,000 per day. To bring about a jaundiced condition in a haemolytic anaemia, therefore, would require the destruction of 1,000,000 cells per day. I do not know exact figures, but suspect that the blood level is not lowered so acutely as this even in P.A. relapse. The characteristic lack of symptoms in P.A. suggests a insidious lowering. To produce the biochemistry of the jaundice in P.A. it seems that liver damage then might conceivably also play

part Also supporting this statement is the fact that the supposedly very sensitive bilirubin tolerance test as a measure of liver damage, is diminished in pernicious anaemia

In iron deficiency and in Addison's anaemia the red cell fragility is normal or more usually decreased, whereas in the haemolytic type of anaemias it is usually increased—this includes the toxic type of haemolysis, e.g., in lead poisoning

There is one factor not mentioned by Dr Bomford which seems to materially support his argument, and that is the presence of methaemalbuminaemia in pernicious anaemia. It is only formed, so far as is known, from extracorporeal haemoglobin and serum albumin and is therefore supposed to indicate intravascular haemolysis. It is found in all the haemolytic anaemias except acholuric jaundice; its absence there being accounted for by the supposition that in this disease the haemolysis is performed by the reticulo-endothelial system and therefore extravascularly. It might also be pointed out that the methaemalbumin is excreted solely by the liver and that in liver damage it might be retained, but its very presence is pathological, I believe. There is one last simple but apparently significant fact that seems very much in favour of the faulty erythropoiesis theory and that is the almost constant finding of leucopenia and thrombocytopenia in cases of pernicious anaemia in contrast to the opposite state found in the haemolytic anaemias.

Unfortunately being somewhat isolated, I have no means of checking these statements nor of getting them criticized. A practical suggestion, should it not already have been performed which might shed some light on the theory of unused haemoglobin being the source of the excess of bilirubin in the serum etc. might be the determination of serum bilirubin levels and urobilinogen excretion in cases of Addison's anaemia with superimposed iron deficiency—I am, etc

A. A. MUDIE
Lieut. R.A.M.C.

MELF

Principles Governing Nervous Activity

SIR—Prof E. D. Adrian describes (March 8, p. 305) how synaptic delay through multineurone arrangements and after-discharges accounts for 'long lasting central effects' by which the results of an afferent message might be stored indefinitely to influence behaviour for many years to come. Such specialized continued activity over years is incompatible with normal sensory experiences whose residues are known to be dormant (as engrams) until a similar sensory circumstance again occurs. Residua of sensory patterns therefore are not in activity but a structural tissue change such as is afforded by neuroblastosis and growth of capillaries. The neural equivalent of what went on in the mind may be a necessary adjunct for mental development and its expression, but must not (as I have shown, Feb. 8 1938, p. 265) be considered as an actual part of mental phenomena because of absolute differences in the fundamental characteristics of neurone and mental function.

That purposive acts must be moulded by afferent patterns may be simply explained by assuming with some degree of positive evidence that the afferent stimuli cause local changes of lumen of cerebral capillaries which open or close appropriate reflex pathways by influencing threshold values of adjacent neurone groups. Neuronal activity along these open pathways is known to leave a wake of acid and other metabolites which can change the vascular pattern and so cause subsidence of the central disturbance. If the original pattern of afferent stimuli still remained, then the vascular pattern would of course tend to reform.

The signalling of the achievement of purposive acts along afferent pathways as the cause of the subsidence of the central disturbance which is the basis of Prof. Adrian's scheme for investigation involves a decentralization of mental phenomena and seems to me unnecessary since an urge readily disappears without change of pattern of the afferent stimuli, upon the advent of unrelated stronger stimuli.

B. M. P. M.

F. A. PICKWORTH

Rubella and Pregnancy

SIR—I refer to the letter from Dr Robert Sanderson (Feb. 1 p. 199). It is easy for the objective observer to criticize the remedies proposed for illis which have not affected him personally but the objective viewpoint tends, *per se* to be truer representation.

Dr Sanderson saw his grand-daughter afflicted with a deaf-mutism which probably was a consequence of rubella during

the pregnancy of her mother. He advocates abortion of pregnancies during which rubella occurs, as, he understands, "is being done in Australia" (is it being done in Australia?) This suggestion of his must be based on emotion rather than on reason. The figures in your leading article of Nov. 23 1946 (p. 778) indicate that a possible 10% of all rubella pregnancies result in congenitally abnormal children. Has Dr Sanderson any suggestions to make as to how we may discriminate so that the nine out of ten infants who would be born entire may escape the 'massacre of the innocents'? Or does it seem feasible that such diagnosis will ever be attainable? However, granting the discovery of a method which will enable us to identify deaf-mutism or such in the unborn, we now come closer to the basic objection to direct abortion which Dr Sanderson advocates. To quote his letter 'deaf-mutism is such a domestic catastrophe and permanent sorrow that I advocate inducing abortion'.

The root of the problem lies deeper. May I quote 'For those who believe no explanation is necessary, for those who do not believe, none is possible. It is accepted as the result of rational argument by philosophers and theologians of many denominations that direct abortion is murder and is therefore never justifiable. There are many more problems' in relation to the morality of abortion, some whose correct solutions are more difficult of acceptance, than that introduced by the association of rubella in pregnancy with congenital defects. It is for that reason that I ask you to publish this letter suggesting the correct approach ethically to these things: it is the morality of our behaviour which must take precedence over its expediency in such dilemmas which are really only apparent and are not unsolved—I am, etc,

P. O. Seshela N. Rhodesia

W. KEVIN BARRY

Prevention of Infant Deaths

SIR—In their interesting and well-informed comments on my paper on the above subject, Dr I. Rose (Dec. 28, 1946, p. 1006) and Drs I. M. Harkness and J. B. Cochrane (Jan. 18 p. 114) stressed the same point, namely, that the deaths of at least five infants cited might have been avoided by retaining them in hospital for a longer period. They are of course absolutely right in this, but it is also true to say as I tried to indicate, that it was because of the inadequate care they received on discharge due to the prevailing sociological conditions and at a time when they were unable to withstand such adverse conditions, that they did not survive. It is agreed that this was a consequence of their too early discharge, but this train of events would not necessarily apply where a premature baby goes to a good home with a capable and sensible mother. Drs Harkness and Cochrane in the second paragraph of their letter describe better than I could have done the sociological dangers to which many babies are exposed on leaving hospital, and a wider realization of this is needed. Nevertheless, the viewpoint of the hospital doctor must be appreciated for, quite apart from the shortage of beds and cots, the risk of cross infection cannot be excluded, and, other things being equal, the sooner a baby is out of hospital the better. The dangers of a poor home environment will often outweigh the potential dangers of cross-infection, but this will not always be so, in any case the hospital doctor must be kept informed of the sociological background of his cases, for without this knowledge he cannot decide whether a baby should be retained in hospital beyond the normal period. It was there that our arrangements were found to be wanting, and it was to remedy this that our scheme was devised.

I am glad to have the support of Drs Harkness and Cochrane for my claim for the provision of hostels where prematures and other debilitated babies can be hardened off before returning to unsatisfactory households, it is however probable that such hostels might have a greater part to play than that of mere postnatal sanctuaries but this is too large a question to enter into here. I regret I cannot give Dr Rose details of the discharge weight of the babies concerned but unfortunately I have not here available the records to consult. As regards blood counts, it was the practice when these cases were under treatment to do a routine blood count on every expectant mother where there was a suspicion of clinical anaemia or debility, and the blood counts quoted referred to the antenatal

14. Iron and vitamin preparations were available and were given almost as a routine, and liver preparations could also be used if and when required—I am, etc.,

W st Bromwich Staffs

J TUDOR LEWIS

Shortage of Nurses

SIR—Gloucester is to be congratulated on having evolved a practical scheme for the employment of part time nurses which will go a long way towards meeting the present hospital staff crisis. It is unfortunate that a number of authorities such as the Kent County Council have not yet launched a publicity campaign for the recruitment of these part-time workers and indeed are turning away from their hospitals both trained and untrained personnel who have volunteered for part-time work in response to the Government appeal.

It is also unfortunate that owing to an oversight an anomaly arose when the London County Council part-time scheme was first operated whereby nurses doing 30 hours in the week received more pay than those doing 40 hours. I understand that this anomaly will now be removed. Its removal will however accentuate the obvious disparity referred to by Miss Katharine F. Armstrong (March 15, p. 345) between the pay of the part time and the full time nurse. The argument in regard to nurses' emoluments cannot hold good indefinitely, since it is recognized by all those anxious to promote an adequate flow of suitable recruits to the profession that nurses should wherever possible, live out and in fact in many cases already do so.

The suggestion put forward by Dr L. Ley for preliminary training (March 15, p. 355) is excellent, and it is of course essential to the success of any long term scheme that nurses' training colleges should be integrated with the higher educational system of the country. It is, however, also essential that the rates of pay for student nurses should be drastically revised, not in the light of whether we can afford 6d a week more but in the light of whether we will be able to run our hospitals without a steady inflow of keen intelligent girls into the nursing profession—I am, etc.,

St Mary Cray Kent

BRIAN H. KIRMAN

SIR—Your correspondent Dr Leonard Ley (March 15, p. 355) has outlined in his letter some useful and wise suggestions whereby the recruiting of nurses can be accelerated. Would it be forgiven if I ventured to say that on a most important matter he has, in common with many medical men missed the point?

A woman who is in training, or who has trained, in the care of the sick is a "nurse" simply and solely and should be treated as such. In many hospitals nurses are messengers and it is quite a part of their routine to leave off any nursing duty which happens to be on hand just to run to such-and-such a ward, "fetch this," or "borrow that." It is not exaggeration to say that many a young nurse associates the advent of the doctor into the ward with being sent off to find forgotten X-ray films, notes, or to borrow, in a hurry some instrument in which the ward is lacking. The natural pride and interest that a young beginner to nursing feels in her work is rather rudely shaken when she downs tools to become a harassed messenger girl.

Is it too much to hope that soon we may see wards equipped each with such articles as Ryle's tubes ear syringes, steam kettles etc.? In how many wards are such articles as kidney dishes, enamel bowls, and trays at a premium? Why is so much time spent in sending off for such articles to be borrowed? As for the messages which must be fetched and delivered in all wards, cannot official runners be employed or, failing that, the under-training-age recruits? Surely it should be a thing unheard of for any nurse, however junior, to leave the ward work for any pretext whatsoever—except perhaps, the classical 'fire or haemorrhage'. In these matters doctors can help—I am etc.,

London E 17

CARMEN MORFEE

SIR—I wonder whether Dr Ley (March 15, p. 355) is aware that the General Nursing Council divided the Preliminary State Examination in 1938 in order that the subjects of anatomy, physiology and hygiene could be included in the general school

curriculum so that intending candidates might cover these subjects before entry to hospital for training. Pre nursing courses have already been established in 265 schools and technical colleges in England and Wales. The list can be obtained from the offices of the General Nursing Council. A girl completing a course can take Part I of the Preliminary Examination before entry to hospital. Last year over 12,000 candidates presented themselves for Part I of the Preliminary State Examination but unfortunately only quite a small number entered by way of a pre-nursing course.

The recruitment of sufficient nurses is an educational problem which can be solved only when the education authorities of the country take the responsibility which is theirs and when every school and technical college in the country has a pre nursing course. This measure would simplify recruitment, further it would lead to revision of the nursing curriculum in order that the knowledge of the basic sciences already gained might be used to form the best foundation for nursing training—I am, etc.

London NW 11

EVLYAN C. PERCI

Mengo Hospital Jubilee

SIR—May I draw the attention of readers of the *Journal* to a rather unusual medical anniversary. In February, 1897, after an adventurous three months' journey on foot for 800 miles from the coast there arrived at the capital of Uganda a party of missionaries, who included among their number the young Dr A. R. Cook and his future wife a nursing sister named Miss Catherine Timpson. Shortly before another pioneer Bishop Hannington while on the same journey, was murdered as he crossed the Uganda frontier.

In May, 1897 the first hospital to be established anywhere in this part of Africa was built of reeds and mud, and from that date without cessation a stream of patients has passed through the wards of this hospital—the figures for last year 1946 being 4,317. Out-patients numbered over 14,000, and nearly 900 operations were performed. There is to day a nurses and midwives training school with 110 students and each year some of these girls, qualified at a Government examination, pass out into numerous hospitals and maternity homes throughout East Africa, both Government and mission.

Space forbids mention of much of the fascinating history of this medical work, started by Sir Albert Cook, C.M.G. O.B.E. M.D., etc. and his brother J. H. Cook, M.S., F.R.C.S. but it is worth recording that the first vaccinations against smallpox in East Africa were performed here and the first case of sleeping sickness in Uganda recognized in these wards, apart from many other pieces of original work in therapeutics, public health and medical education. Fifty years in the life of a young African territory is a long time, and such a Jubilee should not pass unnoted in medical circles. With this in view the Uganda Branch of the British Medical Association is organizing an East African inter territorial meeting to celebrate the occasion during the first week in September. The work done in these years has been of the highest quality, as is exemplified by the orderly rows of bound case sheets in the hospital library dating back to the first case seen *en route* even before arrival. It is interesting to mention that on another shelf are bound copies of the *British Medical Journal* going back to the very early days of the century.

A programme of rebuilding urgently needed, is being undertaken to mark the occasion of the Jubilee at a cost of £30,000. If any readers should feel inclined to help with the carrying on of this valuable service for one of our African dependencies donations would be gratefully acknowledged by the Secretary of the Jubilee Appeal Box 161 Kampala, Uganda—I am, etc.

R. T. S. GOODCHILD
Medical Superintendent

Medical Certification

SIR—I was interested to read (March 15 p. 353) of Dr. Leslie Ballon's struggles with the Board of Trade to procure a "thermos" flask for one of his patients. I am recording a case of my own, as I think you will find it rather amusing though I am afraid I did not think it very amusing at the time—particularly as just then I was spending a large part of most days digging my car out of snow drifts.

Mrs. S. gave birth to a 5-lb (2.2 kg) child, and it was considered necessary to give the child three hourly feeds. As

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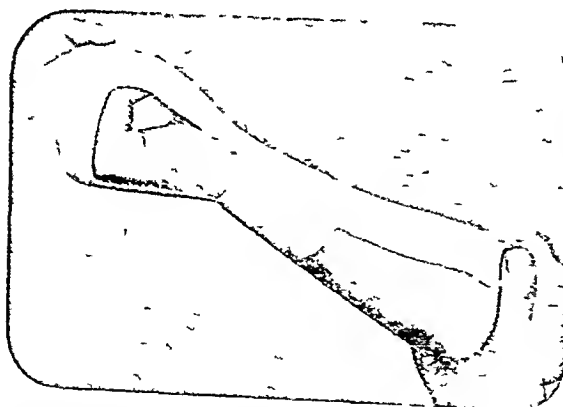
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Treatment — Fingers immobilised by postero-anterior strips of Elastoplast binding them over a roller bandage Another turn of Elastoplast bandage strapped the wrist

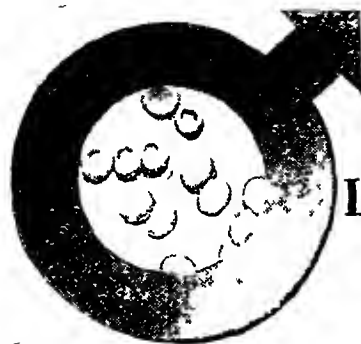
On the 23rd January there was still slight pain and Elastoplast was re-applied to the hand and wrist only

By the 30th Jan there were no symptoms The patient returned to work after 14 days, but the Elastoplast wrist strapping was retained for a further week

The details and illustration above are of an actual case T J Smith & Nephew, Ltd, manufacturers of Elastoplast, are privileged to publish this instance, typical of many in which their products have been used with success, in the belief that such authentic records will be of general interest

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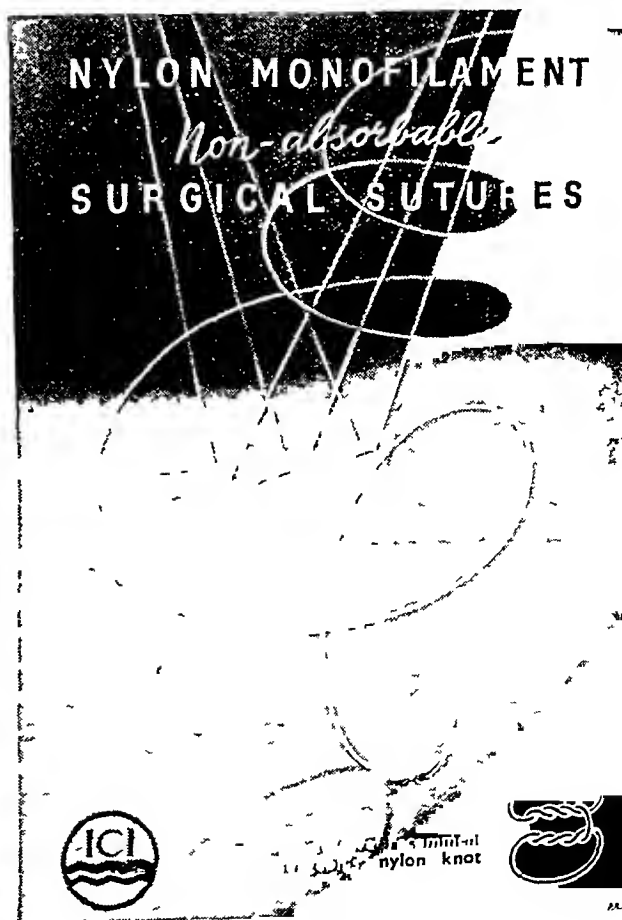
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she was unable to breast-feed the child, it was put on an artificial food. She asked me if I could give her a certificate for a thermos flask so that she could keep water hot for the night feeds. Accordingly I wrote out a medical certificate.

1st certificate—Please supply Mrs S with a "thermos" flask.

Reply—Certificate inadequate. State for what reason flask required.

2nd certificate—Please supply Mrs S with "thermos" flask, she is a nursing mother.

Reply—Inadequate. State why nursing mother should require thermos' flask.

3rd certificate—Please supply Mrs S with thermos' flask, she is a nursing mother and requires the flask to give the child night feeds.

Reply—Please state that Mrs S has no other means of cooking.

4th certificate—Please supply Mrs S with thermos' flask, she is a nursing mother and requires the flask to give the child night feeds. She has no other means of cooking.

By now the whole affair had become fantastic and I asked Mrs S if she really wanted me to go ahead with it. "Oh, no," she replied. "I have a friend who is an agricultural worker and he got a flask for me on a certificate from his boss"—I am, etc.

Ruckington Lines

R L GIBSON

Remuneration under the Act

SIR—I have just read with great interest the letter of my namesake Dr R J Healey (March 15 p 352). I could not disagree more strongly with the suggestion made. During the war I had considerable experience of A.F. 1667 from the Army side and have since had some from the civilian. The trouble to obtain payment is so great and the remuneration so small that for months now I have forsworn anything to do with the remuneration.

To me it seems that payment by the numbers on a doctor's list is fair and reasonable, the doctor having simply to remember, when he gets a troublesome call, the numbers of those patients for whom during any year he is not called upon to do anything whatsoever. Such a condition is of course innate in any insurance system—I am, etc.

Longton Staffs

C W HEALEY

Basic Salary

SIR—Out of all the confusion of thought surrounding the National Health Service Act the crucial point has been clearly indicated by Dr D Saklatvala in his admirable letter (March 8 p 308)—viz. no basic salary. The basic salary is not in the patients' interests, and on that account alone should be resisted by all general practitioners. Let us all unite on this essential point and everything else will fall into its proper place.

The General Practitioners Subcommittee will have failed completely if they do not show the Minister that a basic salary will not be tolerated. We must have an adequate capitation fee remembering that this time it will not be subsidized by private practice. We must have access to the courts when necessary. There is no need for "direction" that can easily be overcome by an added sum per capita for those working in depressed or unpopular areas. Our practices can still remain our own under the capitation system. Limitation of lists will find work for all the new-comers. For our patients' sake the family should be the unit until the individuals leave home—I am, etc.

Prestwich, Manchester

J A JAMIESON

Caloric Value of Toasted Bread

SIR—The statement that the caloric value of bread increases by 10% or 20% by toasting (*Journal* Feb 22) should go a long way towards solving the present world food shortage. It would for example only require the compulsory toasting of all bread in this country to effect a saving greater than that resulting from rationing it.

Perhaps however you did not mean to imply an absolute increase in calories by toasting but an apparent increase when expressed on the basis of dry weight of bread or toast. The drying of the bread during toasting naturally results in more calories per ounce (20 g.). But one normally does not eat one's bread in ounces but in slices and a slice of bread before or after toasting has of course the same caloric value. One might equally well refer to the decrease in caloric value of milk

when taken in tea, milk has a caloric value of about 20 per ounce, while milk in tea would have a caloric value of perhaps 3 per ounce. The caloric value of the milk has no more been reduced in this instance than that of bread is increased by toasting, the same number of calories are there but in a more or a less dispersed form—I am, etc.,

London W 8

JOHN YUDKIN

Dirty Milk Bottles

SIR—During a recent visit to a large wholesale dairy in London by a number of doctors studying for the Diploma in Public Health, attention was drawn to the difficulty arising out of failure of the consumer to rinse out milk bottles after use. The one-third-of-a-pint bottles from schools comprise the dirtiest specimens. They are not only unrinsed but many contain broken straws and aluminium caps, while some are not completely emptied and contain curdled milk. Not only are these bottles hard to clean but in warm weather flies gain entry and breed on the sour milk.

It is surprising that milk bottles returned empty from schools should be received in this very dirty condition especially as the organizing bodies are public authorities. It would appear moreover, that a very valuable opportunity of instilling practical habits and knowledge of hygiene in children is missed. It should not be a matter of great difficulty or expense to organize a system by which children cleaned their own milk bottles and received some instruction on the reasons for so doing—I am, etc.

Iver Bucks

J H WILDMAN

"Trade Secrets"

SIR—Would it be of interest and benefit to open a discussion on "trade secrets" in your columns? I write in respect of surgery, though the subject applies also to the art of physical diagnosis in general as well as to technique in operations. It is fundamental that the ideal method of learning to operate is by serving an adequate apprenticeship. Thereafter skill and wisdom are the fruits of experience.

Most trade secrets are still passed by word of mouth both in the east and the west. How many of us consciously know that the secret of entering a subcutaneous vein depends upon three factors—viz. getting everything 'teed up' in a most unhurried fashion, experimenting until a proper oblique light falls upon the skin which has been rendered semi-transparent with methyl alcohol and 'catheterizing' the vein by inserting the needle exactly in the vein's axis while the left thumb of the operator makes traction on the vein distal to the site of the needle's entry? Is it realized that footwork is as essential to the tying of a surgeon's knot as it is to the skilled boxer? Watch an adept making his passes during either game.

I was invited to watch Mr Hamilton Stewart, of Bradford, using his trans-urethral tools. He works standing. His operating table is elevated almost to eye level. Since then I have done knee-cartilage and piles operations while standing at my work. The hands work better when footwork is permitted. Where in orthopaedic literature are we advised to apply a full-length compression dressing before releasing the tourniquet at a knee operation?—I am, etc.

Calgary, Canada

J A M CAMERON

The latest annual report on medical services in Nigeria (population 174,000) states that the general health of Europeans is, on the whole, good. Malaria is the commonest condition necessitating admission to hospital and accounts for about one-quarter of all in-patients. Diseases of the skin, enteritis, and diseases of the digestive system are, after malaria, most frequently encountered. Among the Africans most hospital admissions are for diseases of the skin, cellular tissues, and organs of locomotion. Pulmonary tuberculosis is still the commonest cause of invalidism among African officials and in 1945 was responsible for 18.9% of all invalidity. Venereal diseases account for a larger amount of hospitalization than malaria. In 1945 the number of in-patients with malaria was 8,569 but those with venereal disease numbered 11,372. In the south country there is a falling off in the number of cases of gonorrhoea treated, possibly due to the increasing activity of private practitioners and to self-medication with sulphonamides. In the north venereal disease remains as serious a problem as before. In 1945 Nigeria had for the first time on record an epidemic of louse-borne typhus (126 cases with a mortality rate of 25%). Prompt measures and the use of DDT controlled the epidemic.

Obituary

S MORTON MACKENZIE, M.B. B.Ch.

His old colleagues in the Council of the British Medical Association and in the Surrey Branch will learn with regret of the death on March 13 of Dr Morton Mackenzie of Dorking. For many years Dr Mackenzie was a very active figure in both the central and local affairs of the Association. He was a member of the Representative Body for fifteen years, a member of the Council for thirteen, and for the long period of eleven years (1922 to 1932) he presided over the Organization Committee. Here he found a sphere of activity in which he took particular delight. Nothing pleased him more than to report the constantly increasing membership of the Association, to encourage local honorary secretaries, and to spur the Divisions and Branches on to new activities. He was himself the embodiment of cheerfulness and energy. He served also for ten years on the Journal Committee and for five years on the Parliamentary Elections Committee. Anything which had to do with propaganda on behalf of the Association, with the recruitment of young practitioners to its ranks and with the enhancement of its reputation had his vigorous and enterprising support.

To the regret of all who had the opportunity of learning the value of his work—work of a kind which has not a wide appeal—Mackenzie withdrew from active participation in central affairs at about the time of the Association Centenary though he was then not much more than fifty years of age.

Stephen Morton Mackenzie, son of Sir Stephen Mackenzie, physician to the London Hospital and nephew of Sir Morell Mackenzie, the laryngologist, took his university course at Cambridge, and went to the London Hospital for his clinical training, qualifying M.R.C.S., L.R.C.P. in 1904, and M.B. B.Ch. in the following year. He settled down to a partnership practice in Dorking and became surgeon to the Dorking and District Hospital. He was also chairman of the Surrey Voluntary Hospitals Consultative Committee, and for fourteen years a member of the Surrey Panel Committee. He had been president of the Surrey Branch of the B.M.A. and remained vice-president. He was on the council of Epsom College and treasurer of the Surrey Medical Benevolent Society. In the war of 1914–18 he served as a temporary captain R.A.M.C. No practitioner was better known in his area and he was greatly esteemed by colleagues and patients alike.

FERGUS L. HENDERSON, M.B.

The death on Feb. 28 at the age of 54 of Dr Fergus Leslie Henderson has ended a life expended to the full in professional and public work in Glasgow.

A son of the manse, Dr Henderson was educated at Glasgow Academy and, after a distinguished scholastic career at Glasgow University, where he graduated in 1914. After a short period in general practice and in the city hospitals, his interest in radiology was stimulated by the late Dr James Riddell, one of Glasgow's pioneers in the use of x-rays. In the early days the interpretation of x-ray films was still largely an unexplored field but in conjunction with Sir Alexander MacGregor and the late Dr John Wilson, Dr Henderson correlated the appearances which he saw in the film with the findings of the clinician and helped to establish the place of the radiograph in the elucidation of the many diagnostic problems of chest work.

When the Corporation of Glasgow opened up its first radiological diagnostic station at Ruchill Dr Henderson was the natural choice as consultant and as the tuberculosis service expanded he became the final arbiter on practically all the chest radiography carried out by the public health department. In 1923, when the McAlpin Home introduced radiological equipment, he became consultant there. By many he will always be remembered for the efficiency of his work with the public health department, but his association with the McAlpin Home brought him into intimate contact with a wider circle of medical colleagues who as the years passed came to value his opinion more and more. Some years ago his service to the McAlpin Home was recognized by his appointment to the board of management, and here his wisdom and administrative

ability found another outlet. Among his other appointments was that of radiological consultant in the West of Scotland to the Ministry of Pensions. For many years he was also in charge of radiotherapy in the Cancer Hospital.

Two other interests were important in his life. A man of sincere religious beliefs, he formed an association with Ruchill Church in 1914 when he became an officer in the 69th Company of the Boys Brigade. Two years later he took charge of the company, and during the last thirty years he had built it up to become one of the largest and most effective in Glasgow. A pioneer in his realization of the need for proper recreational opportunities among working class boys, he set in train schemes which culminated in the purchase of an athletic ground at Maryhill which might have been the envy of any wealthy public school. Here the boys enjoyed first-class playing facilities and learned the qualities of real sportsmanship under the guidance of a man to whom playing the game in every aspect of living was as natural as breathing.

His other enthusiasm was music. A life-long supporter of the Scottish Orchestra he had been a valued member of the committee of management for many years. Before 1939 his interest in music was fused with his Boys Brigade activities and the annual production of a Gilbert and Sullivan opera was one of the features of his company's activities.

His private circle of close friends was small, for his natural modesty and shyness formed a mantle which kept him somewhat aloof. But a wide circle respected him as a man of real integrity whose sense of responsibility was great and whose opinion was always fearless and forthright. He was one of the world's givers, and his passing is felt the more keenly because there are so few to fill his place. In his work at Ruchill it would have been easy for him to seek the limelight which such a unique piece of public service deserved, but that was not his way. His enduring record is there, however, in the playing fields of the Ruchill Church and in the imprint he has left on the minds and in the lives of a multitude of the young citizens of Glasgow. Dr Henderson was unmarried. He is survived by his mother, two brothers and a sister.

WILLIAM DUIGAN, M.B.

Oxford lost one of its oldest and most respected practitioners when William Duigan died on Feb. 24. Dr Duigan was born in 1865 the son of Dr J. Duigan of Gainsborough, Lincolnshire, and was educated at Loretto, Christ's College, Cambridge, and the London Hospital. An M.A. at Cambridge in 1886 was followed by the M.B., Ch.B. in 1890 and shortly afterwards he began his career as a general practitioner at Woodstock. In the 1914–18 war he was a captain R.A.M.C.(T) attached to the 3rd Southern General Hospital at Oxford where he became more and more interested in the administration of anaesthetics. After the war he was appointed honorary anaesthetist to the Radcliffe Infirmary later becoming its director of anaesthetics and chief anaesthetist. There he built up a reputation as a safe and helpful assistant and his services as an anaesthetist were in constant demand by the surgeons of his day both in hospital and in private practice. Later, with the institution of the Nuffield professorship, Dr Duigan's active connexion with the department gradually ceased. Till then successive generations of medical students had reason to remember with gratitude his painstaking and skilled tuition.

Dr Duigan suffered from fibrosis, and as he grew older this became a crippling ailment while in 1929 and 1931 he had to undergo two operations for chronic glaucoma which left his sight impaired. Nevertheless, for several years afterwards he continued in active work as a general practitioner with a substantial list of lifelong patients who had no thought of going elsewhere. As the age of 80 approached, however, he had reluctantly to give up work altogether. Dr Duigan was a great traveller and he delighted in touring with his car and family through this or that country abroad. Other relaxations he found in fencing, fishing and gardening, and especially in the culture of roses.

Dr Duigan gave many years of devoted service to the British Medical Association and to the local medical profession. He was hon. sec. of the Oxford Medical Society from 1897 to 1906. A member of the B.M.A. since 1891 he was hon. sec. of the Oxford Division and of the Reading, Oxford, and Maidenhead Branch 1902 to 1913, local secretary for the

Annual Meeting at Oxford in 1904 representative at the Annual Representative Meetings 1905-7 and president of the Oxford and Reading Branch in 1922-3. He was also a member of the Oxford Medical Literary Club for forty-five years, and the University of Oxford honoured him with the grant of its MA while University College, Oxford made him a member of its Fellows' Common Room. Dr Dugan married in 1902 Jane the youngest daughter of the late General Sir Horace Anderson KCB. She died in 1930. They had one daughter who survives her father and to whom as his constant and devoted companion in later years the local medical profession has extended its sympathy and gratitude.

Dr G. A. Auden formerly professor of public health in the University of Birmingham, writes. In the obituary notice of Dr T. W. Shore in the *Journal* of March 8 (p. 315) mention is made of the open scholarship in science at St Bartholomew's Hospital won by him in 1880. The late Sir Arthur Shipley FRS, tutor, and later master, of Christ's College, Cambridge and Vice-Chancellor of the University, sometimes used to say with a twinkle in his eye that he owed all his success at Cambridge to the fact that he had been beaten in that scholarship by Tommy Shore otherwise he would have been a hard worked country practitioner. For, after his defeat at Barts he obtained an open science scholarship at Christ's College, where he spent the rest of his days with such manifest enjoyment of life and where he gained the affection of everyone who was privileged to know him. Truly Heaven from all creatures hides the book of fate.

Dr W. Norwood East writes. May I add a few words to your sympathetic reference (March 15, p. 357) to the premature death of Dr W. H. DE B. HUBERT? Those of us who were associated with him at Wormwood Scrubs Prison in the years before the war will particularly remember him for his conspicuous ability, charming personality, loyalty and wide vision as well as for the remarkable ease with which he gained the confidence and co-operation of a difficult group of patients. From the commencement of his work at the prison it was clear that his practical approach to mental analysis and his diagnostic acumen would prevent him from committing the mistakes which are liable to occur at first when dealing with law-breakers. His ready response, clear penetration, good humour and constructive criticism, together with a readiness for his own work to be criticized, made him an easy collaborator. We are entitled to believe that had it not been for the exigencies of war Hubert would have made further contributions to the psychiatric approach to crime and criminals.

Dr GEORGE WISHART MCINTOSH died suddenly at his home in Kirkcaldy on Feb. 27. He studied medicine at Edinburgh University where he graduated MB, CM in 1896. In 1902 he took the B.Sc. (Public Health) and after a visit to America and some preliminary assistantships he began general practice in Kirkcaldy. This continued until 1910 when he was appointed medical officer of health for Kirkcaldy and Dysart. He occupied this post for twenty-seven years and during his tenure of office was responsible for the modernization of all his health services. His previous experience of general practice gave him a broad outlook on medical problems and local practitioners found in him a sympathetic and understanding colleague. They showed their appreciation by entertaining him to a dinner and making a formal presentation on the occasion of his retirement in 1937. During the recent war he emerged from his retirement and did valuable service by assisting the five medical officers of health in organizing the ARP services for the county. Dr McIntosh had been a member of the British Medical Association since 1898 and in 1932-3 was president of the Fifeshire Branch. For many years he was a member of the Branch Council where his shrewd common sense was always helpful. He was a member of the Caledonian Medical Society and a Fellow of the Society of Medical Officers of Health. Dr McIntosh was for many years a keen Territorial and served in the 7th Black Watch (RHR). During the first world war he commanded a company in this famous regiment which he took to France. After some active service abroad he was invalided home and was there transferred to the RAMC with the rank of major. After the war he was awarded the TD. Apart from his profession he had many other interests. He was a staunch member of the Baptist Church and an original member of the Rotary Club. In fact he had just returned home from the club's weekly luncheon when his sudden death occurred. He was also a justice of the peace for Fife. Always fond of sport he played golf in his earlier days and was a keen curler. Latterly he had

devoted himself to bowling and at the time of his death was president of the Victoria Bowling Club. Dr McIntosh had a fine personality. His uprightness of character, his kindness and generosity and above all his geniality and great gift of humour made him a general favourite.

WALTER GRAHAME STEWART died on March 6 after being in poor health for some months. He was born in Port Elizabeth, South Africa, in 1874 and educated at Dulwich College and Guy's Hospital, qualifying in 1899 and taking the London MB in the same year. After being house-physician at Guy's and clinical assistant at the Royal London Ophthalmic Hospital and at the Throat Hospital Golden Square, he settled in Ware, Hertfordshire, in 1901. He took over a busy general practice being district medical officer and public vaccinator and medical officer to the Post Office and to the Herts Training School, Chapmore End. He was honorary medical officer to the Hertford County Hospital from 1906 till 1916 and medical superintendent of the East Herts Joint Hospital for 33 years until his retirement in 1945. He was later elected a member of the board an office he held until his death. During the 1914-18 war Dr Stewart was commandant of the Ware VAD Hospital of which his wife was lady superintendent and matron. He was appointed MBE in 1920 for his war services. Later he served on the Hertford Pensions Board. Divisional surgeon to the Ware Division of the St John Ambulance Brigade since 1929, he undertook the training and organization of the town first-aid service during the recent war and was medical officer to the first-aid post. Among his writings was an article in the *Journal* on enteric fever. Dr Stewart took an active part in the public affairs of Ware. A keen churchman he was for many years a churchwarden at Ware Parish Church. He was elected to the urban district council in 1923, and was chairman from 1928-30 and from 1939-44. He remained a member of the council up to the time of his death. He was a member of the British Medical Association for thirty-two years, chairman of the East Herts Division in 1930 and again in 1935 and president of the Hertfordshire Branch from 1936-8. He married in 1902 Rebecca Charlotte daughter of the late Major-General F. F. Daniell, his wife died in 1933 and he leaves one son, Lieut. Col. Gordon W. F. Stewart, R.A., and two daughters.

Dr GEORGE MONTGOMERY DRURY of Cheadle Heath, Cheshire, died at the age of 79 on Feb. 21. A student of the Royal College of Surgeons, Edinburgh, and Queen's College, Cork, he qualified in 1893 and had been in general practice all his life. Dr Drury had one of the oldest practices in Cheadle Heath and had been well known there for over fifty years. He had long been associated with St Augustine's Church, Cheadle Heath and he had been a member of the British Medical Association since 1898.

Dr WILLIAM GLOAG GALLETT, of Anerley, died at the age of 84 on Feb. 23. He qualified MB, CM at Edinburgh in 1884 and was in practice in Sunderland for a few years. He then moved to Northwold, Norfolk, and continued in general practice there from 1893 until 1915 when he joined the RAMC. In 1918 he was appointed to the staff of the Ministry of Pensions and he continued his work on medical boards until failing eyesight necessitated his retirement in 1928. Dr Gallett was a man of studious disposition and a quiet and lovable character.

Dr JOHN ALEXANDER NEILAN died at the age of 70 on March 16 at Scarborough. He was in practice at Seaham for forty-eight years. Dr Neilan, who qualified in Dublin, went from Ireland to Seaham in 1899 as a partner of the late Dr L. G. Dillon. Latterly he was in partnership with his brother Dr Charles James Neilan, and Dr H. J. Weir. He left Seaham last December and went into retirement at Cloughton, near Scarborough. For some years he was medical officer of health to Seaham Urban Council. During the war he was medical officer to Seaham Home Guard, holding the rank of major.

FREDERICK CHARLES PRIDHAM died at his home in Darlington on March 11. He had been ailing for some time but with the unquenchable courage and thought for others that characterized his whole mode of life he did his job as a doctor almost to the last. He was a student of St Thomas's Hospital, and a worthy son of that great foundation, of which he later became casualty house-surgeon. Later he was house surgeon to Chesterfield Infirmary, and eventually settled in Darlington in general practice in 1913 the year in which he took the FRCSEd. During the 1914-8 war he joined the RAMC and serving as a captain, was gassed while overseas. He was

an honorary senior surgeon of the Darlington Memorial Hospital for many years. He had been a member of the British Medical Association since 1910 and was chairman of the Darlington Division in 1927-8. He devoted his leisure hours to the medico-political side of his profession and was a tower of strength to the B.M.A. in all its activities. He was much beloved by his own patients and by others whom he had helped back to health in the hospital. In the minds of his colleagues he will always remain a model of what each of them would wish to be.

Dr JOSEPH ELLISON died on March 14 at Alwoodley Leeds aged 82. He was in practice in the Beeston district of Leeds for nearly fifty years, and retired about ten years ago. A native of Leeds Dr Ellison was a student at the Leeds School of Medicine at the same time as the late Lord Moynihan.

Medico-Legal

RESPONSIBILITY FOR DRUGS SUPPLIED

A recent decision of the High Court¹ opens up a serious new legal threat to medical practitioners, though it concerns a firm of veterinary surgeons. In the summer of 1945 a drug retailing firm recommended to the veterinary surgeons a new preparation known as corynebacterium toxoid for use against summer mastitis in dairy cattle. The managing director assured them that it was perfectly harmless. They inoculated with it two dairy herds, and sixty cows suffered from serious illness. The dairy farmers sued the veterinary surgeons, who joined as co-defendants the suppliers of the toxoid, who in their turn joined the manufacturers.

The judge, Mr Justice Hallett, said that if the veterinary surgeons had recommended the toxoid, supplied it, charged the farmers for it and left the farmers to administer it, they would undoubtedly have been liable. If they had rendered a bill charging for the toxoid as one item and for their services as another, they would also have been liable. He could not see how their liability was lessened by the mere fact that they themselves injected the toxoid. He therefore concluded that there was an implied condition in the contract between the two parties that the substance to be used for the inoculation should be reasonably fit for the purpose of inoculating the cattle against summer mastitis. The condition had not been fulfilled and the farmers could recover damages against the veterinary surgeons; the veterinary surgeons could recover from the suppliers, and the suppliers again from the manufacturers. He assessed the damages at £3,341 18s 6d with costs.

This decision makes new law of a very disturbing kind. If it remains unchallenged, a doctor may be called upon to pay heavy damages if any drug, injection, or appliance which he uses should cause harm through not being reasonably fit for the purpose for which it is intended. A writer in the *Law Journal* suggests a cumbersome form of disclaimer of warranty which might afford partial protection but is a general practitioner to produce this every time he dispenses a bottle of medicine? To shoulder the consequences of our own mistakes is bad enough, to be responsible for those of drug manufacturers would be crushing. In view of the possibility of an appeal, further comment must be withheld.

¹ *Dodd v Wilson* (1946) 2 All ER 691
2 1946 96 681

The World Federation of Scientific Workers has appointed Mr J. G. Crowther Secretary General Designate (London Office, 15 Half Moon Street W1). The President of the Federation is Prof. F. Joliot Curie, the High Commissioner for Atomic Energy in France. The Federation was founded last year at a conference convened by the British Association of Scientific Workers and attended by associations of scientists from five continents. The World Federation serves as a centre through which the various national associations render each other mutual advice and encouragement. It helps the growth of the individual associations in their own countries and assists them to work out common aims and methods of organization. It is preparing a charter of the rights and duties of scientists to serve as a guide model to scientists in all countries.

Medical Notes in Parliament

SCOTTISH HEALTH SERVICE BILL

The remaining Clauses of the National Health Service (Scotland) Bill were approved by the Standing Committee on Scottish Bills on March 18.

Transfer and Compensation

On Clause 65 Mr J. S. C. REID moved to extend the payment of compensation to persons who immediately before the appointed day had devoted a substantial amount of their time to employment with voluntary hospitals, local authorities, insurance committees or such other bodies as might be prescribed. He said that under the Act as it stood there was provision for transfer or compensation of whole-time officers, but he could find none with regard to part-time officers. He held that if a man had been doing this work he should be taken over as he hoped the Minister would say that such men if they desired it would be given whole-time employment under the new scheme. A number, however, were unable to accept offers of that kind. Why should they not be compensated?

Mr THORNTON KEMSLEY said the Clause was another example of English legislation being copied blindly without cognizance of the special conditions in Scotland.

Mr BUCHANAN regretted that he could not accept the amendment. It was then rejected by 17 to 12. On the motion that the Clause stand part of the Bill, Mr REID asked whether it included employees of a contributory scheme who were not employed directly by hospitals.

Sir THOMAS MOORE asked whether when full-time servants were transferred to the executive councils they would enjoy superannuation rates based on their past services, or would come under an entirely new system.

Mr BUCHANAN replied that no man would be the worse off as the result of being taken over. His rights under the original scheme would be safeguarded. Those who were employed full-time by hospitals as collectors were also amply safeguarded. Full-time collectors employed in Scotland by associations for collecting for hospitals numbered only seven, and the Department had practically made arrangements for giving them full-time employment. He understood that in England a number of collecting associations were going to continue and would be given certain other matters to attend to, but they were not likely to continue in Scotland. Clauses 65 and 66 were then ordered to stand part of the Bill.

Mr BUCHANAN said Clause 67 gave the Secretary of State power to hold inquiries so that he would not be forced to make a decision without this procedure. This Clause was also ordered to stand part of the Bill as was Clause 68. Clause 70 was ordered to stand part on an assurance by Mr Buchanan that there would be no novelties of procedure in the making of regulations under the Bill. Clause 71 as amended was approved, and so were Clauses 72 to 76. Clause 77 was accepted after Mr Buchanan had said that the word "asylum" had got into a wrong setting and the people engaged in this work would like a different word. This did not mean that the law was different. He promised to insert during the Report Stage words which would make clear that the Ministry only intended in this Clause to cover the Act of 1857.

"Remunerative Time"

On Clause 78 Mr REID withdrew an amendment which he proposed to declare that "remunerative time" included any time during which a person would normally be occupied in remunerative work. He said a doctor would lose remunerative time from his practice or consulting room while attending boards set up under the Bill. Doctors ought to be compensated for loss of time.

Mr BUCHANAN replied that the Lindsay Committee had inquired into the whole question of lost time in public work and its report was being printed. The Government must have this report in front of it before any action could be taken. If the Government decided to take action on this report the Scottish office intended to operate it in the widest possible terms so as to provide for the loss of remuneration of all people concerned. The amendment was withdrawn.

Dr MORGAN inquired about the meaning of the word "hospital" and the phrase "persons requiring medical rehabilitation." He wished to make sure that the definition included a rehabilitation centre where there was no question of medical or surgical treatment but a man was prepared for restoration to his former work.

Mr BUCHANAN said the point was important. In Scotland a great experiment was carried on at Gleneagles where people were not so much medically treated as equipped for some useful service to themselves and to the community. The Government intended to take over that work as a part of medical treatment in the widest sense. Clause 79 was then ordered to stand part of the Bill.

Scottish Health Services Council

Discussion followed on the First Schedule. Mr McKIE said the Bill gave the Secretary of State wide powers on how the Scottish Health Services Council and the Advisory Committees were to be selected. Mr WATSON thought the medical profession was over-represented on the proposed bodies and that there should be better representation of local authorities. Sir THOMAS MOORE said doctors, dentists and midwives were more qualified to exercise responsibility than anybody else. One of the weaknesses of local authorities was that the medical profession had been largely ignored by them.

Resuming the debate on March 19, Sir THOMAS MOORE said he agreed with Mr Westwood in regard to professional practitioners who were to be members of the Scottish Health Services Council but his advisers had been lax in regard to other healers who were unorthodox. He referred to homoeopaths and osteopaths. The osteopath was supported in many cases by the orthodox practitioner, but at present neither homoeopaths nor osteopaths were represented on the Council.

Mr BUCHANAN said that in most things the Government had accepted certain standards. The Secretary of State had an open mind and did not think these people wrong because they were in competition with older ideas. Mr Westwood had no feelings on the possibility of the homoeopathic doctor being grafted into this system. It would be better if this development came by its own growth rather than by the Secretary of State forcing it. Concerning the general composition of the bodies with which the Schedule dealt there had been a feeling that doctors were over-represented as against local authorities. The Government took the view that in no case should the medical profession have a preponderance of the representation.

Mr CARMICHAEL said the composition of the Council disturbed many members. There were 18 medical practitioners on a Council of 35. Laymen were completely overwhelmed by the members who would represent the professions. Social health services had in the main been the result not of the work of the medical profession but of ordinary men and women taking a broad view of health. Nobody could argue that the medical profession pioneered the supply of milk and meals to schools. He asked Mr Westwood to see whether it was possible to have one member of the Council elected from the local authorities.

Need for Co-operation

Mr WESTWOOD said it was impossible to allow every interest to be represented. If some bodies were left out their interests would be taken into consideration. He could not agree to elect representatives direct from the public health authorities in Scotland which numbered about 55. After consultation with the medical authorities he had increased from four to five the number of representatives with local government experience. The medical representation of 18 was to be drawn from all sides of the profession from specialists as well as from medical practitioners. In addition the Government might have to draw upon medical officers of health. So far as he could see there could be no possible combination among the 18 medical representatives to give advice which would be detrimental to the Service. He would have consultations again with the medical profession. He could not make a success of the Service unless he had the whole-hearted co-operation of that profession but before the Report Stage he would see if it were possible to increase the numbers of those who would represent local authorities. The question of representation for the homoeopathic school of medicine would not be overlooked. He had not had consultations with the homoeopaths but had received representations. Homoeopathy was recognized but osteopathy was not. He was entitled therefore, to take homoeopaths into consultation and consideration.

Mr GALLACHER said it was far more important that the people whose health was at stake should be represented. Doctors and others associated with the medical profession could give their services but it was not necessary that they should be on the Council. Mr SCOLLAN was astonished that in the negotiations the medical profession had asked for a preponderance of 18 out of 35.

Mr WESTWOOD said there were no negotiations in the ordinary sense. There were discussions but the final decision was with the Selecting Committee and the House.

Mr MCKINLAY asked whether the allopaths would keep the homoeopaths from being taken into consultation. If it was within the power of the allopaths to keep the homoeopathic physicians outside, they would. Ten years ago Glasgow Corporation passed a resolution that homoeopaths were to get all facilities in Glasgow hospitals. It was left to the medical officer to make the necessary arrangements but there had never been a homoeopathic practitioner in the hospitals to dispense even the smallest pellet. In the medical office of a local authority he had found that the doctors had no ideas outside their own profession. He asked that there should be on the Council representatives of the medical profession with local government experience.

Technical Advice

Dr STEPHEN TAYLOR said that in the English Bill the medical profession had done rather better. It had got 21 members instead of 18. Medical committees in Scotland had done valuable work in the past. The purpose of the Council was to give technical advice. It would set up subcommittees for such subjects as maternity and child welfare, skin diseases, and special hospitals, but it certainly would not be running hospitals. If the Government wished to get good medical advice it needed experts to give it. Medicine now had so many branches that to get a sufficiency of experts a large medical representation was needed. He reminded the Committee that not all the medical profession was in favour of the Service which was being set up. Many doctors had doubts about it and felt that they were having to make big sacrifices. They had indicated that at any rate their advice should be heeded in the running of the Service. To regard the medical profession as incorrigible was the doctrine of despair. He hoped that after the Bill had been in operation for a few years the profession would bless the day when it had been passed.

Mr J. S. C. REID said that if the services to be set up under the Bill were regarded primarily as services to cure the patient the doctors were not over-represented on the Council. If as many Labour members appeared to think the Bill was designed primarily to set up a bureaucracy the form of which was more important than the curing of patients then the views of Government supporters were correct and the medical elements should be smaller.

Mr WESTWOOD said that running all through the Bill and through the Schedule there was provision for those with experience of local government. It might be that the medical profession would not object to an increase in the number of such persons to six or seven. The First Schedule was then approved by 22 to 11 and the Second Schedule, on hospital endowments, was approved with consequential amendments. The Third Schedule was also accepted.

Chairmen of Boards

On the Fourth Schedule Mr REID moved an amendment designed to leave to hospital boards the selection of their own chairmen.

Mr WESTWOOD said he had not the slightest desire that these regional boards should be run on rubber-stamp lines. They could be run on different lines in different regions, but the Secretary of State must see that the person appointed as chairman was a proper person with the highest qualifications. Mr REID's amendment was defeated by 22 to 12.

Mr WILLIAM ROSS moved to provide that at least one half of the members of each regional hospital board should be persons other than medical practitioners. He said that in the Schedule as it stood there was a grave danger that the regional boards and later the boards of management would be overloaded with medical practitioners. If the medical profession provided the largest number of representatives there was always the danger that the medical profession would be told that they were running these hospitals for the benefit of the doctors and not for the benefit of the patients. The Committee agreed to the amendment.

Mr WESTWOOD accepted an amendment moved by Mr REID authorizing boards of management to elect their own chairmen. On the motion that the Schedule as amended stand part of the Bill Mr CARMICHAEL asked about local government representation on regional hospital boards. He argued that this element should be in the majority.

Sir BASIL NEVEN-SPENCE asked why the Royal College of Surgeons and the Royal College of Physicians and also the colleges in Glasgow were not to have a say in the appointment of these committees.

Mr BUCHANAN said the Government would consult the local authorities to the fullest possible degree. It intended to give the colleges representation under Part II (c). The Government had not the vaguest idea what the size of the Board would be.

except that it must be of manageable size. The Fourth Schedule was then agreed to. The Fifth Schedule was also accepted after discussion.

Continuing on March 20 the examination of the Sixth Schedule Mr NIALL MACPHERSON said nothing would be more disastrous than for this great system to start on the assumption that the medical profession was antagonistic to the Secretary of State. It would be far better for the medical profession to appoint the medical, dental, and pharmaceutical representatives on the executive council, and for the local authorities to appoint their representatives, the Secretary of State appointing none at all.

Mr BUCHANAN replied to the plea of Sir Thomas Moore for the homoeopathic doctor. This type of doctor was fully qualified and was like any other specialist, but the Government had not picked members of the medical profession because they were specialists. It must be for the doctors themselves to choose what people they proposed to have. There were good reasons for the appointment of four members by the Secretary of State. The proposed body was as near as the Government could get to what used to be called the 'Borough Committee'.

Mr MCKINLAY asked what was the local medical committee which had the right to appoint seven members. Was it the medical committee of the British Medical Association?

Mr BUCHANAN said no, it was the medical committee recognized under the Bill. The Standing Committee then agreed to the Sixth Schedule.

Scottish Medical Practices Committee

On the Seventh Schedule Cmdr CLARK HUTCHISON moved to leave out paragraph 5 of the Schedule, which provides that proceedings of the committee shall not be invalidated by any vacancy in its membership or by any defect in the appointment for qualification of any member. He said his friends felt there ought to be no doubt of the qualifications and suitability of the members.

Mr BUCHANAN said that without this paragraph it would be impossible if one of the members died to carry on the work until another man was appointed. Without the latter part of the paragraph there would be the same difficulty if, after a member had been appointed, it was found that in some way he might not be a proper person to be a member. If he had taken part in the work of the committee everybody who had received a certificate from the committee would have to be re-certified.

The amendment was withdrawn and, on the question that the Schedule stand part, Cmdr HUTCHISON pointed out that nothing in it laid down what should be a quorum of the Medical Practices Committee to adjudicate upon cases at any one time. If some members of the committee had to travel long distances and were busy men they might be tempted not to attend and important decisions might be made by two or three instead of by the full committee. The committee had considerable powers to influence the careers of young doctors.

Mr BUCHANAN said the Government proposed to allow each of these committees to fix its own quorum. If a rigid quorum were laid down for a country district, hardship might be inflicted on a doctor because it might be a long time before the business was settled. Although there was a committee for the whole country this committee might have to go to many districts. He did not wish it to call doctors from Inverness and such places. Instead it might meet in Inverness. To get four or five people to go to Inverness might be difficult, and the committee should be trusted to fix its own quorum regulations, and standing orders.

Mr MACPHERSON said people whose cases came before the committee would far rather have a full hearing with the quorum.

Mr BUCHANAN said he would look into the matter again, but in his own mind he was against it. The Medical Practices Committee was being trusted with great powers yet it appeared the only thing its critics could not trust it with was its own quorum. If any applicant felt that he was not getting full representation he could apply for an adjournment. The Standing Committee then agreed to the Seventh Schedule.

On the Eighth Schedule Mr BUCHANAN moved an amendment to make the Lord President of the Court of Session the authority who should appoint the chairman of the tribunal. The Committee agreed to the amendment and to the Schedule.

Lunatics and Mental Defectives

On the Ninth Schedule Mr BUCHANAN said that in view of the passing of this Bill the lunacy laws must be brought up to date within the next two or three years, apart from any alterations made under this Schedule. In the Schedule the Government proposed two or three changes. One was that mental hospitals and institutions for mental defectives were in future

to be provided by the Secretary of State instead of by the local bodies. The Government was also ending the detention of lunatics in poorhouses. Private patients and the Poor Law lunatics or the Poor Law mental defectives were to have the same treatment. The whole matter was codified under the new National Health Service arrangement. All this made the Schedule long and complicated. Sir Basil Neven Spence deserved credit for the work which he had done on the reform of the lunacy laws in Scotland. The Government hoped to introduce a Bill dealing with this subject at an early date. Private asylums would be taken over provided they were not carried on for profit. The Committee agreed to the Ninth Schedule.

Cmdr HUTCHISON moved to leave out of the Tenth Schedule the paragraph dealing with expenses which put a limit of five guineas a day for the services of any officer engaged on an inquiry. This paragraph also provides that expenses incurred by the Secretary of State shall be paid by the parties.

Mr BUCHANAN could not accept this amendment. Further pressed, he indicated that he would reconsider the matter. The amendment was withdrawn, as was another by Cmdr HUTCHISON to substitute ten guineas for five guineas. Mr BUCHANAN said that if it was necessary to appoint a person at a higher fee the Secretary of State had the power. An amendment enjoining publication of a full report of the inquiry was also negatived. Mr BUCHANAN said that a decision on publication had always rested with the Secretary of State and it was essential to the working of the scheme that this should continue. The Tenth Schedule was approved.

On the Eleventh Schedule Mr BUCHANAN moved an amendment authorizing the giving of convalescent treatment to a person recovering from infectious disease. This amendment was accepted, the Schedule as amended was approved, and consideration of the Bill was concluded.

The Bill was ordered to be reported as amended to the House.

PENICILLIN BILL

LORD AMMON in the House of Lords on March 18 formally moved the Second Reading of the Penicillin Bill.

LORD LISTOWEL, for the Government, said its purpose was to control the sale and supply to the public of penicillin or any substance with similar properties. The Bill would prevent such drugs and preparations reaching the public unless supplied or sold by a doctor, a dentist or a veterinary surgeon, or by a chemist acting on a prescription drawn up by such a person. The production of penicillin had steadily increased and there was now enough for all medical purposes at home leaving some for export. There was no longer any justification for continuing to enforce Orders under the Defence Regulations which had been authorized by Parliament to conserve a limited supply of this drug. Before deciding whether penicillin should be sold freely and without restriction or should be subject to some new statutory control the Government consulted Sir Alexander Fleming, Prof R V Christie, Col L W Harrison and Sir Philip Panton. Their unanimous opinion was that unrestricted access to penicillin would do grave injury to the public health. The most serious danger would arise when a patient took too small a quantity. This caused germs to lose their sensitivity to penicillin. People who acquired this immunity to penicillin would not only harm themselves but would be a danger to their families. The temptation to self-treatment or to amateur treatment in venereal disease to avoid publicity would be almost irresistible if penicillin could be obtained at any retail shop or store. The results would be injurious to health. This again would add to the grave difficulty of preventing the spread of diseases. The indiscriminate use of penicillin might also lead to dermatitis and ulcers of the mouth. In no other way than by legislation could the use of penicillin be effectively controlled. There would be no interference with the wholesale trade in these drugs and preparations nor with the supply to doctors and surgeons, to hospitals and nursing homes, to bodies doing medical research, or to Government Departments. Clause 1 of the Bill set out the restrictions on the sale and supply of penicillin and other substances. It also provided exemption from restrictions where these drugs could change hands without prejudice to health. Subsection 3 of this Clause provided that the same prescription should not be used more than once nor after three months unless the person signing it directed otherwise. Clause 2 applied the Bill to penicillin and to such other substances prescribed in regulations made by the appropriate Minister after consultation with the Medical Research Council.

Lozenges and Snuff

LORD STRABOLGI said he had been in touch with Sir Alexander Fleming with regard to the terms of the Bill. Where penicillin

lozenges were prescribed, perhaps 100 at a time, and were used for some chronic complaint, the mouth and throat would become an ideal breeding ground for the resistant strain of streptococcus. Not more than two dozen tablets should be dispensed to any person without further authority from the practitioner. He asked whether the Bill could be amended to cover this point.

LORD AMULREE welcomed the Bill but said that certain firms making cosmetics sought to increase the sale of these goods by calling attention to the fact that they contained penicillin. The preparations contained such a minute quantity as to be completely valueless. This was calculated to bring penicillin into disrepute. He was not clear whether the remarks of Lord Strabolgi about penicillin lozenges would also apply to penicillin snuff. This was good for the after-effects of colds and catarrh, and he understood it was safe. It tended to lose its properties quickly. It seemed hard to make a patient go back to his doctor for a prescription for penicillin snuff each time he caught a cold when it could be made possible for him to get a repeat supply on the original prescription.

LORD LISTOWEL said the responsibility for not prescribing too large a quantity of penicillin at one time fell upon the medical profession rather than on the Government. Penicillin was the first of a series of new substances on which experiments were being made. The most advanced of the other preparations was streptomycin, on which the Medical Research Council was conducting tests. Too little was known about its properties for it to be specifically mentioned in the Bill.

The Bill was read a second time and referred to a Committee of the whole House.

University Grants

In reply to Sir Ernest Graham-Little on March 10 Mr DALTON announced receipt of a report from the University Grants Committee on the needs of the universities for the five years 1947-52. He proposed to resume the pre-war practice of settling Exchequer grants to the universities for periods of five years. They would need Exchequer grants on a rising scale for some time to effect improvements which were due even before the war and to increase the number of students. He proposed that Parliament should be asked to provide recurrent grants rising from £9,000,000 for the academic year 1947-8 to £9,970,000 for 1948-9 and thence by annual increments of £60,000 to £11,920,000 for 1951-2. The recurrent grants for the present academic year would amount to between £6,000,000 and £7,000,000. These figures excluded the grants of £500,000 now made to teaching hospitals which would continue during the financial year 1947-8 and the amount of which for future years had not yet been determined. The University Grants Committee estimated that the universities' requirements of development would necessitate during the quinquennium non-recurrent grants amounting to £50,000,000 of which £40,000,000 would be for new buildings and £10,000,000 for acquiring sites, existing buildings and new equipment. He accepted this estimate of the need and would do his best to meet it. Even after allowing for a high degree of priority the best forecast at present possible did not justify the expectation that universities would be able to undertake more than £20,000,000 worth of new building during the quinquennium. Such a restriction of the building programme must retard to some extent the expansion which the universities had in view. He proposed to review the position from year to year. The sum which Parliament would be asked to vote for the financial year 1947-8 was £11,875,000. This figure included the grants to the teaching hospitals provision for vocational education after the present academic year and £5,000,000 for the capital grants.

Dr. J. H. P. F. C.—The supply position for vacuum flasks is still at a low level. The scheme for one pint thermos flasks cannot be dropped. This scheme according to Sir Stafford Cripps, is a full account of the needs of agricultural and other rural areas as well as of the cases in which there are no other facilities for having a hot drink.

Dr. J. H. P. F. C.—The present production of streptomycin in Britain is very small. The Minister of Supply hopes that by June it will be about 250 grammes per month. The Medical Research Council is concerned with the use of streptomycin in certain types of bacterial infections.

Dr. J. H. P. F. C.—From November 1945 to February, 1946, 1,000 cases of measles in Greater Britain were compulsorily notified. Of these, 100 were found to be suffering from cerebral disease.

The Services

Major General W. Foot, M.C., late R.A.M.C. has been appointed Honorary Physician to the King in succession to Col. (Hon. Brig.) J. S. K. Boyd, O.B.E., late R.A.M.C., retired.

Col. J. Biggam, M.C., late R.A.M.C., has been appointed Honorary Surgeon to the King in succession to Major Gen. R. E. Barnsley, C.B., M.C., R.A.M.C. (ret.).

Major (Hon. Lieut.-Col.) H. Stevenson, R.A.M.C., has been awarded the Efficiency Medal (Territorial).

The President of the U.S.A. has conferred the following decorations in recognition of distinguished services in the cause of the Allies.

Legion of Merit Degree of Commander—Major-Gen. (Temp.) Sir Henry Letheby Tidy, K.B.E., late R.A.M.C.

Legion of Merit Degree of Officer—Col. D. G. Cheyne, C.B.E., M.C., late R.A.M.C., Brig. J. A. MacFarlane, O.B.E., E.D., R.C.A.M.C.

Bronze Star Medal—Col. (Temp.) H. H. Kenshole, D.S.O., T.D. Majors (Temp.) W. G. H. Allen and A. D. Robertson, R.A.M.C.

Medal of Freedom with Bronze Palm—Major (Temp.) G. A. G. Peterkin, M.B.E., R.A.M.C.

The King of Norway has conferred the King Haakon VII Freedom Medal upon Acting Air Cdre R. R. Macintosh R.A.F.V.R., in recognition of valuable services rendered in connexion with the war.

The Queen of the Netherlands has conferred the following decorations in recognition of distinguished services in the cause of the Allies.

Bronze Lion—Capt. J. W. Logan, D.S.O., R.A.M.C.

Bronze Cross—Major (Temp.) C. J. Longland, Capts. T. D. V. Swinseow and D. Wright, M.C., R.A.M.C.

CASUALTIES IN THE MEDICAL SERVICES

Died on Active Service in India on March 6 from injuries received in an accident—Capt. James Campbell Forfar, R.A.M.C.

DEATHS IN THE SERVICES

Col. EDWARD MAUDSLEY MORPHEW, CMG, DSO, died at Cromer on March 8 at the age of 79. A student of University College Hospital, London, he qualified M.R.C.S., L.R.C.P. in 1890. He retired from the R.A.M.C. in 1921, having seen active service in the Tihah campaign of 1897, the South African war, in which he received the Queen's medal with four clasps and the King's medal with two clasps and in the 1914-18 war, in which he was mentioned in dispatches and received the DSO. He was made a CMG in 1918.

AUXILIARY R.A.M.C. FUNDS

The annual general meeting of the members of the Auxiliary Royal Army Medical Corps Funds will be held at 11, Chandos Street, London W.1 on Monday April 14, at 5.30 p.m., when the annual report and accounts for 1946 will be presented and officers and auditors elected for 1947.

The Minister of Health trusts that local authorities will now resume the process, interrupted by the war, of establishing small homes for the aged, and he will consider schemes for the acquisition and adaptation of suitable premises even where priorities or compulsory purchase are involved. A number of such schemes have in fact already been approved. Success has been achieved where the numbers in these homes have been limited to 30 or 35 residents of both sexes carefully chosen to ensure congenial companionship where the maximum amount of freedom has been allowed to the old people where facilities for worship, recreation, shopping and other services have been readily to hand and where the site is well away from the public assistance institution. The present demand is for a greater degree of freedom in the residents' daily routine particularly in the institution and for easier and more frequent contact with the world outside. There should be visiting hours on each day of the week. Where practicable the residents who wish to do so should be allowed to use their own clothes. Each resident should have a wardrobe or locker with keys, where personal clothes and private possessions may be kept in safety. In the past too much caution has been exercised "in the interests of the aged" when framing the rules for the old people's activities both inside and outside the institution. More freedom should be allowed even if the risks are greater.

EPSOM COLLEGE

The council of Epsom College will shortly proceed to award St Ann's Scholarships to girls attending Church of England schools. Candidates must be fully nine and under sixteen years of age and must be orphan daughters of medical men who have been in independent practice in England or Wales for not less than five years. The value of each scholarship is dependent upon the means of the applicant and the locality and fees of the school selected.

Pensions are also available from the Fund of the Royal Medical Foundation for impecunious medical men or their widows, and Foundation scholarships, providing education, clothing, and maintenance free of cost, for the sons of necessitous medical practitioners. Application forms are available from the secretary, Epsom College, Surrey.

Medical News

There will be a discussion meeting of the Medical Society of the L.C.C. Service on Thursday, April 3, at 4.15 p.m., at the County Hall, Westminster Bridge, S.E. Dr McCartney will open a discussion on 'The Uses of Photography in Medicine'. A number of films made by members of the society will also be shown.

A Pasteur Exhibition will be held at the Science Museum, South Kensington, from April 10 to May 26. Arranged with the assistance of the Cultural Relations Department of the French Foreign Office by the Palais de la Découverte in Paris where it has recently been on show, it will include a chronological account of the chemical and biological work of Louis Pasteur on fermentation, putrefaction, the spontaneous generation of life, and on the germs of numerous diseases of men, animals, and plants. A section of the exhibition will deal with the Pasteur Institutes established throughout the world for the preparation of serums and vaccines for the combating of disease epidemics. The museum will be open, admission free, from 10 a.m. to 6 p.m. on weekdays, including Saturdays and bank holidays, and from 2.30 p.m. to 6 p.m. on Sundays.

The 19th annual dinner of the Great Ormond Street Dining Club will be held at the Savoy Hotel on Friday, April 11, at 7 p.m., with Dr Harold Sington in the chair. All members who wish to attend are asked to communicate with the honorary secretary, Hospital for Sick Children, Great Ormond Street, London, W.C.1.

The British Red Cross Society will hold its Easter conference at Exeter University, and has arranged to hold a conference in the North of England on July 4-7, when Durham University is willing to accommodate 150 delegates.

Speaking on 'The Study of Epidemic Influenza' at the Royal Institute of Public Health and Hygiene on Feb. 19, Prof. C. H. Stuart Harris said that the modern study of influenza had begun fifteen years ago with the first laboratory transmission of the disease to the ferret. Technical advances since then had brought the study of the influenza virus within the scope of most well equipped laboratories. Of chief importance had been the proof of the existence of two independent influenza viruses, A and B, and the utilization of the allantoic and amniotic cavities of the chick embryo for cultivation of the virus and demonstration of its specific haemagglutinin (Hirst phenomenon). Epidemics of influenza were studied in order to demonstrate the type of virus concerned and to differentiate influenza from outbreaks of other types of respiratory tract disease. In the past epidemics of influenza virus infection among semi-isolated communities had exhibited a striking variation in incidence, being sometimes a few sporadic cases and at other times explosive outbreaks. When the incidence of influenza in the general population was studied by means of mortality statistics a correlation was found to exist between widespread epidemics and the demonstration of influenza virus infection in the laboratory. There was evidence of a periodicity of influenza virus infection with cycles at well defined intervals. Thus some power of prediction of the likelihood of future epidemics now existed, but the intensity of the future outbreak was still a matter of conjecture. Experimental study of influenza by the inoculation of human volunteers with cultures of influenza virus had been developed considerably during the war both in order to yield information concerning immunity and as a test of the efficacy of artificial immunization. The results provided a basis for field trials of immunization in advance of epidemics of influenza, and the success of these trials had suggested that influenza was a preventable disease.

Mr A. W. McKenny Hughes, D.I.C., who is on the staff of the Natural History Section of the British Museum, has been appointed Hon. Entomologist to University College Hospital.

Sir John Boyd Orr, Director General of the F.A.O., has announced that the World Food Council will probably be set up at Geneva in August.

The first annual meeting and dinner of the Airborne Medical Society were held on March 15. Brig A. A. Egger was elected president and Mr G. Rigby Jones honorary secretary. It is proposed to arrange a dinner annually on the evening of the England-Scotland 'rugger' match and a lunch after the annual Airborne Forces memorial service. Gen. Sir Alexander Hood, who was present as a guest, pointed out that many in the room had been pioneers in developing and practising airborne warfare, and Gen. Urquhart suggested that they could render valuable service to the territorial airborne division now being formed. Besides combatant units that would require medical personnel there would be three field ambulances, located probably at London, Liverpool, and Sheffield.

The annual dinner of the Association of Certifying Factory Surgeons was held at the Café Royal, London, on March 20. Mr George Isaacs, Minister of Labour and National Service, had accepted an invitation to attend but was unable to do so. Proposing the toast of the visitors Dr M. W. Paterson suggested that the 84-hour week worked by most general practitioners might be held to entitle them to the same pensions as those laid down for commissioners and deputy commissioners under the Industrial Injuries Act. In an eloquent reply Mr James Griffiths, Minister of National Insurance, referred at some length to this Act, which gave doctors far greater responsibilities than any of the Workmen's Compensation Acts. He described the Act as 'a new chapter in the treatment of the men and women who serve the industries of the nation'. Dr R. Nightingale, who presided, proposed the toast of the Factory Department of the Ministry of Labour. In the absence of the Minister, Dr E. R. A. Merewether replied. Finally, Dr David McKail responded to Dr Charles Hill's toast 'The Association of Certifying Factory Surgeons'. Dr Hill mentioned the many links between the Association of Certifying Factory Surgeons and the B.M.A.—links which he hoped would be strengthened in the future. He took the view that the aim of both associations must be the provision of the same health service for the smaller factories as was achieved at its best in the larger factories.

On the advice of the Food Rationing (Special Diets) Advisory Committee, the Minister of Food has decided that persons suffering from active tuberculosis and actinomycosis who are granted a priority supply of milk shall also be granted an additional allowance of one ounce of bacon weekly in order to restore to them the recent cut in the ordinary consumer's bacon ration from three ounces to two ounces a week. These invalids are being invited in the present instance to apply at local Food Offices for the additional allowance. In future the medical certificate of classification will provide the necessary authority for issue.

Each year scholarships in Britain are awarded to students usually postgraduates, from a number of countries overseas by the British Council. Since the end of the war scholarships have been offered in return to British graduates by Czechoslovakia, Sweden, the Netherlands, and Finland. Ten scholarships of one year's duration have been awarded by the Czechoslovak Ministry of Education, two scholarships for one year each by the Swedish Ministry of Education and the Swedish Institute for Cultural Relations (including one to J. N. Mickelson, M.D., for the study of diseases of the heart and chest), three scholarships for one year and four for one term by the Netherlands Ministry of Education, and one scholarship for one term by the Finnish Ministry of Education.

A unit for the investigation and treatment of rheumatism under the auspices of the British Legion has, since June, 1946, been in operation at Fairfield Hospital, Letchworth, Herts., where there are 50 beds for this purpose. Fairfield Hospital is the country annexe of the Royal Free Hospital. The unit at Letchworth owes its existence to the initiative of the governing body and medical committee of the Royal Free Hospital.

St George's Hospital is to move from its present site at Hyde Park Corner to the Springfield Estate at Wandsworth. The new building will house 1,000 beds. St George's was founded in 1733 in Lanesborough House on fields overlooking Hyde Park, and was rebuilt on its present site at the 'centre of London' just over 100 years ago.

As a result of representation by local authorities the Secretary of State for Scotland has agreed to the introduction of a standard test for milk apart from designated and heat-treated milks. The test to be used is the methylene blue (Hiscox) test. Milk failing to pass the test will result in investigation into the conditions of its production and handling.

In our account of the British-Swiss Medical Conference in the *Journal* of Sept. 28, 1946, we stated that Mr John Hunter was unfortunately taken ill during the Proceedings. We are glad to learn that he is now back at work.

Dr Doris Odium has been elected a Corresponding Member of the Swiss Psychiatric Association.

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Literature available on request

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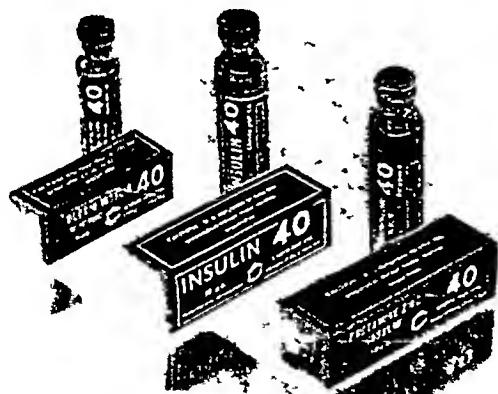
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No 10

INFECTIOUS DISEASES AND VITAL STATISTICS

Print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended March 8

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year for (a) England and Wales (London included) (b) London (administrative county) (c) Scotland (d) Eire (e) Northern Ireland
Figures of Births and Deaths and of Deaths recorded under each infectious disease for (a) The 126 great towns in England and Wales (including London) (b) London (administrative county) (c) The 16 principal towns in Scotland (d) The 13 principal towns in Eire (e) The 10 principal towns in Northern Ireland
A dash — denotes no cases a blank space denotes disease not notifiable or return available

Disease	1947					1946 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever Deaths	86	7	33	5	8	45	3	35	2	2
Diphtheria Deaths	182	20	34	18	12	477	31	116	40	17
Dysentery Deaths	69	11	38	—	—	295	36	64	—	1
Encephalitis lethargica acute Deaths	—	—	1	—	—	2	—	1	1	—
Erysipelas Deaths	—	—	46	13	4	—	—	30	8	1
Infective enteritis or diarrhoea under 2 years Deaths	89	9	21	29	2	55	7	8	43	—
Measles* Deaths	12 137	574	246	21	168	1 672	557	545	60	—
Ophthalmia neonatorum Deaths	81	1	15	1	1	57	2	18	—	—
Paratyphoid fever Deaths	—	4	—	1 (B)	—	—	16	—	1 (B)	—
Pneumonia influenzal Deaths (from influenza)	958	81	18	28	8	849	65	27	17	8
Pneumonia primary Deaths	—	102	303	55	17	—	46	278	23	14
Polio-encephalitis acute Deaths	—	—	1	—	—	4	—	1	—	—
Polio-myelitis acute Deaths	10	1	2	2	—	7	—	—	3	—
Puerperal fever Deaths	—	—	10	—	—	—	—	21	—	—
Puerperal pyrexia† Deaths	128	5	11	—	2	127	6	11	2	1
Relapsing fever Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever Deaths	1 217	79	199	21	37	1 137	75	179	11	20
Smallpox Deaths	7	—	—	—	—	—	—	—	—	—
Typhoid fever Deaths	4	—	1	1	—	5	—	2	4	—
Typhus fever Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough* Deaths	2 461	262	369	109	29	1 843	138	117	34	8
Deaths (0-1 year)	15	11	9	—	2	6	2	—	1	—
Infant mortality rate (per 1 000 live births)	636	79	78	—	17	420	57	66	42	13
Deaths (excluding still births)	7 755	1258	931	—	195	5 770	861	725	277	149
Annual death rate (per 1 000 persons living)	—	—	19.4	—	—	—	—	16.0	17.7	—
Live births	9 650	1 452	1 231	—	274	7 534	1 138	972	356	258
Annual rate per 1 000 persons living	—	—	24.8	—	—	—	—	19.6	22.8	—
Stillbirths	290	33	49	—	—	247	20	29	—	—
Rate per 1 000 total births (including stillborn)	—	—	3.8	—	—	—	—	2.9	—	—

* Measles and whooping-cough are not notifiable in Scotland and the returns are therefore an approximation only.

† Includes primary form for Eireland and Wales London (administrative county) and Northern Ireland

‡ Includes puerperal fever for England and Wales and Eire

Return of births and deaths for Eire for week ended March 8 is not yet available

EPIDEMIOLOGICAL NOTES

Discussion of Table

In England and Wales a decrease in notifications was recorded for measles 1,200, dysentery 23, and acute pneumonia 23 while an increase was reported for whooping-cough 171 and scarlet fever 50

The rise in the incidence of whooping cough was mainly confined to London and the south east and south midland counties, 168 more notifications were recorded in these areas than in the preceding week, but no large local variations occurred. Only small fluctuations were reported in the local trends of scarlet fever

A small decrease was recorded in most areas for cases of acute pneumonia, the only exception of note being an increase of 27 in London. The only appreciable change in the local returns of diphtheria was a decrease of 14 in Lancashire. The largest falls in the notification of measles were Lancashire 440, Middlesex 181, Staffordshire 179, Nottinghamshire 133, Warwickshire 121, and Devonshire 107 counties with an increased incidence included Yorkshire West Riding 94, Derbyshire 62, Somersetshire 56, and Glamorganshire 45

An outbreak of dysentery was reported in Dorset, Poole M.B., affecting 12 persons. The only other important centres of dysentery were Middlesex 12 and London 11

In Scotland a decrease was recorded in the notifications of scarlet fever 29 and of diphtheria 12. There was an increase in cases of acute primary pneumonia 26 and dysentery 22. The notifications of diphtheria have declined continuously for the past month and the 34 cases during the week are the smallest total yet recorded, half of these cases were notified in Glasgow. The increase in the incidence of dysentery was due to its re-appearance after one week's interval, in Banff county where 20 cases were notified this week.

In Eire a rise occurred in the incidence of primary pneumonia 34 and of whooping cough 23. Notifications of diarrhoea and enteritis were 12 fewer than in the preceding week. The rise in the incidence of whooping-cough was due to the experience of Dublin C.B., where cases increased from 62 to 87

In Northern Ireland a further fall of 29 was recorded in the outbreak of measles in Belfast C.B. Diphtheria notifications which had been at a constant level of 6 cases per week rose to 12 cases

Week Ending March 15

The notifications of infectious diseases in England and Wales during the week included scarlet fever 1 336, whooping cough 2 407, diphtheria 184, measles 11 269, acute pneumonia 1 076, cerebrospinal fever 107, dysentery 73, smallpox 2, paratyphoid 5, typhoid 6. Deaths from influenza in the 126 great towns numbered 80

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The pre-clinical departments of Charing Cross Hospital Medical School are to be reopened. The school ceased to teach anatomy and physiology in 1911 and entered into agreements with King's College, London, whereby students of the school attended the college for this instruction, an arrangement which has continued to date. As the accommodation in the medical schools throughout the country is inadequate for the number of students wishing to study medicine the revival of the departments in the school, by absorbing an additional 45 students each year will help to meet the deficiency. It is hoped that the repair of the damage to the school buildings, suffered as a result of enemy action during the war, will be completed in time for the departments of anatomy and physiology to be reopened at the beginning of the next academic year in October. Opportunity will be taken at the same time to admit women students to the clinical as well as to the pre-clinical courses

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A—Ethisterone is a steroid compound whose chemical structure is similar in type to that of progesterone and testosterone.

Other names for it are anhydro hydroxy progesterone ethinyl testosterone and pregnenolone. Its biological actions, according to animal experiment, resemble in some respects those of progesterone and in others those of oestrogens and of androgens. Among other things it has been shown that in rabbits ethisterone can produce progestational changes in the oestrogen primed endometrium and that it prevents abortion which ordinarily follows ovariectomy during pregnancy in these animals. It is on such evidence that it is used in place of progesterone, or as a supplement to it, in cases of habitual abortion. Its advantage over progesterone is that it is effective by the oral route. On the other hand, its biological activity is comparatively weak, and progesterone given by injection is six to ten times more effective. Large doses of ethisterone are therefore required, and although it is widely used in clinical work it is doubtful whether its practical value has yet been established.

Instruction about Menstruation

Q—Could you recommend a book dealing with the physiology of menstruation and suitable for a girl of 12 years? I would prefer one containing diagrams.

A—I do not know of any book on menstruation suitable for reading by a girl of 12 and if any are available the wisdom of giving them to a girl of that age is open to question. She should not be encouraged to concern herself with the details of anatomy and physiology but should be told only the general principles governing menstruation and its management. This information is best imparted verbally and informally, as the occasion arises, by informed parents, or sometimes by the family doctor or school teacher. See also a reply to a question published in the *Journal* of Oct 6 1945 (p 483).

Carcinoma at Site of Insulin Injection

Q—Is anything known of the development of carcinoma at the site of injection of protamine zinc insulin?

A—So far as is known a carcinoma has not developed at the site of injection of protamine zinc insulin though atrophy of the fat may occur if repeated injections are made in the same place. It is advisable to change the site of injection every day.

Causes of Anosmia

Q—A middle aged woman has lost her sense of smell but has had a musty sweet odour in the nose for six months following an attack of influenza. She has since been free from colds. There are no other signs or symptoms. What line of investigation or treatment should be followed?

A—The patient has either a sinusitis which has not been previously located and may be in one or other antrum or an atrophy of the olfactory nerve following influenza. In any case the sinuses should be x-rayed.

Erythromelalgia at the Menopause

Q—Until the age of 45 when the menopause started a woman had severe chilblains every winter since then she has had none. She is now 49 and for the past three years has had increasingly painful burning of the feet as soon as she gets warm in bed with every sign of extreme local vasodilatation. Her blood pressure is 190/100 mm Hg and her last period was two years ago.

A—Although the menopause seems to have precipitated the vascular change in the feet this is not necessarily so, and some features of the case suggest that the two conditions are not directly connected. Thus a change in the circulation of the feet evidently began at least two years before menstruation ceased, and whereas the climacteric disturbance of the vasomotor system, as manifest by hot flushes, seems to be clearing up the vascular upset in the feet is getting worse. It is therefore unlikely that oestrogenic or other hormone therapy will be of any value. The description is fairly typical of one type of erythromelalgia in which the symptoms are brought on by heat rather than posture. If the patient has arterial disease associated with the hypertension this might be an important aetiological factor, and investigations from this standpoint should be carried out. Unless an underlying cause such as

this can be found the treatment of erythromelalgia is not very satisfactory, but, apart from simple treatment such as elevation of the feet and reducing the number of bedclothes, calcium in large doses and quinine sometimes appear to be helpful.

Cold Urticaria

Q—A healthy girl of 19 has for the last five years been subject to attacks of urticaria on exposure to cold. The rash is typical and spreads rapidly over the body. It fades within half an hour if she gets warm. Treatment by calcium injections has had no effect.

A—Cold urticaria indicates a peculiar individual sensitivity to mild exposure to cold or to a certain range of temperatures. In these individuals the slight injury provokes an abnormal quantity of a histamine-like substance in the skin which determines the local and general reaction by urticaria. The susceptibility may date from puberty or sometimes follows an illness, such as influenza. It commonly lasts for a number of years and eventually disappears. The usual lines of treatment have not in the past been of much avail but it is likely that the recently introduced anti-histamine products (for example benadryl) may control the attacks.

Mongolism and Thyroid Deficiency

Q—What is the earliest age at which treatment with thyroid should be started for mongolian idiocy? What is the dosage and what if any are the precautions that should be taken? Is it of much use?

A—Mongolian idiocy is not caused by a thyroid deficiency, therefore treatment with thyroid will not be of benefit. It is remotely possible that a mongolian idiot might also be a cretin, although no such combination has ever been reported. In these circumstances the cretinism should be treated with thyroid, starting with 1/4 gr (16 mg) daily in early infancy and later increasing the dose to 1/2 gr (32 mg).

Heat Reflection

Q—Is there a suitable material for covering the screen behind an invalid's chair so as to reflect the heat from the fire? Can walls or ceilings or even curtains be made to reflect heat?

A—A bright polished surface reflects most and absorbs least. White and light-coloured materials reflect most, and dark and black materials absorb most. A dark material lining an invalid chair will absorb more from a fire and become warmer while a polished metal screen encircling the chair will reflect the heat of the fire on to it. On the other hand, a dark screen will become warm and warm the surrounding air.

INCOME TAX

All inquiries will receive an authoritative reply but only a selection can be published.

Residence Abroad

***COLONIAL** is shortly taking up an appointment abroad. He has an income arising in this country—£360 gross taxed at source plus £22 10s which is not taxed and which we assume to be derived from 3½% War Stock. Will he be able to reclaim the tax paid in the United Kingdom?

***Not entirely.** Assuming that "Colonial" is not retaining a residence in this country, he will be entitled, as a British subject residing abroad, to claim a proportion of the reliefs claimable by residents here. For instance, his British income (excluding the war loan interest on which he will be able to claim exemption) will be about one half the colonial income, and he will therefore claim one-half of the reliefs due in respect of personal allowance, the reduced rate applicable to the first £125 of taxable income, etc.

Cost of Telephone

R holds an appointment—his duties require him to be on call though the majority of the calls are private ones. What can he claim as a deduction from his salary?

***The current costs of his telephone—i.e., total cost less any "instalment" expenses—in the proportion of the "employment" calls to the total. No doubt the amount will have to be estimated.**

Letters and Notes

Twelve Toes

Dr ARDESHIR K TURNER (Bombay) writes I am tempted to bring this case of 'nature's freak' before the medical practitioners of England and other countries. The photo is that of a Hindu



labourer (household worker) aged 25. He has two big toes on both his feet and can walk without the least difficulty or pain. His hands and fingers are all right. He is a bachelor. None of his relations shows this abnormality.

Prognosis of Hypertension

Dr W WEISS (London NW6) writes I read Dr V C Medve's letter (Feb 15, p 269) on the 'Prognosis of Hypertension' and learned that apparently great conflict has arisen with regard to the fact that the blood pressure in old people is above the arithmetical average. A blood pressure to be regarded as 'high' in middle age may be low in old age. It is not the reading of the blood pressure as such which has to be taken into account when a prognosis is to be made, the problem is, how does the motor the heart, react to the blood pressure level? The heart certainly will often have to work harder when a blood pressure rises, and it makes no difference to the organ whether the blood pressure rises in younger days (hypertension) or whether the rise occurs (physiological) in older days—the heart will be urged to work harder. And so at best it depends entirely on the vitality or muscle power of the heart muscle whether the old patient will have to be recognized as a 'hypertonic' or not.

Hospital Bureaucracy

Mr G H CAIGER FRCS (S Africa) writes The African servant of a friend of mine fell off a bicycle returning from a garden on the outskirts of the town. When he had not returned before dark the mistress learned from the police that the boy had been admitted to the local Government hospital with a fractured forearm (lower third of the right radius). This occurred on a Thursday. She rang up and also visited the hospital to find out and see how the boy was. Someone in the 'phone inquiries' seemed to think it very funny her asking about a patient and could be heard laughing and repeatedly saying 'poor Willie X'. As if once was not enough this was repeated again the next day on making inquiries, but the mistress's humour was by this time flagging somewhat. No radiographical examination had been made before the week end, and on the Monday the mistress was informed that the 'doctor' (H.S.) had been away for the week end. Being a trained nurse she repaired to the hospital to see if things could be expedited, and soon succeeded in demolishing the myth that the doctor had been away, and got an admission that he had been there all the week end. On the following day Tuesday, five days after admission she was informed on inquiry that the x-ray showed the bone in good position and it was not necessary to set the fracture. Till now only the temporary splint had been left on, the arm remaining painful. They could not say when he would be fit to discharge. Unhappy about the whole position and planning to leave on holiday on the Thursday, she suddenly in her extremity remembered a friend of her husband's in charge of a missionary hospital for Africans, and she repaired to him for advice. He is an American and so put his hand in his pocket from long usage, produced his car keys and said, 'Take my car drive down to the hospital get the boy discharged bring the x-rays and the boy to me. The boy was admitted, the fracture set under an anaesthetic and the arm put in plaster, and the boy was sent out that afternoon. The final result has been 100% and the boy has full use of the arm. It is easy to tell this little tale, which, although it concerns an African, may as easily apply to others before long. In my opinion it illustrates the difference between the bureaucratic ridden institution

and the hospital as those who know what it should be and as they would like to see it. Soon those who know the best tradition will not be there, or submerged beneath a sea of bureaucracy, as they fear their patients with them. This, as I see it, is the central fear of many that the belief in 'drive, organization, and will-power' does not build real systems of healing and endangers the finer spiritual qualities without which the best cannot be achieved or maintained.

Shadows under the Eyes

Dr HUGH A L O LATT (Liverpool) writes Shering Di Bernard Sweetman's interest (Feb 15, p 283), the one constant factor in those I have observed seems to have been emotional inhibition. It is most noticeable in young people with finer, softer skins and more resilient subcutaneous tissues, and three groups as examples come to mind: (1) Children prevented from free expression in play; (2) young people from 15 to 25 denied free social intercourse by too strict an upbringing; (3) students not taking sufficient physical and mental relaxation while swotting for examinations. Assuming the relative overworking of inhibitory impulses from the prefrontal gyrus makes increased blood drainage via the tributaries of the anterior cerebral veins one can postulate that some of these will be shunted via the anastomotic veins adjoining the anterior cerebral to the ophthalmic veins. The relative subcutaneous venous engorgement at the inner angle of the eye and on both eyelids is easily visible, but attention is focused on the area just beneath the eyes where the contrast with the skin of the cheek is so marked. The dramatized 'hollow eyes' of grief, anguish and villainy seem to be the sign in its most pronounced form.

Dr JOHN CAHILL (Middlesbrough) writes Referring to Dr Bernard Sweetman's inquiry (Feb 15, p 283) as to the causes, other than gross organic disease, of shadows under the eyes it appears that such shadows in the young are most frequently associated with fatigue in a nervous child.

Cracked Nipple

Dr D RUD TWEDIE (Sungei Siput, Perak, Malaya) writes Having failed with all the usual nostrums to disperse a painful crack in the nipple of a nursing mother I tried the effect of applying after feeds a drop of a strong solution of penicillin (20,000 units to 1 ml), and was astonished and pleased to find that the crack granulated up and disappeared in about 72 hours.

Penicillin for Colds

Dr J A ROUTH (Brighton) writes In reply to your correspondent (March 1) who asks if penicillin has been tried for colds I have tried it on myself and family with great success. The technique is simple. I use the ointment in a tube with a small nozzle and squeeze a small amount into each nostril, massage the nose slightly and then sniff up the ointment. The effect was most encouraging—the sneezing and running of the eyes and nose stopped immediately and the extension of the coryza to the bronchial tubes was arrested. This treatment should be investigated.

Disclaimer

Dr R CUDDEFORD (Cross in Hand Sussex) writes I am the doctor mentioned in an article on a three pound baby in the *Sussex and County Herald* dated Feb 14, 1947. I was not aware that this was printed in a public newspaper until it was pointed out to me. I am in no way responsible for the publicity, which is apparently the effect of the grateful parents.

Correction

In the reply to a question about 'dilatant' (Feb 15, p 28) we should have made it clear that 'dilatant' is the proprietary name in America for sodium diphenylhydantoinate, introduced many years ago by Parke Davis and Co., following the work by Merrifield and Putnam to which reference was made (*Science* 1937, 85, 57). In this country 'dilatant' became 'epanutin', and the drug sold by other firms as phenytoin soluble and as sodium diphenylhydantoinate.

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PETHIDINE IN LABOUR: RESULTS IN 500 CASES

BY

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The search for the ideal analgesic agent for use in obstetrics has continued for very many years and innumerable agents have been recommended. Pethidine is a comparative newcomer to this field, and although it has already received extended trial its value, uses, and limitations do not seem to be as well known as they should be. This article embodies the results of its use in over 500 cases in the Obstetric Unit at University College Hospital between the years 1942 and 1946.

Chemistry and Pharmacology of Pethidine

Pethidine is 1-methyl-4-phenyl piperidine-4 carboxylic acid ethyl ester hydrochloride. In Germany, where it was originally discovered and in South America it is known as "dolantal" or "dolantin". In the USA and Canada it is known as "demcrol," and it has also been known as S-140 and D-140. It is unfortunate that these different names have come into use in different countries, since it leads to confusion. The original description was given by Eisleb and Schaumann (1939), who introduced it as a synthetic substitute for atropine. They found that it not only possessed spasmolytic powers similar to those of atropine but also was antagonistic to acetylcholine, tended to depress the action of smooth muscle, and had a marked analgesic effect. Dietrich (1939) as a result of clinical trial found pethidine useful as an antispasmodic and analgesic.

Duguid and Heathcote (1940) found that pethidine has no haemolytic effect on erythrocytes and no effect on unicellular organisms. They noted a depression of all types of muscle—cardiac, striated and non striated. Pethidine also causes a non-toxic fall of blood pressure, depresses the respiratory centre, and acts as an analgesic by relieving spasm of smooth muscle and by raising the pain threshold. Gruber, Hart and Gruber (1941) confirmed the fall in blood pressure, which they showed was due to preliminary vasodilatation. They found respiration temporarily diminished in depth and frequency, and that the effect on smooth muscle was unpredictable. No effect was noted on intact smooth muscle contractions were maintained, and the analgesic effect was not due to spasmodic. Generally, the effect on the uterus was one of stimulation, though to a less degree than with posterior pituitary extract. Roehrschild (1941) stated that pethidine is a powerful analgesic with an action like that of morphine. It stimulates rather than depresses the central nervous system. No effect was observed on the pulse or the pupils, but the fall of blood pressure was noted and also depression of respiration, though only with large doses. Batterman (1943) confirmed the above findings and stated that pethidine is more valuable for relieving pain of visceral origin than that of peripheral origin. He noted a tendency towards dizziness and faintness and doubted if the drug was safe for ambulatory patients. Syncope was occasionally seen. Batterman and Himmelsbach (1943) studied the effects of pethidine and compared them with those of morphine. They tested the analgesic effect by raising the pain threshold, using the method

of Hardy, Wolff, and Goodell (1940). Batterman and Himmelsbach found that the pain threshold was raised to a maximum in one hour and that the effect lasted up to six hours. The usual duration of analgesia was about three hours. They found that 50 mg of pethidine was equivalent to 22 mg of codeine and to 17 mg of morphine, but that the duration of its effect was shorter. They confirmed its value in visceral pain, especially in the colicky type, and quoted a personal communication from G. Woodby, who found no effect on the action of the uterus in labour. They considered the addiction liability less than that of morphine.

The question of the liability of pethidine to cause addiction was studied by Himmelsbach (1942), who stated that it was much less than with morphine. He observed tremor when pethidine was given over a long period. Andrews (1942a) using patients addicted to morphine, found that a tolerance is developed to the pain-threshold-raising effect that is maximal at eight weeks and is maintained for 30 days after discontinuance. Andrews (1942b) also found that morphine addiction causes changes in the electroencephalogram and that pethidine in very large dosage has powerful cortical effects, which are pleasant and might lead to addiction. The doses given were enormous—in the region of 3,000 mg. Yonkman, Noth, and Hecht (1944) noted that pethidine is safe, is readily absorbed, and possesses a weak atropine-like action with a strong papaverine-like effect on smooth muscle. The effect was more intense in the presence of spasm or stimulation. Noth, Hecht and Yonkman (1944) noted analgesic effects similar to those observed by Batterman and Himmelsbach (1943). They found a slight tendency to addiction.

Uses of Pethidine in Medicine, Surgery, and Gynaecology

Pethidine on account of its analgesic and spasmolytic effects has been used for relief of pain in medical, surgical, and gynaecological conditions. Christie (1943) gave pethidine by mouth to 335 cases, comparing its effect with that of tab. codein. He found that in 46% of cases pethidine was more effective than the codeine preparation, in 21% as effective, and in 33% it was ineffective. He found the analgesic effect less than that of morphine but generally enhanced when pethidine was given by injection. Branwood (1943) described clinical trials with pethidine, and concluded that it was valuable for biliary, renal, and intestinal colic and for hypertensive headaches. It was useless for neuritic pain. Sleep and drowsiness tended to occur independently of pain relief. A fall in blood pressure was noted, especially when pethidine was given intravenously, but no toxic effects were observed and no changes in blood or urine. FitzGerald and McArdle (1943) used pethidine in twelve neurological cases and found the effect comparable with or superior to that of morphine.

Objectionable side-effects such as giddiness, nausea, and faintness were noted when pethidine was given intravenously

Rovenstein and Batterman (1943) described the use of pethidine with scopolamine for premedication. They found that patients tended to complain of thirst and dryness of the mouth. They noted, however, that this combination provides psychic sedation, does not depress respiration so much as morphine, facilitates induction of anaesthesia, has more effect in drying secretions than morphine, has fewer undesirable side-effects, and reduces the amount of anaesthesia required as much as morphine. Batterman and Mulholland (1943) studied the effect of pethidine as a substitute for morphine for post-operative pain. They found it satisfactory, though side-effects such as dizziness and nausea were noted. These might partly be due to the anaesthetic. The action was short—only about two hours. They prefer pethidine to morphine since it rarely causes respiratory depression, has an antispasmodic effect, dries mucous secretions, and does not suppress the cough reflex.

Sostmann (1940) used pethidine as a substitute for morphine in gynaecology. He found that the minimum effective dose was 25 mg by mouth, 50 mg by injection, and 100 mg per rectum. He observed a good analgesic and spasmolytic effect. Hecht, Noth, and Yonkman (1943) studied the general effects of pethidine in 111 patients. They noted certain toxic effects, including dizziness, nausea, vomiting, dryness of the mouth, and euphoria. They found no effect with normal dosage on the blood or electroencephalogram, and concluded that pethidine can be used as a substitute for morphine. Hori and Gold (1944) reported a good effect from the use of pethidine in 2,000 cases, though this was weaker and of shorter duration than that of morphine. In post-operative cases there was less need for catheterization and the constipating effect was less than when morphine was used. Pethidine can be combined with scopolamine and with the barbiturates. In 50 obstetrical cases good sedation was obtained in 30, but the effect was better when pethidine was given with scopolamine.

Pethidine in Obstetrics

The first account of the use of pethidine in labour was that of Benthin (1940), who described its use in 400 cases. Pethidine was given alone in 250 cases and combined with amidopyrine in 150. The optimum dose was found to be 100 mg given by intramuscular injection and repeated once or twice if necessary. The course of labour was uninfluenced and the child was not affected. The same author (Benthin, 1942) recommended an initial dose of 100 mg combined with rectal administration. He claimed that pethidine reduced the duration of labour in 30- to 40-year-old primiparae to 13½ hours. He found that pethidine could usefully be combined with oxytocics such as "thymophysin". Sonnek (1941) stated that labour was facilitated by the use of pethidine, and Fuchs (1941) claimed good results from the use of twilight sleep induced by pethidine and an intravenous barbiturate.

Gilbert and Dixon (1943) administered pethidine to 150 women in labour. The drug was given alone to 54 primiparae, the highest dose used being 650 mg and the lowest 100 mg. The average total dose was 294 mg. The average time elapsing between the last dose of pethidine and the end of labour was 2 hours 42 minutes, and the average total length of labour 11 hours 18 minutes. In 62 primiparae pethidine was used in combination with "seconal" (sodium propyl-methyl-carbinyl allyl barbiturate). The average duration of labour and the length after the final dose were similar to those in cases where pethidine was

given alone, and 72% of patients gained satisfactory analgesia with pethidine alone, though in no case was there amnesia. When pethidine was combined with "seconal" satisfactory amnesia could be obtained only with large doses—4½ gr (0.29 g) or more—of seconal. Toxic effects in the mother included dizziness and lightheadedness, also thirst and dryness of the mouth when a general anaesthetic was given as well. No effect on the third stage of labour was noted. Pethidine given alone had no apparent effect on the baby, but when combined with other methods, especially barbiturates, a slight to moderate depressant effect was noted, and treatment for foetal apnoea was necessary, though there were no foetal deaths from this cause. Gilbert and Dixon suggest as a programme for the conduct of labour that three 100 mg doses should be given in the early stages and that the pethidine dosage should be completed early in labour. Amnesia may be added with other drugs when necessary.

Roby and Schumann (1943) presented a preliminary report of the use of pethidine combined with scopolamine in labour in 112 cases. They gave an initial dose of 100 mg of pethidine, with 1/100 gr (0.65 mg) of scopolamine, followed by 1/100 gr of scopolamine one hour later. Schumann (1944) gave a further report on 1,000 cases. These authors claim satisfactory amnesia in 70.5% and a shortening of labour by 2½ hours in primiparae and 1½ hours in multiparae. In patients expected to deliver themselves quickly, intravenous administration was used with no demonstrable ill effect, except for transient nausea. Of 37 patients delivered without anaesthesia 79% could recall no pain whatever. No demonstrable effect was noted on full-time or premature babies. Schumann claims that pethidine combined with scopolamine is superior as an obstetric analgesic to others in common use.

The following scheme of dosage is recommended. An initial dose of 100 mg of pethidine and 1/100 gr (0.65 mg) of scopolamine is given. Forty-five minutes later a further 1/150 gr (0.43 mg) of scopolamine is given, and 100 mg of pethidine with 1/200 gr (0.32 mg) of scopolamine four hours later. This is followed as required by 100 mg of pethidine every four hours and 1/200 gr of scopolamine every three hours. Mackenzie (1943) described two cases in which 50 mg of pethidine hastened dilatation and relieved distress in the course of prolonged labour.

Gallen and Prescott (1944) described clinical studies in 150 cases. They gave 200 mg of pethidine alone or in combination with scopolamine or with a bromide chloral and-opium mixture ("mother's mist"). They found that pethidine acts in 15 minutes and the effect lasts three to four hours. Amnesia was noted in only one case where morphine and scopolamine were also given. The duration of labour was apparently prolonged, but the forceps rate was 10%—not a significant increase. Toxic reactions included vomiting, rise of blood pressure, dizziness, vertigo, and dryness of the throat, but the pethidine was given by the intravenous route. Nine babies required resuscitation, and these authors doubt whether pethidine should be given within 2½ hours before delivery is expected.

Cripps, Hall, and Haultain (1944) in a report of 102 cases concluded that although pethidine is not the ideal obstetrical analgesic it fulfils many of the conditions required of such an agent. It is not always successful in producing analgesia, but no undue excitability was noted. Amnesia occurred only when hyoscine (scopolamine) was given as well. Pethidine was found useful for premedication for caesarean section under local analgesia in six cases. Spitzer (1944) described a series of 80 normal mothers in whom all but 10% received satisfactory relief

at pain in labour with pethidine. The oral route was used and doses of 50 mg initially, followed by 25 mg, were given. No side-effects were observed. Spitzer claims, though without statistical evidence, that pethidine has a remarkable shortening effect on normal labour. Venters (1944) described a routine for labour where a bromide and chloral mixture was combined with diamorphine (heroin). Recently good results had been obtained by substituting pethidine for heroin, either entirely or in part. Steinberg (1945), in describing 400 cases where pethidine and scopolamine had been used in labour, noted three cases in which oedema of the uvula occurred, one having oedema of the glottis as well. All three exhibited a cutaneous sensitivity to scopolamine, as did a fourth case in which oedema of the uvula occurred after the use of seconal and scopolamine. While not completely relevant to the discussion of pethidine in labour, this represents a complication of the use of scopolamine that might well prove dangerous.

Lull and Hingson (1945) describe pethidine as one of the safer drugs for obstetric analgesia, though they believe that depression of foetal respiration occurs comparable to that present in the mother. Less narcotization of the baby is seen than with morphine. They recommend the combination of pethidine with scopolamine or barbiturates.

It will be seen from the review of the uses of pethidine that it promises well as an obstetric analgesic, though it does not gain universal or unqualified approval. Its chief advantage seems to lie in its relative safety to mother and child and in the relative rarity of toxic effects. It certainly deserves extended trial, and the object of this paper is to present results in such a trial, to assess its scope and limitations in obstetrics, and to make recommendations for its use in the future.

Clinical Results

Pethidine was first used for obstetric cases in the Obstetric Unit at University College Hospital in 1942. In order to establish the safety of this then relatively new drug a preliminary trial was carried out in 47 cases using doses of 50 mg. No toxic effects were noted, but it seemed that this dosage was inadequate.

Between 1942 and 1946 a full trial was given in 500 labours. Pethidine was not administered to every patient in labour, but only to those who appeared to require a sedative or analgesic. These cases are thus to some extent selected, since patients who had easy and relatively painless labours did not receive pethidine. The dose used was 100 mg given by subcutaneous or intramuscular injection, and repeated as required. In many cases pethidine was combined with other sedatives and analgesics, patients receiving nitrous oxide and air analgesia or "trilene" in the later stages of labour. In a few cases where pethidine appeared to be insufficient, morphine or papaveretum (omnupon) was given later in labour. No case received hyoscine since it was desired to ascertain as far as possible the effects of pethidine alone.

This series of 500 cases included eight pairs of twins, so that 500 mothers gave birth to 508 infants. There were 479 primigravidae and 21 multiparae. The total dosage given was as follows:

4 mothers received 100 mg	9 mothers received 400 mg
124 " 200 "	2 " 500 "
1 mother " 250 "	1 mother " 600 "
14 mothers " 300 "	

A single injection of 100 mg was adequate for the majority of labours, and a high proportion of the remainder required only two doses. Table I shows the method of delivery in these 500 cases.

TABLE I—Method of Delivery

	Primigravidae	Multiparae
Spontaneous vertex presentation	415	20
Forceps	46	0
Breech presentation	8	0
Face presentation	3	0
Twins	7	1
Total	479	21

There was no maternal mortality. Slight toxic effects were noted in eleven mothers. These included dizziness, a feeling of faintness, giddiness, or numbness, sweating, and slight retching. One mother stated that the injection made her feel 'fighting mad'. These effects were transient.

Of the 508 babies 21 were lost: 8 were stillborn and 8 macerated—a stillbirth rate of 16 (3.2%)—and there were 5 (1%) neonatal deaths, making a total loss of infant life of 4.2%. Of the 8 stillbirths, two followed forceps delivery, two breech delivery, two were found to have atelectasis at necropsy, but both had died *in utero* before pethidine was given. One infant had a bilocular heart and the eighth was a premature twin weighing only 2 lb 6 oz (1.1 kg). Five of the macerated infants died in labour for no apparent cause, and the remaining three consisted of one pair of twins and a premature twin infant. Two of the neonatal deaths were due to gross deformity, one to asphyxia following forceps delivery, one to prematurity, and one to white asphyxia following a very long labour. It was not felt that the administration of pethidine contributed in any way to the infant deaths.

Signs of asphyxia at birth were noted in 55 infants. Of these, 13 were born in a state of white asphyxia or shock, but in all except one there was a definite cause such as operative delivery. Of the rest, the type of asphyxia was not stated in three cases, and in 39 the infant was slightly blue at birth or slow to breathe.

The mean time elapsing between the last dose of pethidine and delivery in the 500 cases was 6.74 hours. It was found, however, that 143 mothers were delivered less than three hours after the last dose, 51 three to four hours after the last dose, and 56 four to five hours after the last dose. In the cases of the mothers of the 55 babies suffering from asphyxia it was found that 13 were delivered less than three hours after the last dose, 4 three to four hours after, and 2 four to five hours after. In view of these findings it seems doubtful if pethidine contributed to foetal asphyxia to any serious extent, though in a few cases it may have caused slight respiratory depression.

The effect of pethidine on the mother in labour was studied in the following ways. Those responsible for the conduct of labour were asked to observe and report the analgesic and amnesic effects of pethidine, and, in addition, patients were asked, either shortly after delivery or on the following day, to express an opinion on the relief of pain and the sedative effect given by the injections. Satisfactory answers were not obtained in all cases, since the memory of labour is often blurred by natural amnesia or by the effect of other analgesics such as nitrous oxide or trilene or by a general anaesthetic given for instrumental delivery. The results are summarized in Tables II, III, and IV under the headings analgesia, amnesia, and patients' opinion.

TABLE II—Analgesic Effect of Pethidine in Labour

Complete analgesia	26
Good analgesia	208
Slight relief of pain	84
No relief	110
Not stated	72
Total	500

Thus out of 428 patients satisfactory analgesia was obtained in 234 (55%). Some analgesia was obtained in 318, or 74% of these 428 cases. In many of the cases in which there was no relief the injection was given much too late in labour—towards the end of the first stage, when it was found that pethidine was often ineffective and that inhalational analgesia as by nitrous oxide and trilene was to be preferred.

TABLE III—*Amnesic Effect of Pethidine in Labour*

Good or complete amnesia	21
Slight amnesia	13
No amnesia	394
Not stated	162
Total	500

Thus out of 338 patients only 34 (10%) obtained any amnesic effect. This confirms the findings by others that pethidine has little such action when given alone. If amnesia is required, some other drug such as hyoscine must be added.

TABLE IV—*Patients' Opinion of Pethidine in Labour*

Very enthusiastic complete relief of all symptoms	30
Good relief of pain	103
Slight relief of pain	18
Slept after injections	126
Able to rest well after injections	96
Able to relax after injections	35
Relieved nervousness	2
Appeared to hasten labour	5
Doubtful	23
No effect	62
Total	500

These results were summed up under the above heading as representing most adequately the statements made by patients when questioned regarding the effects of pethidine. The answers appear to fall into two main groups—those who claimed relief of pain and those who experienced a sedative effect, permitting sleep in many, and in others inducing a feeling of restfulness and relaxation. Out of the 477 patients who gave satisfactory answers, 415 (87%) had had some relief of symptoms following the administration of pethidine. Several patients stated that they found the effect of pethidine of short duration.

The effect of pethidine on the course of labour was studied by noting the action of the injection on the uterine contractions. No effect was noted in 334 cases, or 67%. In 118 (23.3%) the strength of the contractions seemed to be increased and the course of labour hastened, while in 44 (8.8%) the contractions appeared to diminish in strength. No record was available in four cases.

It has been claimed that pethidine reduces the duration of labour, and it was decided to investigate this point by determining the length of labour in this series and in a control series in which no pethidine was given. For control purposes the duration of labour in primigravidae delivered in the Obstetric Hospital, University College Hospital, in the year 1939 was estimated. This year was chosen because 1940 and 1941 were abnormal years, and pethidine has been consistently in use in the hospital since 1942. The results are given in Table V, which shows the mean duration of

TABLE V—*Effect of Pethidine on the Duration of Labour in Primigravidae*

	Total	1st Stage (hrs)		2nd Stage (mins)		3rd Stage (mins)	
		Mean	S D	Mean	S D	Mean	S D
Pethidine	476	29.5	22.0	118.1	117.0	31.2	27.1
Controls	619	22.2	21.2	113.3	90.5	27.0	34.5
Difference		7.3		4.8		4.2	
Standard error of difference		1.3		6.5		1.9	

the first, second, and third stages of labour in 476 out of the 479 primigravidae who received pethidine compared with those in 619 primigravidae delivered in the hospital in 1939.

It will be seen that the patients who received pethidine had a significantly longer first stage than the controls, while there is an apparent prolongation of the second stage which is not significant and is of less than five minutes. The difference in the duration of the third stage is also slight and barely statistically significant. It is fully realized that the pethidine cases were specially selected on account of distress in labour, and form only a portion of the patients delivered in the hospital between 1942 and 1946, so that this is by no means an adequately controlled series. Ideally, of course, for the purpose of such a series, pethidine should be given to alternate primigravidae in labour, but there are many practical difficulties in the way of such an experiment, including the fact that not infrequently patients arrive in the hospital very late in the course of labour and often in the second stage. These results do not, however, support the claims that pethidine reduces the duration of labour.

Forceps delivery was performed in 46 out of the 500 patients who received pethidine in labour. This gives a forceps rate of 9.2%. During the year 1939, 927 patients were delivered in the hospital, 22 by caesarean section. Of the 905 patients delivered per vaginam forceps delivery was performed in 71—a forceps rate of 7.8%. The difference between the two groups is not statistically significant, and in any event the higher proportion of primigravidae in the cases receiving pethidine probably accounts for the slightly higher rate of forceps delivery.

Post-partum haemorrhage—a loss of blood exceeding 20 fl oz (568 ml) after the birth of the baby—was noted in 16 of the 500 cases receiving pethidine. In six cases haemorrhage followed forceps delivery, in one case extraction of the breech was performed under anaesthesia, and there was one case of twins. No cause was apparent in the remaining eight cases. This low incidence suggests that pethidine given in labour does not in any way cause an increased tendency to haemorrhage in the third stage.

As was stated earlier, many of the patients in this series received some other analgesic or sedative in addition to pethidine. It was found that pethidine could be effectively combined with chloral hydrate, 2 fl dr (7 ml) (22 gr (1.5 g) of chloral hydrate) being given by mouth 20 minutes after the injection of pethidine. For the later part of the first stage and for the second stage, nitrous oxide or trilene analgesia was given in many instances. For forceps delivery general anaesthesia was always used.

Pethidine as Premedication for Caesarean Section

Because pethidine appears to produce little or no depression of the foetal respiratory system, even when given shortly before delivery, it has been used for premedication in cases of caesarean section. Records of 37 operations are available for the present series. Pethidine was given in combination with atropine gr 1/100 (0.65 mg), four patients receiving 100 mg, 27 receiving 200 mg, and one, to whom 500 mg of pethidine had previously been given in labour, a total of 600 mg. There was no maternal or foetal mortality. Slight asphyxia was noted in 10 infants, but in eight delivery had been performed under general anaesthesia. In one case epidural analgesia combined with nitrous oxide was used, while delivery in another was accomplished with local analgesia. In this last case there was a slight depression of respiration but recovery was rapid.

General anaesthesia was employed in 17 cases. Epidural analgesia was used alone in six cases and supplemented by nitrous oxide and oxygen in seven. One patient was delivered under local analgesia and one under local analgesia supplemented by cyclopropane. The high proportion

of cases of epidural analgesia is accounted for by the fact that this method was under trial in the hospital while the investigation of pethidine was taking place. Six of the infants were premature, weighing from 3 lb 1 oz (1.4 kg) to 5 lb 8 oz (2.5 kg). In none was there any sign of asphyxia.

This small series is included because it gives evidence regarding the effect of pethidine on the infant. In almost every case the second dose of 100 mg of pethidine was given well within an hour preceding the operation. In only one case could any effect on the foetal respiratory system from pethidine alone be noted, and this was slight and transient. In the cases receiving general anaesthesia it is difficult to assign responsibility for foetal asphyxia. The effect on the mother is not easy to assess, especially as so many received general anaesthesia. The impression was gained that a more useful effect would be obtained by combining pethidine with hyoscine as premedication for caesarean section, though a series of cases would be necessary to prove the safety of this.

Conclusions

Six criteria for the ideal method of relieving pain in labour were laid down by Sturrock (1939). As a result of the experience in 500 cases it is now proposed to attempt to assess how far pethidine fulfils his conditions.

1 "That it does not endanger the life of the mother or child or in any way have an adverse effect upon them"—Pethidine appears to satisfy the first part of this criterion. In the present series there was no maternal mortality. The foetal mortality was low and in no case could foetal death be attributed to pethidine. Toxic effects noted in the mother were slight and transient, amounting to little more than dizziness or a feeling of faintness. It has been stated that pethidine has a slight but definite depressant effect on the foetal respiratory system. In the present series pethidine may have accounted for a few of the cases of slight asphyxia or of slowness in achieving normal respiration. The condition was never severe enough to cause anxiety and recovery was always rapid.

2 "That it abolishes or diminishes pain and the memory of suffering over long periods"—Good analgesia was obtained in the present series in 55% of cases, while 74% of patients obtained some relief of pain. In some of the cases where pethidine failed to procure analgesia it is suggested that the injection may have been given too late in labour. In addition, a definite sedative effect was claimed by a large number of patients, so that 87% experienced relief of symptoms in some form. It does seem possible that there is some personal idiosyncrasy to pethidine. This is noted when pethidine is given in medical, surgical, and gynaecological cases, some patients obtaining marked relief while in others there is little or none. Pethidine has little or no amnesic effect, and if amnesia is required in labour it is suggested that hyoscine be given in addition though it is doubtful whether complete amnesia is either essential or desirable in every labour. Sturrock's second criterion is thus only partly fulfilled by pethidine.

3 "That it does not diminish uterine contractions and thereby delay labour or predispose to atonic post-partum haemorrhage"—In 67% of cases no effect was noted on uterine contractions. In 23% the contractions appeared to increase, and in 8% there seemed to be a slight diminution. The first stage of labour lasted longer in the primigravidae receiving pethidine than in a control series of primigravidae delivered in 1939, but there is a probable fallacy in this observation since the cases receiving pethidine were selected on account of difficulty or distress in labour. No tendency to post-partum haemorrhage was noted.

4 "That during the second stage it does not prevent the patient from co-operating intelligently with the doctor so that an anaesthetic and aseptic technique can be maintained"—This condition is amply fulfilled when pethidine alone is used, as the slight effects of pethidine on the patient do not prevent co-operation.

5 "That there is no necessity for operative delivery solely on account of the method used to alleviate pain"—This condition is also fulfilled, since there was no evidence of an increase in the number of patients requiring forceps delivery after pethidine.

6 "That it is simple to give"—This criterion is easily fulfilled, as a single injection of 100 mg of pethidine appears to suffice for the majority of labours, though some require a second injection and a few three or more. The method of administration, however, presents no practical difficulties.

It may be concluded that pethidine approaches the criteria for an ideal analgesic for use in labour more nearly than any other known substance. Its chief advantages are safety, lack of toxic effects, lack of effect on the course of labour, and simplicity of administration. It may also usefully be combined with other agents. Hyoscine has not been employed in this series, but reports of its use in combination with pethidine are encouraging. It would seem to give the advantage of amnesia, but with the possible disadvantage of lack of co-operation of the patient in the later stages of labour and thus of a possible increased need for instrumental delivery.

It is not suggested that pethidine is necessary in every labour. It is well known that many labours are relatively painless and that much can be done for the patient by encouragement, allaying nervousness, and by the practice of relaxation. These facts are well known and everything must be done to apply them. There are still many cases in which there is real distress. Pethidine helps such patients by allaying suffering and by inducing sleep or restfulness. It is suggested that 100 mg of pethidine be given by injection as soon as the uterine contractions are causing distress. This dose may be repeated in one hour if necessary and thereafter as required. Chloral hydrate given in addition has appeared to enhance the effect. For the later stages of inhalational analgesia in the form of nitrous oxide and air or oxygen or trilete may be used if necessary. This combination will give relief in the majority of cases and is simple and safe.

Summary

The results of the administration of pethidine in labour to 500 patients—479 primigravidae and 21 multiparae—are given.

There was no maternal mortality. Eleven mothers noted slight toxic symptoms.

The foetal mortality was 16 stillbirths (3.2%) and 5 neonatal deaths (1%). Signs of asphyxia were noted in 55 infants, recovery occurred in all. Pethidine may have contributed to slight respiratory depression in a few cases.

Good analgesia was experienced by 55% of mothers. Failures may be accounted for in some cases by the fact that pethidine was given too late in labour. Amnesia was obtained in only 10%. Pethidine given alone does not appear to lead to amnesia.

Some relief of symptoms, chiefly in the form of analgesia or of sleep, and a feeling of restfulness and relaxation were experienced by 87% of the patients.

No effect on uterine contractions was noted in 67%. In 23.3% contractions appeared to increase, while in 8.7% they appeared to diminish.

The duration of labour was compared in primigravidae with a control series of patients delivered in 1939. It was found that the first stage was seven hours longer in patients receiving pethidine. This may be due to other factors, but the claim that pethidine shortens the duration of labour cannot be substantiated.

The forceps rate was 9.2%, comparing favourably with a rate of 7.8% for the year 1939 since the series receiving pethidine contained a high proportion of primigravidae.

No tendency to post-partum haemorrhage was noted.

Pethidine was used for premedication for caesarean section in 32 cases. There was no maternal or foetal mortality.

As a result of this investigation pethidine is compared as an obstetric analgesic with the ideal criteria laid down for such an

agent by Sturrock (1939) Although pethidine does not fulfil all his criteria it is suggested that it approaches the ideal more nearly than any other obstetric analgesic drug in current use

Brief recommendations for the use of pethidine in labour are given

My warmest thanks are due to Prof F J Browne, under whose aegis as Director of the Obstetric Unit at University College Hospital this work was carried out, also to his successor, Prof W C W Nixon, for valuable help with the manuscript

I am indebted to Roche Products, Limited, for supplies of pethidine used in the early part of this investigation My thanks are also due to Miss Monica Cogman for help with the statistical work and to Sister Billing and the staff of the labour wards in the Obstetric Hospital, University College Hospital, whose willing co operation made this investigation possible

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The scientists on the whaling factory ship *Balaena* in the Antarctic, have been investigating for the Department of Scientific and Industrial Research methods of ensuring that whale meat is in the freshest possible condition when frozen. There are certain general principles of slaughtering of animals for meat and the handling of carcasses which can be followed only with difficulty in whaling. One of the most important of these is rapid cooling of the carcass immediately after death. Owing to the bulk of the whale's carcass and the thickness of the blubber cooling takes place very slowly, and the meat is therefore likely to go bad rapidly. As the time between death and butchering on the deck of the factory ship may vary considerably, some method of cooling the carcass as soon as possible after death had to be found. An experiment was recently carried out to test a method of doing this. The carcass of a whale when caught is normally inflated with air to prevent its sinking. This causes the whale to roll over on to its back and float belly uppermost. In the experiment portions of the skin and blubber were removed as soon as possible after death to admit cold sea water, which at that time was at a temperature of 30 F (−1°C). It was necessary to insert a special temperature-recording unit deep into the body before this to register the temperature immediately after death and any subsequent change. The leader of the scientific team Dr R A M Case, therefore entered the water as the whale surfaced after its final dive. Clad in a frogman diving suit he swam under the belly of the whale and shot his recording thermometer into it. It was found that when the blubber was stripped from the belly the internal temperature of the whale fell rapidly

AN OUTBREAK OF STAPHYLOCOCCAL FOOD-POISONING

BY

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Since 1930 many outbreaks of food-poisoning have been described in which the evidence has pointed to a staphylococcus as the responsible organism. Commonly, milk and milk products have been the vehicle, but other foods, such as prepared meats, have less often been the medium in which the toxic substance was disseminated. The actual time and place when contamination of the food occurred have been difficult to define, and conclusions have been made on circumstantial evidence. Early last year Williams *et al* (1946) described three outbreaks of staphylococcal food-poisoning due to ice-cream, in two of which, by typing the isolated staphylococci with bacteriophage, they were able to trace the source of contamination to an assistant in the cookhouse where the ice-cream was prepared.

The present article describes an outbreak of staphylococcal food-poisoning due to consumption of pressed pickled beef in which the source of infection was demonstrated by means of bacteriophage typing.

The Outbreak

On Sept 27, 1946, 167 miners at several collieries were taken ill three hours after eating sandwiches containing pressed pickled beef. The outbreak was explosive, and clinically the onset was sudden, with dizziness, nausea, vomiting, diarrhoea, and pain in the abdomen. All the patients were much better in 24 hours and were normal on about three days. Fifteen men were sent to hospital with severe prostration, but were not detained longer than 24 hours.

This outbreak had been preceded by two smaller ones on Aug 16 and 30, involving 16 and 22 men respectively, pressed beef sandwiches being the suspected food. On the first occasion the cause was not established. On the second occasion a staphylococcus was isolated from the pressed pickled beef but not from the vomit. All the meat came from one cooking centre, but in the second outbreak this was not obvious, because the sandwiches had on this occasion been made up elsewhere. Immediately the third outbreak occurred steps were taken to investigate the matter in detail.

The Food—At the centre from which the pressed beef was distributed the meat was cooked, pickled, and pressed by one butcher, who placed it, when ready for cutting, in a large refrigerator of the domestic type, operating at a temperature just above freezing point. The quality of the food and the conditions during preparation were quite satisfactory. The pressed beef was made into sandwiches on the day of distribution to the collieries. One pressed beef sandwich was wrapped in grease-proof paper alone, with another containing either roast beef or corned beef. The whole packet was known as a "B" pack, and stamped on it a date after which the pack should not be eaten (this prevented the sale of stale sandwiches). The "B" packs arrived at the various collieries between 9 a.m. and 1 p.m. on the day of distribution, and were issued to the afternoon shifts at 2 p.m., to the night shifts at 10 p.m. and to the day shifts at 6 o'clock the following morning.

They were eaten about five hours after the miners received them. On the occasion of the outbreak under discussion 1,661 "B" packs were sold among 10,098 miners. The afternoon and night shifts, totalling 1,713 persons, to whom 189 "B" packs were sold, apparently did not suffer any ill effects. All the 167 victims were members of the day shifts, numbering 8,385 men, to whom 1,472 "B" packs were sold. It was not possible to ascertain how many "B" packs each man consumed. Storage conditions varied from colliery to colliery, some having refrigeration, but others having to keep the packs at room temperature—at that time about 74° F (23.3° C).

Bacteriology

Staphylococcus pyogenes aureus was isolated from the vomit of three individual patients by plating, via Robertson's meat medium, and also, by direct plating on blood agar, from a vessel into which several miners had vomited. It was also isolated from some "B" packs remaining at one of the collieries, as well as from "B" packs belonging to the suspected batch that had not been distributed, and was recovered from the outer surface of a block of uncut pressed beef in a refrigerator at the cooking centre. We failed to isolate it from the brine in which the pressed beef was prepared, from the bench on which the sandwiches were cut, and from the bread-slicing machine. Petri dishes of nutrient agar exposed in the centre did not grow a *Staph. pyogenes*.

Kelly and Dack (1936) have shown that staphylococci will grow in meat with a content of 10% sodium chloride, which prohibited the increase of spore-forming and non-spore forming rods, this is in accord with our experience, for after 18 hours incubation the blood-agar plates, after direct plating and plating via Robertson's meat medium, gave a preponderant growth of staphylococci, although a spreading organism finally outgrew the cocci on the plates after three to four days.

A search for carriers was made among the staff at the cooking centre. Swabs were taken from the nose, throat, and any lesions in exposed parts of the body likely to be a source of contamination to the food. In all, 58

TABLE I—*Staph. pyogenes aureus* Found in Swabs from Personnel

No of Persons	No of Swabs	No of Positive Swabs	Site of Positive Swabs		
			Nose	Throat	Hands
25	58	10	6	2	2

TABLE II—Distribution of Positive Swabs

No of Positive Swabs	Total No of People	Nose Only	Throat Only	Nose and Hand	Throat and Hand
10	8	5	1	1	1

swabs were examined from 28 persons, and the results are shown in Table I. The 10 positive swabs came from eight people and the distribution is shown in Table II.

All the coagulase-positive staphylococci from whatever source were of *aureus* type fermented mannite, liquefied gelatin and were haemolytic on horse blood-agar plates. They were all submitted to the central laboratory of the Public Health Laboratory Service for bacteriophage typing. *Staphylococci* belonging to the same bacteriophage type (47-47C) were shown to have been present in the vomit (individual and pooled) B packs pressed beef, and the nose and on the hand of the butcher who prepared the pressed beef. Neither *Staph. pyogenes* nor organisms of the *St. aureus* and dysentery groups were isolated from stool samples submitted from seven patients.

Discussion

An explosive outbreak of gastro-enteritis involving 167 persons two to four hours after they had eaten pressed pickled beef sandwiches suggested the probability of toxic origin. Two independent lines of inquiry led to the source of the trouble. One investigation, by the local and county medical officers of health and their staff, by elimination, led through the common denominator of the pressed beef as a vehicle to the butcher who was the sole person handling the beef in all three outbreaks. In the second outbreak, although the sandwiches had been prepared at another centre, the beef was processed by this butcher. The other line of inquiry, consisting of the chemical and bacteriological analysis of the food and material involved in pickling the beef, showed that inorganic substances capable of toxic effects were absent or were present in normal quantities—for example, nitrites, arsenic, zinc, antimony, lead, mercury, copper, and tin—while *Staph. pyogenes aureus* was isolated from an uncut block of pressed beef and the sandwiches. It had also been isolated from the vomit of individual cases and a communal bucket, as well as from eight of the workers in the food-preparing centre. This evidence was reinforced by bacteriophage typing.

The same bacteriophage type was found in the pressed beef block, the pressed beef sandwiches, the various vomits, and on the person of only one worker in the food-preparing centre—the butcher who was responsible for pickling and cooking the meat and who handled it from the raw state to the finished pressed block ready for slicing. He was harbouring the organism in his throat and in a trivial cut on the palmar surface of his right hand, and it seems most likely that from this second source the contamination of the pressed beef occurred. The cut could easily have been overlooked, and was causing the butcher no discomfort, although the swab revealed a heavy growth of the offending staphylococcus. It was the sort of minor lesion that would have been treated lightly by anyone. The general hygiene of the centre was excellent—floors and benches were clean and the workers wore clean caps and overalls.

It is of great interest that all the cases occurred among the day shifts. The sandwiches were made during the earlier part of the day of distribution, and by the time they were eaten by the afternoon shifts were about eight hours old, by the night shifts 17 hours old, and by the day shifts about 25 hours old. No complaints occurred among the afternoon and night shifts, and it therefore seems that, under conditions prevailing in the sandwiches, it took the organism between 17 and 25 hours to produce enough toxin to cause sickness. Experimental confirmation of this is difficult because the only satisfactory indication of the presence of enterotoxin is the reaction of a human volunteer. The kitten test as described by Dolman and his collaborators (1936) has not been found completely reliable by Fulton (1943). However, under almost identical conditions of temperature and material (five hours' incubation at 37° C, followed by 16 hours' refrigeration and a further six hours' incubation of a pressed pickled beef sandwich) Kelly and Dack (1936), using human volunteers, showed that no ill effects were observed on eating the sandwiches after the first 5 hours' incubation, but that the typical symptoms of staphylococcus enterotoxin poisoning followed the ingestion of the sandwiches at the end of 26 hours. Incidentally they noted that under identical conditions one volunteer showed no ill effects, while another was severely ill. It would appear also that the organisms are capable of producing the enterotoxin under a wide temperature range, because at the collieries storage conditions varied from 35° to 74° F (1.7° to 23.3° C), and yet cases occurred

at each of them and no correlation between the storage temperature and the number of cases could be made out.

The butcher who was the source of the staphylococcus causing the outbreak had local treatment for the lesion in his hand, which soon healed. He also had a course of sulphathiazole, and swabs from his nose, throat, and hand are now negative.

This experience has shown the value and importance in such outbreaks of close liaison between all interested parties and the necessity for thorough and prompt investigation by a bacteriologist with up-to-date services at his disposal.

Summary

An outbreak of toxic food poisoning following the consumption of pressed pickled beef sandwiches is described. The evidence showed *Staph. pyogenes aureus* (phage type 47/47C) to be the cause. Personnel handling food should pay scrupulous attention to personal hygiene and especially to lesions, however slight.

Close liaison between all interested parties was an important factor in finding the cause.

Our thanks are due to Drs Hall, Brothwood, and Carroll and the staff of the Lancashire County Council Public Health Department, especially Mr Eckersley and Mr Ward, for providing many of the circumstantial details. We also wish to thank Prof H B Maitland for his criticism and advice.

Drs Allison and Williams of the P.H.L.S. Central Laboratory at Colindale, kindly phage-typed the staphylococci for us, and Mr C H Walker, analyst to the Lancashire County Council, performed the chemical analyses.

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d-TUBOCURARINE IN CAESAREAN SECTION

BY

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Anaesthesia for caesarean section is a subject full of controversy, but the advent of *d*-tubocurarine seems to offer a solution to some of its problems. It assures an easy induction and eliminates any necessity for harmful doses of toxic anaesthetic agents. This report on a series of 30 such operations in which this drug has been used is published in the hope that it will encourage others, who may have greater opportunities in this field of anaesthesia, to explore its possibilities. It is hoped that the constancy in results may convince despite the paucity in numbers.

Technique

The best results were obtained with the following technique and dosages. As premedication, 1/100 gr (0.65 mg) of atropine is given one hour before operation. When the surgeon is scrubbed up and ready, the induction is carried out on the table with an injection of 15 mg of *d*-tubocurarine ("tubarine"—Burroughs Wellcome and Co.) followed by 0.3 g of "kemithal" (cyclohexenyl-allylthiobarbiturate) in 5% solution. Anaesthesia is maintained with cyclopropane, using the closed circuit. The loss of consciousness which results from the initial injection is, however, only transient, and it is necessary that the face-piece of the anaesthetic apparatus be applied without delay. Respiration is "aided" (Gray and Halton, 1946) from the beginning for it is of paramount importance that the small

amount of depression that may result from this dose of *d*-tubocurarine must not be allowed to result in any suboxygenation.

The operation is started as soon as the patient fails to respond to painful stimuli. An early indication as to when this plane has been reached may be afforded by the reaction of the patient to the application of the towel clips. Up to the time of delivery of the child the anaesthesia must be kept as light as possible. It has been found useful to turn the absorption canister out of the circuit for a few minutes before the uterus is incised. In such a short time this has probably little effect upon the mother, but may build up a carbon dioxide tension in the foetal blood which may well contribute to the early commencement of respiration by the baby. After delivery the anaesthesia is deepened as required, but it is not necessary to carry it lower than deep first plane. A pharyngeal airway is not usually inserted. In fact it is inadvisable, as this procedure may well precipitate vomiting. Endotracheal tubes and a laryngoscope are always to hand, but have been found necessary only on the one occasion described later.

Results

There has been a certain dependability about the results of this technique which has been encouraging. There is no anxiety with regard to depression of the infant. With the exception of two understandable cases these babies have all cried most lustily as soon as the head was delivered. They have been quite unusually lively and have shown no evidence of curarization. One of the exceptions was an infant who was rather sleepy but cried after five minutes. In this case thiopentone, 0.15 g, was used for induction instead of the usual "kemithal". The other was a premature baby of 32 weeks weighing 3 lb 2 oz (1.42 kg), and the mother was eclamptic, having had several fits before delivery. This baby took six minutes to expand its lungs.

An increased contractility of the uterine muscle has been observed. The placenta always separates very easily and the uterus contracts down firmly. The injection of "pituitrin" (pituitary lobe extract) which had always been routine was continued in the early cases before this feature was appreciated. It was seen to be unnecessary and has been abandoned. Five patients who it was felt might be predisposed to post-partum haemorrhage received 0.5 ml of pituitrin. The usual indication for this was a justifiable apprehension on the part of the surgeon rather than any unsatisfactory condition of the uterus. Nineteen patients who had no uterine stimulant showed excellent contraction throughout, and not infrequently clots have been observed extruding through the cervix at the end of operation.

As a result of the extremely light anaesthesia the patient wakes up as the dressings are applied, and she often has been told the all-important news before she leaves the theatre. On occasion there have been slight residual signs of curarization at the end of an unusually quick operation, but only twice has it been necessary to inject adequate doses of "prostigmin" and atropine. This has always resulted in complete recovery.

Post-operative vomiting or retching is rare, and is only minimal when it does occur. One of the patients under review developed a chest complication, but it was of doubtful nature and had completely cleared up within 48 hours. There was no evidence of any undue retention of urine, nor have any eye symptoms as reported by Langton Hewitt (1946) been seen. There has been no case of ileus.

Discussion

The ideal anaesthesia for this operation should be safe and, if possible, pleasant. It must provide good working

conditions for the surgeon and be non-depressing to the baby and the uterine tone. The safest technique to date has probably been local analgesia, but there are few who would care to maintain that this is a pleasant experience. Some of these patients who had undergone previous sections have been most grateful for the intravenous induction and the subsequent freedom from unpleasant sequelae.

d-Tubocurarine has passed its experimental stage, and its early promise has been confirmed by further extensive experience. It is debatable whether any potent drug which is delivered into the blood stream can be called safe, but this one seems to be less dangerous than many others in daily use. On the other hand, among these patients were five who were seriously ill: two had eclampsia, having had several fits, two had had extensive haemorrhage from placenta praevia, and one had advanced pulmonary tuberculosis. They all had an uneventful convalescence and with the exception of the last mentioned were fit for discharge within three weeks.

Vomiting during the induction of anaesthesia with consequent aspiration pneumonia is acknowledged to be one of the hazards of this procedure. These patients have not had the usual sedative preparation. They are often admitted as emergencies "off the district," and are not infrequently stout and short-necked. All these factors tend to make the induction period a rather anxious time. The ill advised insertion of an airway immediately after the initial injection did precipitate vomiting in one instance. A cuffed endotracheal tube was inserted, and the fact that suction was ready and to hand prevented any untoward result. Whatever the anaesthetic, these patients are very likely to vomit if they have had a recent meal. A rapid intravenous induction makes the emergency less likely, and the administration of d-tubocurarine undoubtedly facilitates the intubation which may be required as either a prophylactic or a therapeutic measure.

The freedom from curarization of the baby has not been surprising. Whitacre and Fisher (1945) have reported that "intocostrin" (Squibb's biologically standardized extract of curare) has no effect on the infant—an observation which has been confirmed in the present series. Substitution of "kemithal" for thiopentone as an inducing agent and the small amount of anaesthetic which is required after d-tubocurarine are factors which have contributed to the wide-awake condition of these babies.

The good uterine tone that has been so marked a feature was not expected. This has been so striking that on two occasions it caused a temporary embarrassment to the surgeon who found that his hand was being gripped by the contracting uterus as he extracted the child. This has so far not proved a serious handicap, and the otherwise good operating conditions have been ample compensation.

Finally, this technique, by avoiding long post-operative depression which is especially menacing after this operation, undoubtedly contributes to a peaceful and trouble-free convalescence.

Summary

A technique for anaesthetizing patients undergoing caesarean operations using d-tubocurarine, kemithal and cyclopropane is reported. It has been used in 30 cases and the results are reviewed.

My grateful thanks are due to Mr. Percy Malpas and the other members of the chemical team at Whiston County Hospital for their help and confident co-operation.

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USE OF d-TUBOCURARINE CHLORIDE AND THIOPENTONE IN ELECTRO-CONVULSION THERAPY

BY

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Convulsion therapy for the treatment of psychiatric disorders was introduced in 1934 by Meduna, who injected convulsant drugs intravenously. The treatment, however, was so unpleasant that patients were unwilling to continue with it, the considerable rise in blood pressure that occurred rendered it unsuitable for cardiac and arterio-sclerotic patients, and fractures and dislocations were very common. The introduction of electrical convulsion therapy (E.C.T.) (Cerletti and Bini, 1938) diminished the frequency of traumatic complications, but this form of therapy was still unpleasant for the patient, and the rise in blood pressure resulted in cardiovascular accidents which were sometimes fatal. Twenty deaths attributed to E.C.T. have been reported, and 16 of these were either definitely or probably due to cardiac failure (Feldman *et al.*, 1946). By the use of E.C.T. with hyperextension of the spine and mechanical restraint the incidence of compression fractures of the spine has been reduced to about 4% (Cook, 1944), although occasional fractures cannot be prevented. The use of spinal anaesthesia, which has recently been introduced to soften convulsions (Shorvon and Shorvon, 1943), is very limited, as it does not prevent fractures of the arms or jaw, it cannot be used in patients with high or low blood pressure, and it carries with it all the hazards of spinal puncture. Although Bennett (1940) was the first to report on the use of curare for softening convulsions in shock therapy, d-tubocurarine chloride, an alkaloid obtained from crude curare, was used at Woodside Hospital for a considerable time before the publication of this paper. Unfortunately the work was interrupted by the war and was not followed up (Palmer, 1939, 1946). Since 1940 many American workers have confirmed Bennett's observations without, however, modifying his technique.

Curare-like drugs minimize convulsions by paralysing voluntary muscle. They do this by blocking the nerve impulse at the myoneural junction, probably by preventing the effector substance in the muscle from reacting to acetylcholine. In the doses in which it is used clinically d-tubocurarine chloride acts almost exclusively on voluntary muscle and produces few side effects if oxygenation is adequate. A slight fall in blood pressure may occur immediately after its intravenous injection, followed by a slight rise. It has no significant effect on the human electrocardiogram (Gray and Halton, 1946, Prescott *et al.*, 1946). A slight overdose can, however, seriously depress respiration by paralysing the diaphragm, and both bronchospasm and laryngeal spasm have occurred following its use without an anaesthetic (B. G. B. Lucas, personal communication).

Preliminary Investigations

American workers report that combined curare and convulsion therapy is dreaded less by the patient than

convulsion therapy alone, but our experience is directly contrary to this. In our early experiments all patients complained bitterly of the terrifying feeling of suffocation and extreme weakness after an injection of *d*-tubocurarine chloride, and some refused further treatment. We first attempted to relieve the unpleasant symptoms by producing unconsciousness with a preliminary subconvulsive electric shock immediately after the injection of the *d*-tubocurarine chloride. It was found impossible, however, to gauge the dose to such a nicety that unconsciousness with a several-minute amnesia could be produced without the risk of muscular contractions of sufficient strength to cause trauma. It also seemed probable that a preliminary subconvulsive shock raised the electrical convulsion threshold, and it has been reported that subconvulsive shocks cause a serious fall in blood pressure (Silfverskiöld and Amark, 1943) and even cardiac arrest (Kalinowsky and Hoch, 1946). The use of subconvulsive shocks was therefore abandoned.

Preliminary anaesthetization with thiopentone ("pentothal") was found to be a much more satisfactory method of producing amnesia. No patient to whom we have administered thiopentone has remembered anything of either the curarization or the convulsion. Thiopentone has the additional advantages of aiding *d*-tubocurarine in combating the post-convulsive rise in blood pressure, in lessening post-convulsive excitement, and in minimizing the likelihood of bronchospasm which may occasionally follow the injection of curare-like drugs. Contrary to the observations of other workers who have used general anaesthesia with ECT (Neustatter and Freeman, 1939; Fabing, 1942) we have not observed any tendency for thiopentone to increase the electrical convulsion threshold. If anything, the threshold appeared to be lowered, possibly because the thiopentone reduced the patient's excitement and apprehension, which is known to increase the electrical threshold (Kalinowsky and Hoch, 1946). In no case have we failed to induce a convulsion following administration of thiopentone.

Serious respiratory depression resulting from diaphragmatic paralysis is the chief danger of curare-controlled ECT, and unless facilities for controlled respiration are at hand a fatality can occur. There are four deaths reported in the literature from curare-controlled convulsion therapy, two of them most probably from respiratory paralysis (Charlton *et al.*, 1942; Cash and Hoekstra, 1943; Smith *et al.*, 1943; Bennett, 1943). Most of our patients were insufflated with oxygen under slight pressure, by means of an apparatus devised by Dr Lucas, during the period between the administration of the *d*-tubocurarine chloride and the shock, and again following the convulsion if there was the slightest sign of cyanosis or respiratory depression. Unless a large overdose of drug is given the diaphragm recovers its function fairly quickly. In the present series of cases it did not become necessary to administer respiratory stimulants or "prostimin," the pharmacological antagonist of *d*-tubocurarine chloride, ventilation with oxygen being quite adequate to combat any respiratory depression. To counteract the salivation produced by *d*-tubocurarine chloride all patients were given atropine sulphate intravenously in a dose of 1/100 to 1/50 gr (0.65 to 1.3 mg) at the same time as the latter.

Technique

The treatment was usually given in the morning. Patients had their ordinary sedative the previous night. They were allowed a cup of tea at breakfast-time but no food in case of vomiting. Blood pressure, pulse rate, and temperature were taken before treatment. No methods of mechanical

restraint or attempts to hyperextend the spine were used. *d*-Tubocurarine chloride and atropine mixed in the syringe were given intravenously, the syringe disconnected, and without removing the needle from the vein an injection of thiopentone administered immediately afterwards from another syringe. The dose of *d*-tubocurarine chloride required to give adequate relaxation was approximately 2 mg per stone (0.3 mg per kg) of body weight, but this dose has to be varied according to the musculature, age, sex, and general condition of the patient. If the initial injection of *d*-tubocurarine chloride failed to soften the convulsion sufficiently it was increased in subsequent treatments. The lowest effective dose in the present series was 14 mg, and some very muscular male patients were given as much as 30 mg without achieving full curarization. Generally speaking, males require more than females and the young more than the aged. The usual dose of thiopentone was 0.3 g, but this was increased if any tendency to bronchospasm or laryngospasm was noted at the first treatment. This complication was dealt with by anaesthetizing the patient more deeply with a second injection of intravenous thiopentone or with nitrous oxide and oxygen. After the injection of the *d*-tubocurarine chloride an interval of three to five minutes was allowed for curarization to reach its maximum before administering the electrical convulsion. A mouth gag was used only to prevent the possible biting of the lips immediately after the shock. The patient's limbs were not restrained.

Pulse rate and blood-pressure measurements were taken immediately before and after the convulsion, and at intervals of 15 and 30 minutes later. Temperature readings were taken at half-hourly intervals for two hours after the treatment. Many of the patients were insufflated with oxygen following the convulsion, and occasionally, if there was respiratory obstruction, an airway was inserted. Usually the patients passed into a quiet natural sleep after recovering from the convulsion. Out-patients were allowed to sleep for two hours before going home.

The treatment was usually given to patients twice weekly and some who did not respond received short daily courses. One or two patients were given two convulsions in quick succession following a single injection of *d*-tubocurarine chloride and thiopentone. The average number of convulsions given was six, but several patients recovered from symptoms after only two or three. The greatest number of convulsions given to one patient was 20.

Clinical Material

d-Tubocurarine chloride and thiopentone were administered to 50 patients undergoing electrical shock therapy for psychiatric illness, approximately half were in-patients and half out-patients. In all 300 treatments were given. The large majority of the patients were suffering from depression, but a few schizophrenics and obsessional states were included. A careful clinical examination was made before the patient was subjected to convulsion therapy, and if any doubt existed as to the condition of the cardiovascular, respiratory, or skeletal systems, electrocardiographic or radiological investigations were first carried out. An attempt was made to collect as many patients as possible in whom unmodified ECT would have been dangerous if not absolutely contraindicated. Included in the series were hypertensive, arteriosclerotic, and senile patients, patients who had previously sustained fractures in unmodified ECT (one vertebral fracture, and recently wired fracture of the condyloid process of the mandible), a patient who had previously had haematemesis from a peptic ulcer following unmodified ECT, a patient with hernia, and a woman five months pregnant.

Observations

Within three to five minutes of giving the *d*-tubocurarine chloride and thiopentone the patient was relaxed and unconscious, respiration slightly depressed, and breathing mainly abdominal. Immediately after administering the shock the patient gave a slight jerk corresponding to the tonic convulsion, and after a latent period of a few seconds there was a very modified clonic convulsion (see Figs 1 and 2). The arms if they moved at all, were flexed slightly,



FIG 1—Patient undergoing unmodified convulsion therapy showing the stage of clonic convulsion and necessitating lumbar pads and physical restraint by three attendants



FIG 2—Same patient undergoing electrical convulsion therapy after treatment with *d*-tubocurarine chloride and thiopentone. One attendant only is managing the patient and in this case no mouth gag was used

and the fingers were drawn up in the accoucheur position seen in tetany. Usually there was no gross movement of the legs. The cry and opisthotonos of the unmodified convulsion were absent. Although the muscles of the face are those most rapidly paralysed by curare drugs, these muscles contract most strongly in the curare controlled convulsion. The muscles of the eyelids and face twitch repeatedly even when there is no movement of the limbs or trunk so it is always possible to observe that a convulsion is taking place.

Sweating which normally occurs during and after unmodified ECT was usually absent. Slight depression of respiration with a short period of apnoea occurred in most patients but apnoea lasting three minutes is also very common in unmodified ECT (Woolley *et al.* 1942). Slight cyanosis was observed in about a quarter of the treatment given but this was not so frequent, so deep, or so prolonged as that commonly seen in unmodified ECT. Broncho-pneumonia with deep cyanosis which occurred in three very restless patients was relieved by a second injection of thiopentone.

There is normally a considerable rise in blood pressure in the first 15 seconds after an induced unmodified convulsion. It is well above 200 mm Hg (Silfverkröf and Amar, 1943). There is normally an increase of 50 to 60 mm in blood pressure (Kunowsky and Hoch, 1946; Jones and Woolley, 1943). In this series with curare-controlled

convulsions the mean increase in systolic blood pressure was 6 mm Hg (standard error ± 1.7 mm). The diastolic pressure was much the same after the shock as before. It is possible that the rise of blood pressure in uncontrolled convulsions is partly due to the blood being squeezed from the muscles during their violent contractions and shunted into the general circulation, thus increasing the cardiac output and blood pressure. Stimulation of the medullary centres also undoubtedly occurs. It is conceivable that in convulsions modified by *d*-tubocurarine chloride the blood pressure does not rise appreciably because blood is retained in the vessels of the relaxed muscles.

There was often a fall in pulse rate immediately after the convulsion, followed later by a rise. Sometimes there was a fall in body temperature one-half to one hour after the convulsion. The maximum fall of temperature was 2°F (1.1°C), and the lowest temperature recorded was 96°F (35.6°C). This occasional fall was presumably due to the *d*-tubocurarine chloride, as there is usually a slight rise in temperature in the unmodified convulsion. A fall in temperature has also been noted in patients receiving *d*-tubocurarine chloride as an adjunct to anaesthesia (F. Evans, personal communication). It was observed that the effects of curarization passed off about twice as rapidly in a patient submitted to a curare-modified convulsion as in a subject receiving the same dose of drug without a convulsion. The most likely explanation is that electrical stimulation liberates increased amounts of acetylcholine at the neuromuscular junction and that this neutralizes the effect of the *d*-tubocurarine chloride.

Post-convulsive excitement, which is common after unmodified ECT, was rare in the present series, and when it did occur was checked by a second intravenous injection of thiopentone. Many of the patients on regaining consciousness expressed a wish to sit up. Sitting up usually relieves the feeling of suffocation which sometimes persists for twenty minutes or more after the injection of *d*-tubocurarine.

There were no complications such as fractures, dislocations, or muscle strains following any of the treatments and the only unpleasant symptoms between treatments were headache and impairment of memory and concentration, which evidently resulted from the electrical convulsion. *d*-Tubocurarine chloride does not appear to influence the therapeutic effect of ECT or to raise the electrical convulsion threshold. The percentage of patients recovered or markedly improved in the present series is roughly what might have been expected if unmodified ECT had been given, but the number of patients is too small and their diagnoses too varied for any statistically significant conclusion to be drawn.

Discussion

The major drawbacks of ECT—namely fractures, dislocations, and cardiovascular accidents—are largely eliminated by the method described, and post-convulsive excitement is reduced. Preliminary curarization enables ECT to be given to patients to whom unmodified ECT would be dangerous. Mechanical precautions to prevent fractures and dislocations are rendered unnecessary. As no methods of restraint are needed one operator can carry out the treatment single-handed. If the patient should become restless on recovery he can be handled easily as being lightly curarized, he is able to offer only feeble physical resistance.

The dose of both *d*-tubocurarine chloride and thiopentone needs careful assessment. Just enough barbiturate is required to produce about five minutes' narcosis, and sufficient *d*-tubocurarine to make fracture or dislocation impossible but not to depress respiration too deeply. No

patient should be given a curarizing drug unless efficient facilities for controlled respiration with oxygen are at hand and the administrator is competent to deal with the apnoeic patient. The injection of stimulants and analeptics cannot replace the provision of a clear airway and rhythmic insufflation of oxygen using a tightly fitting face-mask. Without the precautions described the treatment advocated might be disastrous, but we feel that with adequate precautions curare-controlled ECT is so much safer than unmodified ECT that we intend to adopt it as a routine procedure. We believe that if patients are curarized with due care the benefits of ECT can be extended to those in whom it would be normally contraindicated. The therapeutic results of convulsion therapy do not depend on the production of a "convulsion," as originally suggested by Meduna (1935), because the end-results are just as good whether the curare modified or the unmodified convulsion technique is used (Bennett, 1941).

Summary

The use of *d* tubocurarine chloride and thiopentone for modifying electrical convulsions is described. In the dosage employed these drugs do not significantly affect the electrical convulsion threshold.

The advantages claimed for the method are: the traumatic complications of ECT are avoided, there is no serious rise in blood pressure, it enables ECT to be given to certain patients in whom otherwise convulsions would be contraindicated, post-convulsive excitement is minimized, the procedure can be carried out single-handed if desired, and the unpleasantness of ECT for the patient is almost entirely eliminated.

Thanks are due to Dr B G B Lucas, of the Surgical Unit, University College Hospital, for the oxygen resuscitation apparatus, which is manufactured by the Medical and Industrial Equipment, Ltd, London.

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A registry of primary malignant tumours of bones has been set up with its headquarters at the Department of Pathology, the Royal College of Surgeons of England, with the intention of collecting records of cases of primary tumour or presumed primary tumour of bone (including joints and cartilages) especially those in which cure or prolonged alleviation has been attained by treatment. All cases claimed as five year cures will be considered by the committee, but in future only those cases will be considered in which histological proof of the nature of the tumour can be obtained by biopsy or following amputation. In cases where histological diagnosis is in doubt the Consultant Panel in Morbid Histology set up by the Pathological Society of Great Britain and Ireland in conjunction with the British Empire Cancer Campaign and the National Radium Commission will be consulted. Those interested are invited to send records of relevant cases with amputation or biopsy specimens to Prof R A Willis, M.D., F.R.C.P., Royal College of Surgeons, Lincoln's Inn Fields, London, W.C.2. Donors will be sent reports on the pathological investigation of specimens received, and in return will be asked for follow-up information regarding patients.

USE OF CURARE IN "POOR-RISK" PATIENTS

BY

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This paper is based on 136 surgical cases in which curarization was performed at Hill End Hospital (St Bartholomew's), and includes the observations of all the members of the anaesthetics department. All of the patients underwent operations of some severity, while most of them were in the "poor-risk" category. An analysis of the operations undertaken in this series is given in Table I.

TABLE I—Operations Recorded

Partial gastrectomy	31	Hysterectomy
Cholecystectomy	7	Thoracoplasty
Resection of large gut	6	Lobectomy
For relief of intestinal obstruction	4	Pneumonectomy
Other laparotomies	11	Ligation of patent ductus
Lumbar ganglionectomy	3	Pericardectomy
Urogenital operations	3	Other thoracotomies
Incisional hernia	2	Oesophagotomy
Resuture of burst abdomen	1	
		Total

Preparations and Dosage

I have used the general name "curare" to embrace all preparations not specifically designated "Intocostarin" (Squibb), *d*-tubocurarine chloride crystals, "curarine" and "tubarine" ampoules (Burroughs Wellcome) have all been employed. The curarine chloride crystals were made up by us in a 1% solution in sterile distilled water or para-chlorocresol which was brought to the boil before bottling. It is impossible adequately to sterilize the crystalline powder in the autoclave. The potency of these preparations remained fairly constant as long as required, in some cases up to six months. An initial dose of 3 ml of Intocostarin or 15 mg of curarine or tubarine was used for abdominal cases, with half the dose usually repeated later for closure of the peritoneum. All injections were made intravenously. The exact calculation of the dose by body weight has the theoretical objection that the number of the patient's myoneural junctions and his weight may not stand in direct relation. The dose was only slightly reduced for children, though very ill and feeble persons, with their slowed metabolism, need less curare and exhibit prolonged effect. Individual reaction to the drug appears to be very variable, but there are too many factors modifying the patient's response to allow of accurate judgment.

All these preparations seemed generally to be reliable, although once Intocostarin and once some curarine chloride made up by us failed to produce the effect expected. Neither of these failures can be attributed to the drug, as subsequent injections from the same bottles produced the usual results. In the latter case the respiration remained adequate, and a considerable amount of ether was given before a lumbar sympathectomy could proceed with tranquillity.

Indications

Limitation of supplies demanded careful selection of cases, curare being used almost exclusively for abdominal and chest operations, particularly with "poor-risk" patients. There would seem to be little point in using curare for procedures where considerable muscular relaxation or very quiet respiration is not called for, as such operations can often be carried out under the narcosis induced as a preliminary to curarization.

Technique for Abdominal Cases

Premedication—The usual premedication for fit adults was omnopon gr 1/3 (22 mg) with scopolamine gr 1/150 (0.43 mg). In some cases mist hyoscin "A" (7 minims, or 0.42 ml, for men, and 5 minims, or 0.3 ml, for women) was substituted. Morphine and atropine in appropriate doses were employed for the young, the old, and the ill, while "seconal" and atropine were given to children.

Induction—Up to 0.5 g of thiopentone (pentothal) was given, and blind intubation performed after the administration of a few breaths of a mixture containing nitrous oxide, oxygen, and carbon dioxide and a small percentage of trilene. Should blind intubation have failed we were prepared to give 15 mg of curarine and perform direct laryngoscopy at once. Thiopentone and curare have been given in rapid succession or mixed, and direct laryngoscopy performed with a Magill laryngoscope, but this was often accompanied by some coughing and straining. We have been chary of giving the curare before the thiopentone, as recommended by Gray and Halton (1946b), in view of the report by Prescott, Rowbotham, and Organe (1946) of the subjective effect of a small dose on the conscious subject. Intubation was performed in every case for the reason put forward by the latter three workers—complete control of the respiration at all times. Endotracheal tubes were lubricated with 5% "nupercaine" in "K-Y" jelly.

Maintenance—Maintenance was by means of nitrous oxide-oxygen and minimal trilene from a semi-closed Boyle apparatus. Ether was used in place of trilene in earlier cases in the series. About 50% oxygen was given to ensure adequate oxygenation, no attempt being made to maintain the anaesthesia by nitrous oxide-oxygen alone. An adjuvant was often needed to prevent movement, and for this purpose a trace of trilene was added to the gases at the beginning of the operation, and for short periods later if required. We have employed this thiopentone-N₂O+O₂-trilene technique without curare for large numbers of orthopaedic, neurosurgical, and similar procedures, with satisfactory maintenance and little post-operative morbidity and discomfort. It is important that only a trace of trilene be employed—not more than at the rate of 1 drachm (3.5 ml) an hour. Should this be insufficient a change-over to another agent should be made, instead of "pushing" the drug (Hewer, 1944). Trilene is preferable to ether as it produces less post-operative vomiting and probably fewer pulmonary complications, while recovery is not delayed and is free from the unpleasant taste and smell associated with ether. It seemed unsound to employ thiopentone as an adjuvant during operation, in view of the possibility of respiratory depression, noticeably lacking with trilene, being added to the respiratory paralysis, as well as the inevitable prolongation of recovery time if thiopentone is employed in any quantity. In cases where ether was used its "curariform" action was noticeable. Curare was given when the peritoneum was first reached, further doses being added as relaxation demanded. With this technique patients invariably left the table with their reflexes fully returned, frequently moving the head and limbs. Mental clarity, with full co-operation, returned rapidly.

Technique for Thoracic Cases

Premedication was the same as that in general cases.

Induction—Up to 0.5 g of thiopentone was followed by cyclopropane-oxygen. Blind intubation was performed under light anaesthesia with a No 7 or 8 Magill tube anointed with 5% nupercaine-K-Y jelly. A Cobb adapter and throat-pack were usually employed. Once the patient had settled down the cyclopropane was turned off. An

intravenous blood drip was then set up. Just before the patient was wheeled into the theatre 15 mg of tubarine or its equivalent was given, administration at this point preventing coughing when the patient was turned on to the table. The insertion of an endotracheal tube was considered essential to provide respiratory control and a perfect airway in an awkward position, and to remove secretions (even in allegedly "dry" thoracoplasties) as soon as they were suspected.

Maintenance—It was often difficult to decide whether to add more cyclopropane to the circuit or another dose of curare to the drip, as it was attempted to maintain the patient with quiet automatic respiration on the one hand and to prevent the possibility of coughing on the other. If the respiration increased in depth 5 mg of tubarine was given, while any movement or an increase in respiration rate (so long as the possibility of anoxia did not arise) was taken as a call for more cyclopropane, 500 ml added to the circuit for one minute usually provided quite enough. We reasoned that the uncured patient under too light anaesthesia would respond to stimuli by coughing and by an increase in the depth and rate of respiration. As the first two responses were abolished by curare the last of the triad would indicate lightening anaesthesia. In view of the unstable pulse rate produced by cyclopropane and intrathoracic manœuvres, this was ignored as a sign of inadequate narcosis. Gray and Halton (1946b) report this sign particularly under barbiturate narcosis. Arrhythmias were, however, strikingly uncommon with this technique. It must be confessed that the signs of depth of anaesthesia and curarization were most difficult to evaluate. Tracheal tug occurred quite commonly, and was abolished by further curare. Aided respiration was frequently employed as needed.

About 15 to 20 mg of tubarine was required for a first-stage thoracoplasty, and about 20 to 30 mg for a lobectomy or pneumonectomy. More was needed for operations performed under controlled respiration, such as repair of diaphragmatic hernia. The results in chest cases were most striking. The blood pressure remained steady, even in severely ill patients, for much longer than in those operated on under cyclopropane alone, all the patients becoming alert, co-operative, and moving almost as soon as they were returned to bed. The temperature returned to normal within one to two hours, and the pulse and blood pressure rapidly recovered from any deterioration. Moreover, the patients felt much better after operation than uncured patients undergoing similar procedures. Curare seems to be of maximum benefit to the unfit subject needing thoracic surgery.

Treatment of Laryngeal Spasm

Tubarine 10 mg was given intravenously to two patients who developed severe laryngeal spasm during induction producing almost instantaneous relaxation of the adductors of the cords with the restoration of a clear airway. This use of curare has been reported by Organe (1946).

Complications

Ocular Complications (Table II)—Twenty cases with eye trouble after the use of curare have been seen. In most instances the complaint about the eyes was volunteered, otherwise the patient was subjected to the most

TABLE II—Ocular Complications

No of Cases	Duration of Symptoms		Diplopia	Blurring of Vision	Pain	Ptosis	Spots
	Up to 24 hrs	Over 24 hrs					
20	9	11	5	13	5	2	2

guarded questioning Blurring of vision was the commonest fault complained of, often accompanied by one or two other defects In more than half the cases the symptoms persisted for over 24 hours, but never longer than three to four days, all of them began with the return of consciousness One patient showed a "myasthenia gravis effect, in which ptosis occurred and accommodation failed after reading for a short while, to return to full efficiency after a rest In another case prostigmin, administered for retention of urine following hysterectomy, immediately cured an incidental blurring of vision A further patient, who was given curare for the first and second stages of a thoracoplasty, developed blurring of vision on both occasions The analogy between the pathology of myasthenia gravis and the pharmacology of curare is, however, not a true one In myasthenia no impairment of pupillary function occurs (Walsbe, 1943) Nothing abnormal was found on examination of the eyes Apparently similar ocular complications did not occur after ordinary general anaesthesia, as none of the patients volunteered information to this effect So far as can be gathered from such a small series, the anaesthetic agent has no effect on the subsequent complications

These phenomena may be due to a "hang-over" action of the curare The muscles concerned are unique in being suddenly put to full use almost immediately consciousness returns and in producing through slight defects, an effect easily apparent to the patient This was particularly the case in the presence of a pre-existing compensated slight fault One is tempted to surmise that all the muscles of the body may suffer in some degree from the effects of curare for some time after operation

Amnesia—One case anaesthetized with thiopentone 0.5 g, N₂O-oxygen, and trilene, with 15 mg of tubarine, developed prolonged drowsiness and amnesia for the 24 hours following operation, although this is more likely to have been due to the thiopentone than to the curare Similar cases have been reported by Landau and Wooley (1934)

Effect on Blood Pressure

There seems no doubt that increased bleeding occurs after curarization and that the blood pressure very commonly rises a matter of 10 to 20 mm, while in one case a rise from 125/90 to 200/130 mm was recorded in 35 minutes This consideration has led to a refusal to administer curare for electro-convulsive therapy in a patient with hypertension The blood pressure has been seen to fall as surgical stimuli became severe, to rise again as they cease, exemplifying the retention of vasomotor control under light anaesthesia mentioned by Gray and Halton after quoting the work of Zweifach *et al.* (1945) Some cases showed no drop in blood pressure however severe the stimulus In others the blood pressure seemed to fall as the curare wore off, to be restored by a further injection, although complete relaxation was present

Post-operative Results (see Table III)

It must be emphasized that not only was curare employed for many operations most likely to be followed by thoracic complications, but as supplies were short the

drug was purposely reserved for patients who were considered to be "bad risks" It should further be mentioned that, to give curare as strict a trial as possible, very severe criteria of "chests" and vomiting were applied Any vomit at all was classed as "slight" vomiting, and any cough with sputum a "minor" chest In a small series it is impressions that count, not statistics Our impression was that, though curare proved an inestimable boon in the theatre, it had no effect on the frequency of post-anaesthetic vomiting in comparable operations, and possibly slightly reduced the incidence of anticipated chest complications The patients recovered consciousness much sooner and recovery was more pleasant—not inconsiderable advantages, otherwise there was no difference post-operatively whether curare was given or not The greatest advantage of curare is that it enables very ill patients—particularly those needing thoracic surgery—to undergo operation without a dangerously prolonged deep anaesthesia and to recover rapidly from the immediate effects of the operation

Deaths following Curare

Eight patients died some time after receiving curare All of them were in poor physical condition before operation, and they represent a high proportion of the total surgical mortality in the hospital for the period One patient died of peritonitis five days after a subtotal gastrectomy The others succumbed to heart failure, in two cases accompanied by bronchopneumonia and in one case by acute dilatation of the stomach One patient suffered two coronary thromboses twelve hours after a cholecystectomy, two had extensive carcinoma of the stomach, and two more were severely ill with intestinal obstruction Another was undergoing lobectomy for multiple abscesses in the middle lobe of the right lung A further patient developed Stokes-Adams attacks after an exploratory laparotomy (for which curare was used), and died of one of these attacks after a second curarization for resuture of a burst abdomen One patient died in the theatre, and the others at periods between four hours and fourteen days after operation

Necropsy in the last seven fatal cases confirmed the cause of death as heart failure and demonstrated a fat flabby heart with coronary sclerosis of varying severity one case had in addition bilateral obliterative pleural adhesions Only one patient showed respiratory depression requiring controlled respiration in the theatre, and in no case was anoxia allowed to occur Although curare cannot be implicated in any of these cases, in which death would probably have occurred whatever form of anaesthesia was used, it is worth noting that the two fatal cases in Gray and Halton's (1946a) original series present a similar picture There is still the possibility that further investigation of the pharmacology of curare may reveal some action upon the heart

Summary

Observations are recorded on 136 cases in which curare was administered, mainly for severe operations in patients of the "poor risk" type

TABLE III—Post-operative Results

Agent	Chest Complications				Vomiting			Ocular Complications	Ileus and Acute Dilatation of Stomach
	Major	Minor	Aggravated	Total	Little	Much	Total		
Nitrous oxide-oxygen-trilene (69 cases)	5.8	10.2	7.3	23.3	23.2	2.9	26.1	14.5	1.5
Nitrous oxide-oxygen-ether (28 cases)	—	25.0	10.7	35.7	42.8	7.4	50.2	17.9	3.7
Oxygen-cyclopropane (39 cases)	—	—	17.9	17.9	33.3	15.4	48.7	12.8	—
Total	2.9	10.3	11.0	24.2	30.1	7.3	37.4	14.7	1.5

The efficacy and dosage of curare preparations are considered, and techniques employing trichloroethylene for abdominal cases and cyclopropane for thoracic cases described.

Twenty cases with ocular complications are reported. The effect of curare on the blood pressure and on severe laryngeal spasm is also mentioned.

An analysis of post operative results is given and eight deaths after curarization are discussed.

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d-TUBOCURARINE CHLORIDE IN ELECTRO-CONVULSION THERAPY

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AND

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It is now generally known that *d*-tubocurarine chloride is used to obtain good relaxation in general anaesthesia. Its value as an aid in electro-convulsion therapy may, however, be of equal importance. Griffith (1946) reviews the history and present knowledge of the clinical use of *d*-tubocurarine chloride, with special reference to anaesthesiology, and discusses the physiological action of the drug. A further review of the literature is given by Kellgren *et al* (1946).

An obstacle to the use of electro convulsion therapy in feeble persons has been the strain imposed on the skeletal structure by the violent muscular contractions produced. *d*-Tubocurarine chloride enables electro-convulsion therapy to be given in cases in which the physical condition would otherwise be a contraindication.

Methods—The drug is given intravenously, and in our experience it is advisable to test the patient's tolerance with small doses before electro convulsion therapy. We commence with 1 mg per stone (6.4 kg) of body weight, and this is increased on successive days until the patient is just unable to raise the head from the pillow after about four to five minutes. Electro-convulsion therapy is then given in the usual way.

One of our cases was a woman who in attempting suicide had sustained a fractured surgical neck of the humerus and a fractured pelvis. She was in a state of acute melancholia and actively suicidal. Electro-convulsion therapy was required, but the recent bone injuries made its administration impracticable. Under the influence of 15 mg of *d*-tubocurarine chloride the electroplexy produced a mere 'purring sensation' in the muscles. This procedure was repeated on six occasions and she made a good psychiatric recovery, and she was up and about, with a good orthopaedic result, when she left hospital.

Another illustrative case was that of a reactive depression in a man of 34 who complained of severe pain in his back after one dose of electro-convulsion therapy. X-ray examination showed no bony injury of the vertebrae, but in the ordinary way treatment would have been discontinued. With *d*-tubocurarine chloride it was possible to continue treatment. His pain has now gone and he has made a social recovery. This was one of our early cases, and an initial dose of 20 mg was given. There was marked respiratory paralysis and apparent loss of consciousness. The pulse remained of good volume and regularity throughout, and after about five minutes' artificial respiration normal respiratory rhythm recommenced. An interesting feature was that the patient was later able to give an account of the artificial respiration and other restorative measures (physostigmine, etc.), taken during a period when he appeared to be deeply unconscious. It seems then that the drug despite its dramatic effect on motor activity, had little influence on the sensorium. This is in agreement with the findings of Kellgren *et al* (1946).

Conclusion—*d*-tubocurarine chloride appears to be effective in minimizing convulsions in electro-convulsion therapy. Although both *d*-tubocurarine chloride and electro-convulsion therapy are respiratory depressants no synergistic action between the two has been noted with the relatively low dosage used.

We wish to thank Dr F Back, Medical Superintendent, Cherry Knowle (Sunderland Mental Hospital), for providing the facilities for this work.

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 Kellgren, J H, *et al* (1946) *British Medical Journal* 2 898

Medical Memoranda

Unusual Case of Poisoning by Zinc Sulphate

The following case seems worth recording because of the unusual sequelae. In the literature at my disposal I cannot find any description of a similar sequence of clinical events.

CASE HISTORY

An Indian woman aged 35 was admitted into the General Hospital, Johore Bahru, Malaya, at 9.30 a.m. on March 4, 1946. About one and a half hours previously she had taken a dose of 'salts' for constipation, and this was followed in a few minutes by vomiting and purging. The substance swallowed was mistaken for Epsom salt, and approximately 1 oz (28 g) was taken. The bottle with the remaining noxious contents was brought to hospital, and the white crystals proved on analysis to be zinc sulphate. The vomitus contained the same substance.

On admission the patient was acutely collapsed and very restless. There was no abnormality of the lips, tongue or buccal mucosa. Treatment with demulcents, morphine, and nikethamide produced marked improvement within twelve hours. On March 5 her general condition was satisfactory, and vomiting had ceased. There had been no haematemesis. She complained of abdominal pain of a colicky nature, but examination revealed no abnormality. The temperature was normal, there was a persistent tachycardia of 90 to 100 a minute, and examination of her urine showed no abnormality, chemically or microscopically. On the 6th progress was well maintained and there was no blood in the stool. Next day the improvement continued, but she vomited two *Ascaris lumbricoides*. At about 8.30 a.m. on the 8th I was informed that the patient had suddenly collapsed. On examination she was found to be semi-comatose with a marked ketosis. Blood was sent for estimation of the sugar content, and a catheter specimen of urine for examination. Insulin therapy was immediately instituted 60 units of the soluble product, of doubtful potency, being given intramuscularly, as the intravenous route was impossible owing to collapse. Nevertheless, the patient's condition continued to deteriorate and she died at 7.30 p.m. The blood sugar was 380 mg per 100 ml, and the urine was loaded with albumin, sugar, and ketones.

Necropsy was performed at 2.30 p.m. on March 9 the report was as follows. The body was that of a fat woman of average build. Rigor mortis was absent. The peritoneal cavity contained about 4 oz (114 ml) of blood stained fluid, there was no evidence of fat necrosis. Liver size normal, rather fatty. Gall bladder size normal, contained six faceted pigment stones. Spleen normal. Kidneys both intensely congested and haemorrhagic. Suprarenals congested. Pancreas size normal, generally congested, the tail was very intensely haemorrhagic. Stomach very congested, mucous membrane eroded and, in places, desquamated, no perforation. Bowel congested only, no perforation. Bladder normal contained about 2 oz (57 ml) of turbid urine which, on examination, showed copious albumin, sugar, ketones and blood—microscopically there were numerous erythrocytes and epithelial cells. Pleural cavities normal. Lungs normal. Pericardial sac normal. Heart somewhat flabby, otherwise normal. Samples of pancreas, kidney, liver, and suprarenals could not be examined histologically, as facilities did not exist.

COMMENTARY

This seems to be a clear case of poisoning by zinc sulphate. Treatment of the original collapse was successful, and progress was well maintained until the fifth day, when hyperglycaemic coma developed. Unfortunately the circumstances precluded daily examination of the urine, otherwise pancreatic insufficiency and renal damage might have been noted earlier. Nevertheless, twelve hours before the onset of coma no premonitory symptoms or clinical signs of hyperglycaemia were observed. It is regrettable that histological examination of the tissues mentioned could not be carried out, but in view of the gross pathological findings at necropsy I feel that this case should be regarded as one of haemorrhagic pancreatitis and widespread renal damage as a result of poisoning by zinc sulphate, with hyperglycaemic coma and death supervening on the fifth day.

My thanks are due to Major S. N. Mittra I.A.M.C. who carried out the post mortem examination.

GEORGE A. B. COWAN M.B., Ch.B.,
Malayan Medical Service

Post-partum Intra-abdominal Separation of Uterus

The following report of what must be a very rare condition may be of interest.

CASE HISTORY

On March 28, 1946, at 10 a.m., a primiparous European woman of medium build, 25 years of age, spontaneously gave birth to a male child of 8 lb (3.6 kg), after having been in labour for 8½ hours, a nurse only attending to her at home. No difficulties were experienced during this stage of the confinement, the placenta, however, appeared to be adherent, and all attempts by the nurse to expel it proved fruitless. It is stated that the patient had some diffuse haemorrhage, but no clots were passed. At 12.30 p.m. (2½ hours after being confined) the doctor was called, and he is alleged to have given her three injections: first 0.5 ml ergometrine subcutaneously, then 10 ml calcium gluconate intravenously, and half an hour afterwards a second 0.5 ml ergometrine subcutaneously. The patient claimed that the doctor did not attempt to expel the placenta, nor did he examine her abdomen or make any other examination. Her condition continued to deteriorate and she was admitted to the Germiston Hospital at 5 p.m. (seven hours after confinement). On admission she was in a state of collapse, with a feeble pulse and a blood pressure of 60/20 mm Hg. She was very anaemic and somewhat restless and there was a slight continuous ooze of bright red blood. The uterus was in a state of contraction. Pressure on the abdomen was resented. A blood transfusion of 1,000 ml of whole blood was given followed by 1,000 ml of serum.

Operation.—At 11 p.m. the patient's condition was considered sufficiently improved to attempt a manual removal of the placenta, and the operation was performed by a house surgeon, with the patient under a general anaesthetic. After having worked for twenty-five minutes he discovered omentum at the vulva. At this stage a further 1,000 ml of whole blood was being transfused, although there was no excessive haemorrhage during the operation. I was then called into consultation, and was able to open the abdomen twenty minutes after the discovery of omentum in the introitus. To my surprise I found the uterus completely severed, not a tag connecting uterus and host remained. Apart from a fair amount of blood in the abdominal cavity only three relatively

small bleeding points were found—one on either side in the four ligaments of the ovaries, and a third in the right uterine fold—were clamped and ligatured. The uterine arteries could not be seen nor was there any retroperitoneal haemorrhage. The stretch of cervix was torn through and severed from the body of the uterus, with a fair sized flap of peritoneum anteriorly. The broad bands with round ligaments of uterus and ovaries presented a continuous flap on either side. The Fallopian tubes, however, were torn off separately. Both ovaries were intact. There was no damage found on any of the adjoining viscera or ureters. With some reluctance it was decided not to look for the uterine arteries as there was no sign of haemorrhage from them. The condition of the patient was somewhat precarious, and ligating these arteries would also have involved



Photograph of the uterus, showing the protruding umbilical cord and placenta, and the attached pieces of the uterine arteries.

ligating a major branch of the internal iliac artery. Very little trimming of the cervix stump was necessary. It was stitched, peritonealized, and the wound closed. The operation lasted about thirty minutes.

Her recovery was uneventful. She received penicillin (20,000 units three hourly) and sulphadiazine (2 tablets four hourly) with mist pot cit for the first four post-operative days. During these four days she had to be catheterized, after which she passed urine spontaneously. On the third post-operative day her blood pressure was 130/80 mm Hg, and her temperature, which showed a slight elevation (102° F, 38.9° C) settled to normal on the fourth day. She was discharged from hospital on the seventeenth day. On April 29 (one month after operation), when I last examined her, she enjoyed excellent health, and was apparently no worse for the loss of her uterus.

The specimen consisted of a contracted uterus with the placenta *in situ*, a few inches of umbilical cord and a bit of placenta protruding. On examination the placenta did not appear to be adherent. The circular tear went through the stretched cervix near the body of the uterus. Anteriorly the specimen was largely stripped from its peritoneum, while posteriorly the serosa was left intact. Both sides of the specimen showed tags of ligamentous tissue derived from the round ligaments of uterus and ovaries. Small ends of the Fallopian tubes were also left intact. Long pieces of the uterine arteries were attached to the specimen 3½ in (8.9 cm) on the right side and 2½ in (7 cm) on the left side, apparently torn off at their origins from the internal iliac arteries (see Fig.).

COMMENT

This patient made a definite statement that prior to 11 p.m. on the day of her confinement she had not had an anaesthetic nor had she been examined per vaginam either by the nurse or by the doctor, yet there had been diffuse bleeding to account for her collapsed condition. The ergometrine injected at 12.30 p.m. and 1 p.m. respectively apparently accounted for the contracted state of the uterus. One may ask, Was there a uterine tear prior to the house surgeon's operation, and, if so, how had it happened? Is it possible to cause a uterine tear by exercising abdominal pressure, or by Credé's method of expelling the placenta? Whatever the answer may be, the patient's survival after such a gross lesion must be without parallel.

Germiston Transvaal S. Africa

J. J. S. WASSENAAR

Reviews

INTRODUCTION TO PHYSIOLOGY

The Physiology of Tissues and Organs (An Introduction to the Study of Systematic Physiology) By Douglas H K Lee, M.D., F.R.A.C.P. Professor of Physiology, University of Queensland (Pp 159, illustrated No price given) Brisbane University of Queensland 1946

This little book is most entertaining, and we should like to see it made available in this country. Although it is intended for the use of the author's own classes, it would be potentially thought provoking to any student beginning the study of physiology. Indeed it would be of value to any teacher of the subject, too, and to students already well on the way.

We have seen no other book at all like it. The main line of approach is by way of general biology and general physiology. The systems are dealt with in a general way, and then some examples of integration of function and of practical applications of physiological knowledge are discussed. There is little reference to the biochemical aspect of the subject, the reason given by the author being that it is treated as a separate discipline (The physiologist might ask what this "special discipline" of biochemistry is.) The author, however, is careful to point out that what his teachers have put asunder the student must try to join together, so that the knowledge "possessed by the student when he leaves the department should be a unified knowledge." This is not a criticism of the book, the author is in the same difficulty as most other physiologists in these days when people talk of unity but act as separate units—presenting, perhaps a picture of unity in diversity. Prof Lee's book is refreshingly original, and we congratulate the author on the production of a useful guide.

C LOVATT EVANS

SURFACE ANATOMY

Surface and Radiological Anatomy for Students and General Practitioners By A B Appleton M.D. W J Hamilton, M.D. FRSEd, and G Simon, M.D., BCh, DMRE. Second edition rewritten (Pp 332, 390 figures 31s 6d) Cambridge W Heffer and Sons

This standard work is a valuable guide to the examination of the living subject by methodical observation, palpation, and skiagraphy. The authors have introduced new skiagrams and illustrations into this edition, and substantially improved the text. The difficulty often experienced by beginners in interpreting certain skiagrams and the appearances seen in fluoroscopy will be reduced by studying the reproductions of normal skiagrams taken from the anterior, posterior, and oblique viewpoints and showing distinctly certain landmarks whose location when understood, gives the key to the whole picture. Moreover, the authors explain their technique lucidly and in sufficient detail to reveal the principles underlying kymography and tomography as well as more ordinary radiological methods. The use of contrast media in the examination of hollow organs and tubes is also admirably described and illustrated. Many skiagrams are shown beside drawings of the corresponding parts—for example heart and large blood vessels exposed by removal of the overlying structures—an arrangement which facilitates the interpretation of certain details in the ray pictures.

Special features of the book are the skiagrams and descriptions of the skeleton, including the centres of ossification and epiphyseal disks, the illustrations of the joints in various positions of the limbs, the grouping of the muscles according to their functions, the clear representation of the motor points as seen in relation to muscular elevations of the overlying skin in a well-developed subject and the accounts of segmental distribution of the nerves with tables, and of the radiological examination of the thoracic abdomino pelvic and cerebrospinal regions. The reader studying the book and verifying each point by examination of a living subject will attain in a relatively short time knowledge that the authors have spent many years

in gathering. All concerned are to be congratulated on having produced a work that will serve both as a textbook in the initial stages of anatomical study and as a reliable book of reference for practitioners.

R J G

NURSING IN INDUSTRY

Nursing in Commerce and Industry By Bethel J McGrath, R.N. For the National Organization for Public Health Nursing (Pp 356 53 00 or 16s 6d) New York The Commonwealth Fund London Oxford University Press 1946

The author of this book was formerly the industrial nursing consultant of the National Organization for Public Health Nursing and with the sponsorship of this organization she undertook to prepare a comprehensive guide to the manifold duties of the industrial nurse. A few of the more technical portions of her subject are the work of other hands. Dr Alice Hamilton points out in an introduction that the book is not only for nurses but for the general public as well.

It is stated that the earliest record of a nurse being employed in an industrial concern in the U.S.A. was in 1895. Progress was very slow at first, and it needed the stimulus of the two world wars to establish adequate nursing services. By 1918 some 1,200 nurses were employed in industry, and in 1927 there were 2,200. By 1941 the number had risen to over 6,000, and by 1943 to nearly 13,000. The relationship of the nurse to the industrial organization under which she is to work and her duties and responsibilities are fully described. In an interesting chapter on mental hygiene some of the types of people specially needing help are discussed. They include the fault-finder, the misfit and those suffering from hysteria, money troubles and family difficulties. In the chapter on control of communicable disease, respiratory diseases and especially tuberculosis are dealt with at length. The book can be cordially recommended as an up-to-date account of nursing services in the U.S.A., but it makes no reference to experiences in Great Britain.

H M VERNON

BACTERIOLOGY FOR STUDENTS

A Textbook of Bacteriology By R W Fairbrother, M.D. DSC FRCP. Fifth edition (Pp 480 illustrated 17s 6d) London William Heinemann Medical Books 1946

This popular book, now in its fifth edition, is admirably suited to the medical student's needs. The author emphasizes the theoretical aspect of the subject and its important applications in medicine, omitting technical detail which is either superfluous or better learnt at the bench. There are a few new illustrations—the inclusion of more would improve the book, and the coloured plate of tubercle bacilli, some of which are shown unnaturally curved, might be redrawn. Chemotherapy and its laboratory uses are now discussed in a separate chapter and are referred to also in connexion with each susceptible micro-organism.

L P GARROD

BIOCHEMISTRY ON THE CONTINENT

Exposés Annuels de Biochimie Médicale Published under the direction of Michel Polonovski. Sixth edition (Pp 301 580 francs) Paris Masson et Cie

This issue of the French annual review of medical biochemistry will be welcomed by many readers in this country, for during the war Continental literature was not easily accessible here and the book contains many articles which discuss work done in France and other European countries during those years. For instance, there is an article by Polonovski and Busnel on the biochemistry of pterines, a group of substances which have recently become interesting in view of their relation to folic acid, fully reporting the work of Wieland and his school on their chemical constitution and synthesis. Data are given on the distribution of pterines in the animal kingdom and their possible functions in metabolism are discussed. Sannicciulli contributes an article on pigments and antibiotics of bacteria and fungi. Roche reviews the work on enzymes which contain a

dissociable metal—a group characterized by an easily ionizable metal constituent which can be removed and, in some cases, replaced by another similar metal. In the iron-containing enzymes—e.g., peroxidase and catalase—the metal is firmly built into a ‘prosthetic group’ of the same type as the haem in of red blood pigment, but there are many enzymes where the metal ion has the character of a coenzyme which can easily be removed by dialysis. In some cases the metal becomes dissociable only after treatment of the enzyme, and other enzymes can be reactivated by metal only when special organic coactivators are added.

Fromageot discusses certain aspects of sulphur metabolism, especially the experimental work on the formation of cystine from methionine and on the oxidation of the sulphur contained in the amino acids cysteine, cystine, and methionine to inorganic sulphate. He suggests that the first step is the removal of the organically bound sulphur from cysteine and homocysteine as hydrogen sulphide, which is subsequently oxidized to sulphate. This suggestion is supported by experimental evidence published in France during the war. Roskam discusses experiments of his own and his colleagues on the effect of sympathetomimetic substances on the bleeding time. The chief outcome of his work is the observation that adrenochrome, an oxidation product of adrenaline without sympathetomimetic action, is as effective as adrenaline itself in reducing the bleeding time. Adrenochrome acts with a shorter latent period than adrenaline, and this is interpreted as indicating that adrenaline acts after being converted into adrenochrome.

The volume also contains a review by Boulanger on the role of sodium and potassium in the animal body and a short discussion by Corbier on functional correlations among steroids. A clearly written and useful article on spectrographic methods in biology is the posthumously published work of G. Florence, who lost his life in 1945 in German captivity.

ASPECTS OF PSYCHIATRY

Modern Attitudes in Psychiatry The March of Time, 1945 (Pp 154 13s 6d) New York Columbia University Press London Oxford University Press 1946

The New York Academy of Medicine sponsors certain lectures to the laity. The subject decided upon for 1945 was the use of psychiatry in medicine, and the present volume contains reprints of lectures by six distinguished American psychiatrists. In these the modern attitude is admirably set out for the intelligent layman. After a foreword by Dr Rhoads, the acting president of the Academy, and an introduction by Dr Zabriske, Dr Goldston opens the series with a historical survey of psychiatry in which he points out that psychological medicine began with Hippocrates and that ancient and mediaeval treatment was indeed really more ‘psychic’ than somatic. Dr Wall deals in greater detail with the history of the subject since the days of Pinel. Then follows an admirable essay on the social aspects of medicine in which it is shown how illness, even if it is organic, can be modified by emotional stresses and strains, and how the patient can be properly treated only if his whole personality, mind, body, and environment are taken into account. In the fourth lecture Dr Alexander discusses the future outlook for psychiatry from the psycho-analytic standpoint, but he stresses the need for shorter forms of treatment.

Col Menninger describes the psychiatric arrangements in the Services and the advances in preventive diagnosis and treatment achieved, with the lessons for peacetime practice. Finally Dr Weiss, discussing the role of the general physician in psychotherapy, points out that much ‘minor’ psychotherapy can be carried out without specialist knowledge, though ‘major’ psychotherapy must remain the province of the specialist. One of the worst features in the history of medicine according to Garrison and Allbutt was the divorce of medicine from surgery. As Dr Weiss suggests, an even more unhappy separation may have been the divorce of both from psychiatry.

These lectures are well worth perusal both for their own merits and because they illustrate how even difficult medical problems can usefully be brought before the lay public in an understandable form.

BOOKS RECEIVED

[Review is not precluded by notice here of books recently received]

Brompton Hospital Reports Vol XIV 1945 (Pp 175 10s) Aldershot Research Department of the Hospital 1947

Includes articles on pleural and pulmonary suppuration treated with penicillin, prognosis of successful pneumonectomy, pulmonary hydatid disease, surgical treatment of carcinoma of the oesophagus and a review of pulmonary tuberculosis.

Problems of Malnutrition and Starvation During the War By Sir Jack Drummond DSc, FRIC, FRS (Pp 21 1s 6d) Nottingham University College 1947

A reprint of the author's Sir Jesse Boots foundation lecture, 1946.

Diseases of Children Edited by D Paterson, MD, FRCP and A Moncrieff, MD, FRCP Fourth edition Vol I (Pp 771 30s) London Edward Arnold 1947

This well known book includes new material on the surgery of congenital deformities, sulphonamides and penicillin for infants, acid base regulation, anaesthetics for children, abdominal pain, pneumonia, and collapse of lung.

Poisons By V J Brookes and H N Alyea (Pp 209 16s 6d) New York D Van Nostrand 1947

A summary of the properties of poisons, and the symptoms and treatments of poisoning.

In Amintrea Profesorului Fr J Rainer (Pp 123)

L'Oeuvre Scientifique de Fr J Rainer—Vol I Neurologie Végétative (Pp 57) Vol II Structure Fonctionnelle (Pp 154) Vol III Anthropologie, Morphologie (Varia), Bibliographie (Pp 121)

Le Métopisme Chez les Roumains et en Général By Fr J Rainer and Al Tudor (Pp 35) Bucharest Impremaria Nationala 1946

The first of these is a memorial volume to Prof Rainer, of Bucharest, who died in 1944, in Rumanian. The other books are collections of papers by Prof Rainer, some written in collaboration with other authors, illustrated, in French.

Les Etats Psychopathiques Infantiles d'Origine Syphilitique Héritaire Larvée By Henry Brantmay (Pp 73 No price) Geneva Georg 1946

A monograph on the aetiology and symptomatology of congenital syphilis, in French.

Legislacion sobre Seguridad e Higiene del Trabajo By the Ministry of Works (Pp 413 No price) Madrid Seccion de Prevencion de Accidentes e Higiene del Trabajo 1947

An account of industrial health regulations in Spain, in Spanish.

Lehrbuch der Hals Nasen Ohren und Mundkrankheiten By E Schlittler et al (Pp 609 60 Swiss francs) Basle S Karger 1947

A textbook of diseases of the ear, nose, throat, and mouth, intended for students and general practitioners, in German.

Formen und Ursachen der Herzhypertrophie bei Lungentuberkulose By Prof W Berblinger (Pp 183 10 20 Swiss francs) Berne Hans Huber 1947

A monograph on cardiac hypertrophy in pulmonary tuberculosis, illustrated, in German.

Functional Anatomy of the Mammal By W James Leach (Pp 231 12s 6d) London McGraw Hill Book Company 1946

An American guide to the dissection of the cat with an introduction to the structural and functional relationship between the cat and man. Intended as an introductory work for students of anatomy.

A List of Medical Libraries and Information Bureaux in the British Isles By W R Le Fanu (Pp 28 3s) Oxford University Press 1947

Includes addresses, telephone numbers, short notes on the history and present function of the medical libraries and information bureaux.

War Stress and Neurotic Illness By A Kardiner, MD, and H Spiegel, MD 2nd ed (Pp 428 \$4 50) London Paul B Hoeber 1947

A monograph on war neuroses and the treatment of their acute and chronic phases.

BRITISH MEDICAL JOURNAL

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EASTER EGG

As a token of rebirth to celebrate the coming of spring and the growth of vegetation many nations in antiquity were accustomed to presenting eggs, sporting with them, painting them, or eating them. Persians, Egyptians, Greeks, and Romans all regarded the egg as a symbol of the universe,¹ and the Jews included it in their Feast of the Passover. Whether the custom was incorporated into the Christian festival of Easter from Jewish or Gentile sources is unknown—indeed it is immaterial, for the egg has no great religious significance to Christians but is merely one of the innumerable symbols taken over from pagan folklore. It is not surprising that primitive man, observing birds and snakes and crocodiles and turtles emerging from an apparently lifeless envelope, surmised that some distant ancestor of his own race had once done likewise. According to an old myth from Bengal the first parents of mankind sprang from an egg, and the Chins of Burma relate that a primeval woman laid 100 eggs from which our ancestors hatched to raise mankind's diverse nations. Primitive Greek myth-makers went further and attributed the creation of the universe to the splitting into two parts of a cosmogonic egg. Phobos and Eros issued from these and created the world and its creatures—a fanciful though perceptive account of an individual's creating his experience, his "world," from his fears and loves. According to the Hermetic tradition the egg round which a serpent twined symbolized the hermaphroditic first principle of the universe, matter-spirit, when apart the former represented Chaos, the latter Ether. The conception of the egg as a link between the animate and the inanimate was taken up by the Greek, and later by the Arabian, alchemists, who saw the egg as a symbol on the one hand of the universe, on the other of the philosopher's stone. Elixir of egg, like the cyclotron to-day, would be capable of transmuting metals. (We note in passing that a recent lecture on "ovobiology" was delivered in Belgium with the title "The Egg will Conquer the Atom!") Sometimes the alchemist referred to his vessel as the philosophical egg in which he heated together opposite elements to form the philosopher's stone. A symbolic analogy may be seen between that process and, if one follows the analytical psychologists in regarding it as a symbol of the mind, the man brooding on the elements of his experience in the creation of individuality. We speak also of a hen brooding on her eggs.

Having endowed his eggs with magic, primitive man was not slow to use them for various medical and other purposes. The ancient Egyptians included eggs in a number of medicaments. The following remedy against sores on

the anus is recorded in the Papyrus Ebers² (written c 1500 B.C.) "Egg of the goose, 1, guts of the goose, 1 Clap on the anus." John of Arderne three millenniums later was recommending white of egg mixed with finely ground flour as a dressing after operating for fistula in ano. Eggs were also popular among the Egyptians as hair restorers and cosmetics, and one face-cream consisted of bullock's bile and ostrich egg beaten up with fresh milk. We need not be surprised that similar concoctions often served the same function in expensive establishments—as "egg shampoos" and "egg packs"—in Britain and elsewhere before the recent war, for primitive ways of thought persist with great tenacity. Black³ has recorded the popular practice of a patient's boiling an egg in his urine and then burying it in an ant-hill. As the egg disappears so does the malady. Again, owls' eggs mixed with a drunkard's liquor will cure him of his evil ways. Ambroise Pare in 1536 found that when boiling oil was not available for treating battle wounds the yolk of egg with oil of roses in turpentine was a better therapeutic trick. Perhaps less remote from our own ideas of the uses to which eggs should be put (though remote from our experience) is William Hunter's predilection for them, his dinner at the British Coffee House consisted of two eggs and a glass of claret.

THE EGG AS FOOD

We want eggs because we like them, we miss the contrast of flavour and texture of intact eggs and the physical properties exploited in cooking. Eggs-and-bacon is a national dish—or at least was, eaten solo, eggs are an equal delight, or they can be combined with other foods in scrambled eggs and omelettes. They satisfy the palate and belly of man, whether he is described as an individual or, in the phraseology of Dr Summerskill, as a calorie-consuming social unit. Their aerating power is used in making sponge cakes, their binding power makes puddings and cakes what they should be, and they for a time stop cakes from becoming stale. The unthinking eater little knows what nutritive value he can extract from an egg. One egg contains about 6 g of protein, equal to the 16% by which our average daily intake of animal protein has fallen since 1938. In a small survey made some four years ago it was observed that it was the families keeping hens who sustained the pre-war consumption of animal protein in their diet. Egg protein is first class. A hen must pack into the shell the protein needed to make a chick that will nearly fill the shell before it can get to other food. For reasons of space the protein must be first class for the chick, if not for other animals. It's a matter of lebensraum.

We read in *Nutritive Value of Wartime Foods* that 1 oz of egg supplies 250 i.u. of vitamin A, this is about 500 i.u. per egg. This statement should have been qualified, for even during the war fowls got varying amounts of carotene in their food, it is from this that the hen gets its vitamin A, and one egg may contain six times as much vitamin A as another. Almost all the vitamin A of an egg is actual,

¹ *Observations on Popular Antiquities* by J Brand. Charles Knight London, 841

² *The Papyrus Ebers* trans C P Bryan G Bles London 1930
³ *Folk Medicine* Folk Lore Society, London, 1893

pre-formed vitamin A, β -carotene makes up about 8% only of the carotenoids that colour the yolk and provides no more than 5 i.u. an egg, but the colour of the yolk provides a rough index of the amount of vitamin in it. Eggs are also one of the few foodstuffs that provide appreciable amounts of vitamin D—about 60 i.u. in egg, which contains also about 0.3 mg. of riboflavin, or one-sixth of our average daily intake. In egg white the protein avidin combines with the vitamin biotin and prevents its absorption, and rats fed on a diet of egg white develop a characteristic dermatitis. A man who lived mainly on six dozen raw eggs a week got a scaly dermatitis, and a similar dermatitis has been produced by feeding people with large amounts of egg white. But there is no risk of biotin deficiency in anyone taking a normal diet, however many eggs are eaten.

Eggs have no ascorbic acid to lose, and the loss of vitamin B₁ in drying appears to be negligible. The physical properties used in cooking may be little changed. The flavours of dried eggs are graded on a scale ranging from "fresh egg flavour, 8," to "inedible, 0." We are told that 75% of people gave a score of 5½ from a sample—between 6 "definite but not unpleasant off flavour," and 5 "unpleasant off flavour"—satisfactory as scrambled egg, and that all domestic eggs now distributed are at least up to this standard. This may well be. But however well the flavour, the nutrients, and physical properties are preserved, dried eggs can never offer the contrasting textures and flavours of whole eggs. Dried eggs smack of utility and austerity.

A laying hen's performance is remarkable. One egg contains as much protein as a pint of human milk, a little less vitamin A, and a little more riboflavin. As converters of the protein of its food to high-class protein for human consumption hens come second only to milch cows, though as converters of calories pigs come first. Hens appear to win as converters of carotene to vitamin A. Cows come first in respect of the B vitamins, for they absorb large quantities of them, manufactured by micro-organisms in the rumen, hens have to depend on what they get in their food as they eat it—a good reason for feeding them with domestic scraps. But the trouble with hens in times of scarcity is that they eat grain that might be eaten by human beings and give no more than a 12% return as calories. In fact we are told that hens will not be content with whole grain but also need the offals left after milling white flour. We have to choose between 85% extraction flour and few eggs on the one hand, and white flour and abundant eggs on the other.

THE EGG AS POISON

Eggs with their apparently impenetrable shells seem to offer us a food safe from the risk of conveying bacterial infection, and were long so regarded. When the Three Musketeers of Dumas feared being poisoned they resorted to boiled eggs as above suspicion. It has long been known that this safety is only comparative, since egg shells are not impervious to bacteria, while some birds get behind our defences by depositing from the oviduct pathogenic bacteria directly in the egg yolk. Many investigations have

shown that ducks may suffer from epidemics of *Salmonella* infections due to strains, such as *S. enteritidis* and *S. typhimurium*, which are responsible for outbreaks of food poisoning in man. Certain varieties of ducks are more prone to these infections than others. The infected ducks may transmit the living bacilli into the egg yolk. In other cases the egg may be infected by pathogenic bacilli passing through the egg shell from outside. Egg shells are porous in the strict sense that they have pores, and many workers have proved the passage through the porous egg shell of bacteria from liquids in which the eggs are soaked. Infected duck flocks have been most frequently met with in Holland and Germany, but they also occur in Great Britain.

Many outbreaks of food poisoning have been shown to be due to the consumption of infected ducks' eggs. Two recent cases are those recorded by R. F. Gordon and A. Buxton,¹ and by E. H. Gillespie.² Much has been done to reduce flock infections by blood agglutination tests, segregation, and the examination of eggs. Hens also may suffer from *Salmonella* infections, but the strains responsible have hitherto been always of *S. pullorum*, a type not pathogenic to man. Unfortunately other strains have recently been encountered. R. F. Gordon and A. Buxton³ isolated *S. thompson* during 1943 and 1944 on 44 occasions from 31 outbreaks in chicks and 2 in ducklings. The organism was not isolated from the eggs themselves. This strain is one which can cause human food poisoning. These findings are in conformity with the fact that at least two food poisoning outbreaks have been ascribed to the egg of the hen, and probably others will occur. They are, however, of extreme rarity, and we may regard the unopened egg of the hen as almost completely safe from being a vehicle for the transmission of disease.

Dried egg powder in tins, now so extensively used to supplement our food supply, is a different matter, and there have been a number of outbreaks of food poisoning from this source. Many investigations have been made into its *Salmonella* content. For example, N. E. Gibbons and R. L. Moore,⁴ examining Canadian egg powder, found *Salmonella* strains in 28 samples (74%), and all but 5 (*S. pullorum*) were potentially pathogenic to man. M. D. Schneider⁵ examined 901 samples of high quality powdered egg used by the U.S.A. armed Forces, and from 32 (3.2%) isolated *Salmonella* organisms, including several strains known to be pathogenic to man. As a means of reducing the *Salmonella* infection the same author subsequently⁶ showed the value of pre-heating the liquid egg at 141°–143° F for six minutes before spraying.

M. Soloway, E. H. Spaulding, and H. E. Goreslar⁷ have recently thrown much light upon sources of infection of the egg powder and suggested lines along which a reduction can be obtained. *Salmonella* organisms were recovered from the shell surfaces of 1% of clean intact shell eggs, from 5% of similar but dirty eggs, and from 5% of "washed-dirty" shell eggs. The same kind of

¹ *Mon. Bull. Emerg. Pub. Hlth. Lab. Serv.* 1945 4 46

² *Ibid.* 1946 5 157

³ *J. Hyg. Camb.* 1945 44 179

⁴ *Canad. J. Res. F.* 1944 22, 48

⁵ *Food Res.* 1946 11 313

⁶ *Ibid.* 1946 11 521

⁷ *Ibid.*, 1946 11 380

results were obtained when liquid whole-egg mixtures were examined, prepared respectively from the three different grades of eggs. The *Salmonella* strains isolated included many strains known as food-poisoning organisms. These results show that the external shell surface is an important source of *Salmonella* contamination and that dirty eggs are the primary offenders. They also suggest that washing dirty eggs by first soaking in a hypochlorite solution, followed by brushing and water rinsings, is unsatisfactory as a means of removing harmful bacteria. Soaking increases the probability of shell penetration, and subsequent brushing tends to force the organisms into or through the shell pores. Other preventive measures, in addition to using only clean eggs and pre-heating, are the avoidance of delay in tanks of the egg mixture and using correct temperatures of holding. As dried egg powder is likely to become a standardized food it is important that steps should be taken to safeguard its purity. The setting up, and enforcement, of suitable bacterial standards should be considered, and this should not be a difficult matter.

NEW PATHS IN ANAESTHESIA

The conditions in which the art of anaesthesia is carried on in Great Britain are noteworthy. The practice of anaesthesia is restricted to medical practitioners, moreover, they are given the dignity and privilege of being treated as specialists. The wisdom of this course, carried out in the face of opposition, moribund but not yet dead, is apparent from the advances made in this country and the general ferment of inquiry evident in the ranks of anaesthetists. This is in happy contrast to the sad state of anaesthesia on the Continent. This spirit of inquiry is evidenced by the articles published in this issue of the *Journal* on anaesthesia and the relief of pain.

Curare is a word already bandied about by medical students at their finals—a good enough indication that it is a part of everyday medicine and that it has come to stay. The story of its application to clinical anaesthesia exemplifies the old advice to respect the opinion of others while reserving one's own. From the time of Aesculapius to the present day a "big" name over an opinion has often tended to stifle criticism and investigation, sometimes, as history shows, for hundreds of years. Most pharmacologists placed stringent prohibitions on the administration of curare to human beings, and had they been allowed the last word one of the great advances of clinical anaesthesia might have been held back, for example, it was stated in a standard textbook of pharmacology that "the therapeutic use of curare has not been encouraged because of its tendency to paralyse striated muscle." Two articles in this week's issue describe the use of tubocurarine to "soften" therapeutic electric convulsions. They confirm the results of Bennett,¹ who not only put "curare" on the clinical map by using it in such cases but suggested its application to anaesthesia, a still more useful field. It was originally advised that while the curare is slowly injected the patient should be asked to perform some simple movement, like snapping his fingers. When he can no longer do this easily muscular power is waning, and the convulsion can be induced without violent response. It would probably be difficult to improve on such a simple biological test of dosage. Under the cushioning influence of tubocurarine convulsion fractures are almost unknown,

while much of the terrifying aspect of the patient under electro-convulsive treatment is removed, to the benefit of impressionable nurses and orderlies.

The application of tubocurarine to caesarean section is new in this country, although reports of its successful use have come from America. No one would underestimate the gravity of delivering a curarized infant and the problem presented by an apnoeic baby whose lungs, never having expanded, could not be inflated. Such fears cannot be dismissed by one enthusiastic paper. Foetal curarization must depend upon the dose injected into the mother. This in turn is a function of the relaxation required by the surgeon, his operating time, and, not least important, the type of operation—classical or lower segment. What is satisfactory for a lightning operator doing a classical operation may be disastrous for the slower man on a lower segment operation. This is one of the points which emerged clearly from the discussion at the Royal Society of Medicine, reported elsewhere in this issue. All these and other factors must be carefully considered before tubocurarine is advocated as a good adjunct of anaesthesia for caesarean section. In any case, proof would have to be forthcoming not only that tubocurarine is safe for mother and child but that it is safer than, for example, spinal anaesthesia or cyclopropane. The question of the transmission of tubocurarine across the placenta ought to have been settled by animal experiments, but no such experiments are on record. Caution is necessary lest what is old and well tried is jettisoned for something new—just because it is new.

Tubocurarine is a powerful drug. Its most dramatic effects are seen in the vigorous patient, so often a real anaesthetic problem in abdominal surgery, for whom otherwise nothing short of spinal anaesthesia suffices. Tubocurarine has earned its fame by the way it subdues the robust. It is therefore all the more interesting to read of its selective use in poor-risk patients. It may be that in skilled hands and with careful dosage a little tubocurarine may do less harm to such a patient than the little extra amount of a general anaesthetic which would have been needed for the same effect. Nevertheless, the fact will need widespread confirmation before general acceptance. Ill patients, particularly those with abdominal emergencies, often have liver and kidney damage. Any drug must be given cautiously, for excretion is delayed. Already one death has been recorded when tubocurarine was used in a poor-risk case.

Caesarean section and the poor-risk case perhaps represent two of the spots in this new path in anaesthesia which are not quite ready for the heavy traffic of daily routine. Experience will no doubt show others. It is to be hoped they will be well marked for the unwary.

PROGNOSIS IN ACUTE NEPHRITIS

Satisfactory criteria for prognosis in acute nephritis are difficult to obtain. Cure rates of from 38 to 100% have been reported. The different systems of classification, together with the failure to recognize continued kidney damage when the patient is clinically recovered in the "latent state," may account for the discrepancies between various authorities. Snoke^{1,2} has drawn attention to this and to the geographical differences in prognosis reported from the Pacific and Atlantic coasts of the United States. The prognosis of war nephritis, the nephritis of children, and post-scarlatinal nephritis may well vary from that of acute nephritis following infections such as tonsillitis. In selecting

¹ *J Amer med Ass* 1940 114 322.

² *Amer J Dis Child* 1937 63 673
³ *Ibid* 1939 57 1373

cases for follow-up investigations great care must be exercised not to include cases of chronic nephritis with no previous history of acute attack. The whole study of the prognosis after acute nephritis has been hampered by the lack of an agreed procedure for estimating the state of the lesion in the latent symptomless period.

Rudebeck³ has used the quantitative estimation of the urinary sediment introduced by Addis⁴ in 1925, in conjunction with albumin estimation and measurement of the blood pressure and the concentrating powers of the kidney, in his re-examination of cases at the Lund Medical Clinic. In order to free himself from the welter of contradictory material in the literature, he collected from the records of the clinic (1910-39) only those cases which satisfied the following conditions: (a) unquestionable acute nephritis after the age of 10, (b) definite post-infectious onset, excluding specific fevers, and (c) no previous renal disease until three months in most cases, or three years at the longest, before admission to hospital. The material thus obtained was considered to be homogeneous and representative of post-infective acute nephritis in the adult. The criteria for recovery finally adopted were: (a) normal blood pressure, (b) urine albumin-free, (c) an Addis sediment count not exceeding one million red cells per 12 hours, and (d) duration of these negative findings for one year. The figures given for the 318 patients investigated in the follow-up agree well with the majority of previous statistics. Deaths were 6.6% of the total cases. Some 50 patients were not traced. Of the remainder—245 cases—69.4% recovered, 11.0% did not, and 19.6% were labelled uncertain. The interest of the investigation, however, lies in the attempt to estimate the effects of various factors on the prognosis. Rudebeck insists that the results must be evaluated cautiously despite stringent precautions taken to allow for sources of error.

Payne and Illingworth's⁵ views on focal nephritis were borne out. Many patients behaving as cases of focal nephritis progressed to a chronic state. There was no evidence that the severity of the attack influenced the long-term prognosis. The risk of death in the acute stage was much increased when almost complete anuria or heavy albuminuria was seen, but the degree of the hypertension, haematuria, and oedema could not be shown to have any prognostic significance. Osman⁶ believed that recurrent acute attacks of nephritis did not prejudice the recovery rate, and 40 such cases were analysed by Rudebeck. He too found it impossible statistically to prove a bad prognosis in these cases. Pregnancy was demonstrated to have no effect in flaring up a past nephritis, thus agreeing with Wellen, Welsh, and Taylor,⁷ who found that the kidney function was unchanged in two chronic nephritics who went to term. Analysis of the effect of rest in bed showed that patients who were going to progress to chronic nephritis did so whether they were confined to bed early or not, and it could not be proved that the prognosis was any better if the patient was kept at rest for long periods. There was agreement with the view of Addis⁴ that the fate of the kidney is decided when infection occurs, and that treatment has little effect on the eventual course. Tonsillectomy could not be shown to have any beneficial effect in these cases.

From this it would seem that a good prognosis may be given in cases which survive the acute manifestations, of whatever severity, and which recover completely, in Rudebeck's sense, before discharge from hospital. The prognosis must be guarded if residual symptoms are present at

discharge, and if they persist more than one year, or are severe, chronic nephritis may be confidently awaited. Repeated acute attacks, pregnancy, and tonsillectomy were not shown to alter a prognosis made on these lines.

In the literature on nephritis, as Rudebeck points out, "the distinction between knowledge and belief appears not always to be maintained with sufficient stringency." It is to be hoped that further careful studies of this kind will be made which, if in agreement with each other, will afford a rational basis for estimating the effects of treatment and the ultimate prognosis in acute nephritis.

THE SPLEEN AS AN ENDOCRINE GLAND

In the minds of those who lightheartedly extirpate a damaged spleen there sometimes remains a hazy recollection of five pages of "Samson Wright," in which its functions in blood formation or destruction are described—functions which appear, from the excellent condition of the patients afterwards, to be rather unnecessary. The anaemia which supervenes on splenectomy is transitory, as the red marrow soon takes over. The decreased fragility of the red cells, the neutrophil leucocytosis, and the increase in platelets hardly matter. It is usually forgotten that haemorrhage is less well tolerated and that a general feeling of weakness may persist permanently.

Though a severely damaged spleen must still be sacrificed, the recent work of Ungar¹⁻⁴ should introduce a note of regret and doubt into a formerly carefree operation. In 1944 he showed that all the stimuli which inhibit histamine release also reduce the bleeding-time and increase the capillary resistance. The bleeding-time was found to be the most convenient and reliable test of histamine release. It is reduced after tissue injury, and in intact animals by the injection of serum from damaged animals, corticotrophic hormone, or adrenal cortical extract. In hypophysectomized animals, however, trauma is ineffective, whereas in adrenalectomized animals trauma, traumatic serum, and corticotrophin are ineffective though cortical extract still works. It appears from this that in intact animals trauma does something to the pituitary which acts on the adrenal cortex and causes it to inhibit histamine release. Ungar has further shown that if the animal has had its spleen removed all these factors are ineffective, but the injection of splenic extract is effective. It therefore appears that the activity of the adrenal cortex in the response of animals to trauma is mediated by way of the spleen. In 1945 he prepared⁵ a crude extract of spleen and found that its injection into guinea-pigs in appropriate dosage reduced the bleeding-time. The best effect was produced by a dose of 0.3 mg of fresh tissue, but with larger doses the effect was less, and when 100 mg was given the bleeding-time was actually increased. He succeeded in separating the fractions responsible for these opposed results. The increaser of bleeding-time is probably the "thrombocytopen" of Troland and Lee,⁶ which is not released as a result of trauma. The decreaser he calls "splenin." It is a crystalline solid of low molecular weight and melting point which decreases bleeding-time in doses as low as 3×10^{-7} mg/kg, with no reversal at higher dosages. The action of splenin is not inhibited by splenectomy, and its action cannot be imitated by other tissue extracts.

Finding that splenin reduced the bleeding time, increased capillary resistance, and inhibited the release of histamine from blood cells, Ungar proceeded to investigate its effect

³ *Acta med scand Suppl* 1946 No 173

⁴ *J Amer med Ass* 1925 85 163

⁵ *Quart J Med* 1940 n.s. 9 37

⁶ *Guy's Hosp Rep* 1936 88 93

⁷ *J Clin Invest* 1944 23 742

⁸ *Johns Hopk Hosp Bull* 1931, 49 203 271

¹ *Lancet* 1943 1 421

² *J Physiol* 1944 103 333

³ *Ibid* 1944 103 18P

⁴ *Nature* 1944 154 736

⁵ *Endocrinology* 1945 37 329

⁶ *J Amer med Ass*, 1938, 111, 221

on the mechanism which prevents the breakdown of proteins by trypsin and other proteases. Trauma and injection of splenin increase and splenectomy decreases the antitryptic action of serum. It has been known for a long time that the antitryptic action of serum is suppressed by extraction with ether. The aqueous fraction has very slight antitryptic power, and the ether fraction is practically inactive, but when the two are mixed activity is restored. Two substances are obviously required. The water-soluble one is probably antitrypsin, the ether-soluble one an activator. Ungar found that splenin restores the activity of the water-soluble fraction of serum, and the question at once arises whether splenin is the normal activator of the antitrypsin present in the serum.

Several stages of the argument still require confirmation, but it seems probable from these researches that the normal response to injury is somewhat as follows. The pituitary increases its output of corticotrophic hormone, the adrenal cortex is stimulated into increased activity, the spleen is stimulated to increase its output of splenin, the splenin acts as an activator of antitrypsin, the breakdown of proteins is decreased, with a consequent increase in the production of vasodilators such as histamine⁷, and finally the reduction in circulating vasodilator substances decreases the bleeding-time and the capillary permeability. The relationship between these observations and the alarm reaction of Selye⁸ and the changes in protein metabolism after injury reported by Cuthbertson⁹ and others still need exploration. It seems not improbable that a new window has been opened through which may be viewed from a fresh angle many problems both of surgery and of general medicine.

COLOUR IN FACTORIES

It should scarcely be necessary to argue that the choice of colours both in the decoration of factories and in the painting of factory equipment should be governed mainly by practical considerations related to the particular work to be done rather than by abstract arguments as to the stimulating or depressant effect of specific colours. In a lecture to the Colour Group of the Physical Society in January Mr H. D. Murray approached this subject from a standpoint which industrial medical officers might well find helpful. The essential physiological requirement, he said, was clear vision of the immediate object of work without the strain which must result from any strong contrast between the intensities of local and of background illumination. This applied to the immediate and to the more distant background. Practical experience had shown that in the working surfaces of machines buff provided a satisfactory background for dull steel, an unsaturated blue for brass and an unsaturated green or neutral grey for multi-coloured materials, such as might be encountered in textile factories. The general principle was that the immediate background should be of contrasting colour, and of as high saturation as was consistent with the requirements of equal brightness and avoidance of colour adaptation. The choice was naturally easiest when the working colour was the same throughout a complete factory, and most difficult when material of any colour might be worked in any machine. For the wider background provided by walls and ceiling, the chief requirements were that the colour scheme should be "non-distracting" and that the resulting level of brightness should be substantially uniform. Thus, with typical factory lighting the brightness factor should increase progressively from floor to ceiling 50% being a suitable value for the upper walls and 75% for the ceiling. There was

some advantage in the idea, now fashionable in the United States, of using the colour scheme to emphasize the main structural features and divisions of a factory building. It was important to remember, however, that the main object was to avoid distracting the worker.

Psychological considerations were dismissed as "a convenient justification for a choice for which no immediate reason can be given", but it was accepted that there are shades of yellow which most people dislike. Tests with factory workers had confirmed also the traditional association of greens and blues with coolness, and of red and cream with warmth. There was justification, therefore, for correlating the colour scheme of a factory with probable temperature conditions. Mr Murray made a further concession to the psychological school in reporting that complaints of excessive coldness in a canteen had ceased in one instance, within his own knowledge, after the colour scheme but not the heating arrangements had been altered. If practical experiments were undertaken to assess the popularity of different colour-combinations, it should be remembered that "low interest-value" was for this purpose an advantage. To annoy no one was a more desirable objective than to please, and possibly to distract, a few and, at the same time, to annoy, and probably also to distract, many others. Finally, for anyone interested in achieving the latter result, it seems that a particular shade of crimson may be commended as a foundation.

CEREBRAL PALSY UNIT

The cerebral palsy unit set up by the London County Council in 1943 at Queen Mary's Hospital for Children at Carshalton has been treating an average of fourteen children at a time. It is now proposed to enlarge it to take twenty at a time, and later forty, and later still sixty, by which time it is estimated that between 120 and 150 children will be undergoing treatment each year. A report by the Hospitals and Medical Services Committee of the L.C.C. makes it clear that this unit, the first to be established in the British Isles, has shown that the treatment of selected cases of cerebral palsy by the methods demonstrated by Prof Phelps, of Baltimore, gives good results. Some hopelessly crippled children have been transformed into individuals capable of taking part in the life of at least a school for physically defective children, and in many instances in normal school life.

It is considered desirable to continue with the special methods of treatment now being carried on and to develop the existing facilities as speedily as possible. The Ministries of Health and of Education both want to develop cerebral palsy work, and the latter Ministry has appointed a technical adviser who has been to America to study the methods employed there and the results achieved. A close association has been arranged between the L.C.C. and those responsible for a new school for children suffering from cerebral palsy. This is being established at Croydon by a voluntary organization. In the Carshalton unit the staff is to include a cerebral palsy therapist and an assistant, an occupational therapist, and a speech therapist (half-time). The part-time consultants and specialists concerned will be paid, the physician at the rate of £250 a year for one session a week, and the orthopaedic surgeon at £5 5s a session.

Edward Joseph Conway, D.Sc., M.B., B.Ch., professor of biochemistry and pharmacology at University College, Dublin, and Geoffrey Jefferson C.B.E., M.S., F.R.C.S., professor of neurosurgery in the University of Manchester, were elected Fellows of the Royal Society on March 20.

⁷ Macfarlane R. G. *Quart. J. Med.*, 1941, 34, 1.
⁸ *Endocrinology*, 1937, 21, 169.
⁹ *Biochem. J.* 1929, 23, 1328.

INTERNATIONAL SYSTEM OF WEIGHTS AND MEASURES

BY

J M HAMILL, MD, D.Sc.

Nearly a century and a half has elapsed since the International System of Weights and Measures was first inaugurated. It is also known as the metric system, because it was based on the metre, but, as will be seen later, this is no longer a correct description on account of modifications which the system has undergone since its inception. After the French Revolution the French Government decided that a rational scientific system of weights and measures which could be used internationally for all purposes was urgently necessary. Accordingly they convened a Commission of representatives of different countries, who in 1799 formulated the international system of weights and measures, or the metric system as it could then quite properly be called. The objects of the Commission were to lay down standards of length, volume, and mass* which should be interrelated and which should be based upon a natural invariable quantity independent of any arbitrary material standard. They chose as their natural quantity a unit of length which was presumed to be the one-ten millionth part of the polar quadrant of the earth which passes through Paris. This unit of length was called the metre and was given material expression in the form of a bar of platinum the distance between whose ends was exactly a metre. This material metre was called the "*mètre des archives*" and remained the standard until 1889. In point of fact the length of the polar quadrant was not exactly known, and the difficulty of repeating the determination of the value of the standard by reference to the definition was so great that it became necessary to legalize the length of the *mètre des archives* as defining the unit, so that actually the standard of length became a material one and not a natural invariable standard as was originally intended.

The standard of volume—the litre—was derived from the standard of length—the metre—or rather from the first sub-multiple of it—the decimetre. The litre was defined as the volume of a cube each of whose sides measured one decimetre. Since a cubic decimetre contains 1,000 cubic centimetres, the cubic centimetre became the term of description for the one-thousandth part of a litre and so remained for just over 100 years, until as will be seen later, the litre was redefined and the cubic centimetre ceased to have any derivative connexion or relationship with the litre.

The standard of mass—the kilogram—was derived from the cubic decimetre. The kilogram was defined as the mass of a quantity of water occupying the volume of one cubic decimetre at the temperature of maximum density (4° C). The material representation of this natural standard was a cylindrical piece of platinum, which was designated the "*kilogramme des archives*" and remained as the standard until 1889. It should be noted that the standard of mass is the kilogram and not the gramme.

The International Commission in 1799 also arranged that multiples and submultiples of the standards of length, volume and mass should bear a decimal relationship to their respective standards in conformity with the decimal scale of numerical notation.

Reconsideration of Standards

The position remained much as stated above during the first three quarters of the nineteenth century. During this period the rapid development of science and technology made accurate measurements imperative and a reconsideration of the international (metric) standards of measurement became urgent. Accordingly preliminary conferences with representatives of about thirty nations were held, and in 1875 representatives of seventeen countries subscribed to a treaty called the Convention du Metre by which an international organization was formed to deal with all questions relating to standards in the inter-

national system of weights and measures. Ultimately thirty-two nations became members of the organization. The organization consists of an international authority—the Conférence Générale des Poids et Mesures—the members of which are accredited delegates of each of the thirty-two nations who joined the organization. This Conference meets normally every six years. They appoint the Comité International des Poids et Mesures, which is an executive body of eighteen members to manage the affairs of the Bureau International des Poids et Mesures between the meetings of the Conférence Générale. This Committee meets every two years, and makes representations to the General Conference or acts on authority delegated to it by the Conference. The Bureau International des Poids et Mesures is the headquarters of the organization, and is situated at Sèvres on a site which has been declared neutral territory and has been ceded by the French Government to the Conférence Générale.

The Bureau International after its formation soon came to the conclusion that the existing standards the original standards of the archives, were capable of improvement, and it was decided to supersede them by new standards. Accordingly in 1889 the *metre des archives* was replaced by the existing standard, which is known as the "prototype metre". This was made as nearly as possible the same length as the *mètre des archives* but it differs in several respects from the old standard. The *metre des archives* was a simple bar of platinum the distance between whose ends was a metre, such a standard is known as an end standard. The prototype metre consists of a bar of iridium-platinum alloy (10% iridium and 90% platinum) whose cross section is X-shaped and near each end on the neutral plane of the bar is ruled a fine transverse line, the distance between these two lines is a metre. Such a standard is called a line-standard. Technical improvements during the nineteenth century made it possible to rule such lines with great accuracy, so that line-standards could be made much more accurately than end standards. When the *metre des archives* was made in 1799 the reverse was the case, line standards could not then be made so accurately as end standards. But the matter does not rest there. It is now possible to make end standards having flat parallel terminal faces with a mirror-like finish of optical perfection so that by interferometric methods the length of the metre can be measured to a degree of accuracy of a wave-length of light. It is, indeed, possible to return to the 1799 Commission's ideal of a natural standard and to express the metre in terms of the wave length of, say the red line in the cadmium spectrum or perhaps the even more monochromatic light of an isotope of mercury. For the present, however, the prototype metre—a line standard—remains the standard in the international system of weights and measures.

Accurate copies of the prototype metre were made and were distributed among the nations who were members of the Conférence Générale. The British copy is No 16, and it is now preserved at the National Physical Laboratory, Teddington. It is the legal standard metre in this country†.

An extremely important change was the redefinition of the kilogram. It had long been realized that masses could be compared with a higher degree of accuracy than volumes could be determined, and the original definition of the kilogram was abandoned because doubt had arisen whether the *kilogramme des archives* did conform precisely to that definition. It was obviously preferable to have a material standard of mass specifically defined rather than one defined from the unit of length through the unit of volume. Accordingly in 1889 the International Bureau constructed a new kilogram which consists of a cylinder of the same iridium-platinum alloy as of the prototype metre, having a mass as nearly as possible equal to the *kilogramme des archives*. This new superseded the kilogram of the archives and is known as the "prototype kilogram", it is the standard kilogram at the present time. It should be emphasized that the prototype kilogram is an entirely independent standard no longer linked with the metre and consequently completely divorced from the metric system.

About forty accurate copies of the prototype kilogram were made and distributed to the countries which were members of the Conférence Générale. The British copy is No 18 and

*Mass is the quantity of matter in a body. Weight is a force expressed as the product of the mass multiplied by the acceleration due to gravity. This latter differs at different places on the earth and consequently the weight of a body at these places differs accordingly.

†Weights and Measures (Metric System) Act, 1897

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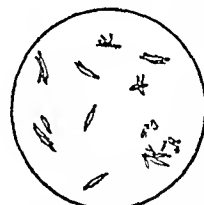


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kept in a specially constructed metal container at the National Physical Laboratory, Teddington. It is the legal standard kilogram for this country†

Cubic Centimetre versus Millilitre

The next step taken by the International Bureau was the redefinition of the unit of volume, the litre. In 1902 the litre was defined as the volume occupied by a mass of one kilogram of water at the temperature of its maximum density (4°C) and under a pressure of one atmosphere. Since it has been redefined on a basis of the prototype kilogram it follows that the litre, like the kilogram, has been divorced from the metric system, it has now no connexion whatever with the metre. This fundamental change in definition of the litre has the effect of excluding the cubic centimetre from any derivative relationship with the litre. The thousandth part of a litre is now a millilitre and not, as originally, a cubic centimetre. The cubic centimetre should therefore never be used as an alternative to the millilitre. Although the cubic centimetre has now no derivative relationship with the litre or millilitre it is desirable to know what is the volume relationship between the litre and the cubic centimetre. This of course, could be decided only by experiment. In 1910 the International Bureau determined this volume relationship and found that the litre as newly defined was slightly larger than the litre of the archives. Actually it was found that a litre is equal in volume to 1 000 027 cubic centimetres, other determinations give a value of 1 000 028 cubic centimetres. That the litre so closely approximates to the cubic decimetre is evidence of the skill with which the *kilogramme des archives* was constructed nearly 150 years ago.

When it is desired to convert millilitres into cubic centimetres the conversion factor will clearly be 1 000 027, and conversely when cubic centimetres are to be converted into millilitres the conversion factor will be the reciprocal of 1 000 027. This conversion factor is necessary only for work requiring extreme accuracy, for all ordinary medical purposes the conversion factor may be taken as unity. The simplicity of this conversion does not of course, justify the use of the cubic centimetre as an alternative to the millilitre. Apart from the small but real difference in volume between the two, the fundamental reason why the cubic centimetre should not be used as an alternative to the millilitre is the fact that there is no connexion whatever between these two units. The only occasion on which the cubic centimetre can properly be used as a measure of volume is when the volume has been determined from linear measurements. It must be emphasized that the cube of a unit of linear measure as a mode of expressing volume has no derivative or cognate connexion with the litre or any of its aliquot parts.

It is sad to reflect that although nearly half a century has elapsed since the litre was redefined, many people, including regrettably a significant proportion of the medical profession, continue incorrectly to use the cubic centimetre as an alternative to the millilitre. The international system has been legalized in this country and the denominations of the Board of Trade standards of weight and measure which may legally be used are given in the Weights and Measures Regulations, 1907, made by the Board of Trade under the authority of the Weights and Measures Act, 1904. The litre and the millilitre have been legalized but the cubic centimetre has not been legalized as a submultiple of the litre.

The *British Pharmacopoeia* 1932 page 639 follows the legal definitions and recognizes only the litre and the millilitre. The Ministry of Health correctly uses the millilitre in the Milk (Special Designations) Order but in the Therapeutic Substances Regulations 1927 the cubic centimetre is used throughout instead of the correct millilitre. In Article 2 (2) of the Regulations it is stated oddly enough that the millilitre may be used wherever the cubic centimetre is indicated. In other words, permission is given to use the correct unit instead of the incorrect one adopted in the Regulations. The *British Medical Journal* has rightly insisted on the correct nomenclature in its articles and it is to be hoped that other journals which have not yet done so will take similar action. Scientific workers in general have adopted the correct nomenclature and all

scientific glassware made in Britain is now graduated and marked in millilitres, not in cubic centimetres. A curious exception is the marking of hypodermic syringes in cubic centimetres. Clinicians should not lag behind the rest of the scientific world but should arrange with manufacturers to mark syringes in millilitres. Until this is done they should convert their readings into millilitres, using unity as the conversion factor. To record their readings in cubic centimetres suggests ignorance.

No Longer a Metric System

It should be clear from the foregoing why the international system of weights and measures can no longer be correctly described as a metric system. The only part of the metric system which remains is the unit of length—the metre—with its multiples and submultiples, and the squares of these to measure area, and their cubes to measure volume when this is determined from linear measurements. The unit of mass—the kilogram—and the unit of volume—the litre—have been irrevocably divorced from any connexion with the metre. Metrologists cannot evade the logic of this conclusion, but some of them would fain continue to use the description 'metric' mainly as a tribute to the origins of the system. When it is remembered that the metric ideal could not be accurately realized and that one of the ideals of the founders of the system was internationality, sentiment should be satisfied by the retention of this latter aspiration in the description 'international system'. The metric ideal has been shattered by the redefinition of the kilogram and the litre, but the ideal of internationality remains unshaken. It would seem, therefore, on grounds both of logic and of sentiment, that the proper description is the 'International System of Weights and Measures'.

It is interesting to note that there is a close parallel between the kilogram, the litre, and the cubic centimetre and the British weights and measures—the pound, the gallon, and the cubic inch. The pound, like the kilogram, is an independent material standard of mass, the gallon, like the litre, is a measure of volume based upon the standard of mass—one gallon is the volume of ten pounds of water. The cubic inch like the cubic centimetre, is a measure of volume when this has been determined from linear measurements—i.e., inches. The volume relationship between the gallon and the cubic inch, like that between the litre and the cubic centimetre has been determined experimentally—one gallon equals 277.4 cubic inches approximately.

The Question of Spelling

Finally there is the question of spelling, in which there is still a good deal of confusion. The French spelling of *kilogramme*, *gramme*, and *milligramme* is used in certificates issued by the National Physical Laboratory. Certain scientific societies use the English spelling, in which the final two letters, 'me' are omitted. The *British Pharmacopoeia* 1932, uses a mixed spelling—namely, *kilogram*, *gramme*, and *milligram*. The *Pharmacopoeia* is strictly correct in this usage, because this is the legal spelling as set out in the Weights and Measures Regulations mentioned above. This spelling was imported into the Regulations from the Weights and Measures Act, 1878 and the same spelling occurred in the Weights and Measures (Metric System) Act, 1864. The reason for its adoption in this Act is not known. From the point of view of the *Pharmacopoeia* the spelling 'gramme' is fortunate, because it is less likely than is 'gram' to be confused with 'grain,' especially when a writer omits to dot the 'i' in 'grain'. There is much to be said for uniformity in spelling, and if a uniform practice is adopted it should be the legal one used in the statutory regulations of the Board of Trade.

The Manchester Dental Hospital and Turner Dental School, aided by a grant of £30,000 from the trustees of the Nuffield Foundation, will undertake research into the causes of dental disease. Dr Matthews has been appointed to the Chair of Prosthetic Dentistry and Dr Holt to a readership in operative dentistry. The children's clinic at the hospital, by arrangement with the Manchester Education Committee will take over the dental welfare of some 1 200 children attending three schools in the neighbourhood. It is expected that the research will continue for ten years.

† Weights and Measures (Metric System) Act, 1897

MOBILE PHYSIOTHERAPY SERVICE IN LIVERPOOL

In an address to the council of the Greater London Provident Scheme for District Nursing Mr H C R Formby, secretary of the Liverpool "Queen's Nurses" Association, described a mobile physiotherapy service which was started by voluntary effort a year ago. Three units in Liverpool, he said, were now working an average of 44 hours a week each, and each was paying eight visits a day, last year they treated nearly 300 cases (3,560 treatments), nearly all of which had been referred by general practitioners. The object was to provide domiciliary massage treatment for patients unable to attend hospital. Until the introduction of this service under the auspices of the District Nursing Association ambulances and wheeled chairs had had to be used, with consequent delay as well as wastage of manpower. No difficulties were encountered in electricity supply, the apparatus was fitted with adaptable plugs, and for some treatments a portable battery was carried.

In Liverpool they had been fortunate enough to obtain their vans free of cost, and had had to pay only £200 for the conversion of each vehicle. Civil Defence and Red Cross vehicles were still available and suitable for conversion, otherwise, if new vehicles were purchased, the total cost was £500 for each outfit. Running costs were higher in rural than in built up areas, and the aim in rural areas should be to base the unit as nearly as possible in the centre of the district. The maximum fee charged to the patient was 7s 6d for each visit, 5s for those who could not afford to pay the full amount, and necessitous cases were attended free of charge, the cost being met out of public assistance funds. The physiotherapists who of course worked under the instructions of medical practitioners, were not responsible for the upkeep of their vehicles or for the details of administration. Mr Formby said that in his view mobile physiotherapy should be linked with district nursing throughout the country. A committee, to which the Chartered Society of Physiotherapists had appointed representatives, had been set up under the chairmanship of Lord Horder, one of the first objects of which was to raise the necessary funds for areas which could not afford to launch mobile physiotherapy units without aid.

NUFFIELD FOUNDATION FELLOWSHIPS

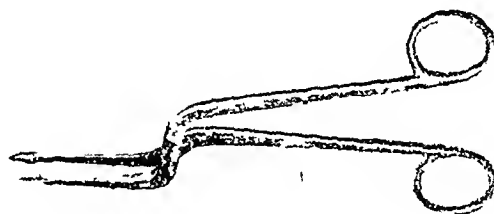
The Nuffield Foundation is prepared to award a few Fellowships to enable some suitably qualified medical men and women to obtain advanced training in the cause, prevention, and cure of chronic rheumatism. As far as possible, the amount of any award and the conditions attached to it will be adapted to the need of the recipient having regard to the purpose for which these Fellowships are offered. Normally the annual value of a Fellowship will be between £500 and £800. In the event of a Fellow being required to travel abroad to obtain special experience or study facilities the Foundation will pay the travelling expenses involved in addition to the award. Fellowships will be awarded for one year, but may be renewed for a second year, and are open to men or women who are British subjects holding a medical qualification registrable in the United Kingdom, and who are normally resident there and who desire to specialize in the diagnosis, treatment, and study of chronic rheumatism. Candidates must have spent at least one year since qualification in the general medical practice of a hospital, and preferably should hold the M.R.C.P. diploma. A Fellow may not hold any other award concurrently with the Fellowship without the permission of the trustees of the Foundation. Fellows will be required to carry out, at institutions approved by the trustees of the Foundation, a programme of work and training similarly approved. Other work, paid or unpaid, may not be undertaken without the permission of the trustees. A Fellow will be required to submit to the trustees, at the end of each year's tenure of his Fellowship, a report on his or her work during that year. Should the trustees at any time find that a Fellow neglects or has neglected the obligations of his appointment, they shall have power immediately to terminate his Fellowship. The Foundation is prepared to receive applications at any time. Medical officers at present serving with the armed or auxiliary Forces of the Crown may apply for Fellowships tenable on their release from such Forces. Forms of application are obtainable from the Secretary, Nuffield Foundation, 12 and 13, Mecklenburgh Square, London WC1.

Preparations and Appliances

CUTTING PUNCH BIOPSY FORCEPS

Dr J WALTER, Deputy Medical Director, Sheffield National Centre for Radiotherapy, writes: This instrument was designed for speed in taking biopsy specimens from surface lesions, particularly neoplasms. It is essentially a modification of the ordinary punch forceps with the following differences: (1) The lower half ends in a lancet point with sharp tip and cutting edges, the blade approximates a scalpel in thickness. (2) The upper half corresponds in shape, but is a "ring" allowing the lower blade to sink into it, to produce a shearing action. The lower edges of the upper ring are sharpened to produce the cleanest possible shear.

To illustrate its action on, say, a skin epithelioma the lower cutting blade is pushed in deep to the growing edge, to the desired depth and distance, and the upper ring is brought down scissors fashion, shearing off the piece of tissue above the cutting blade, and the specimen is lifted cleanly away. The



whole operation is completed with one hand in a few seconds, and usually no local analgesia is necessary. Its advantages are marked, as compared with the ordinary two-handed method with scalpel and dissecting forceps: (a) There is no danger of missing the selected fragment, or of macerating it by repeated incision and manipulation. (b) Bleeding cannot interfere with the speed and success of the operation once the blade is correctly inserted. (c) An adequate depth of tissue, suitable for a definite histological opinion as to invasion of corium is more likely to be secured than by the ordinary method. (d) The speed and ease of the operation make it particularly valuable in a busy out-patient department, where routine biopsies would otherwise be impracticable. (e) A wider field of biopsies is opened up, for example, from the pharynx, back of tongue, vagina, where time-consuming methods are generally needed. It is particularly useful inside the mouth.

Experience over two years in a busy department has demonstrated its value. The edges can be sharpened as necessary, and sterilization secured by immersion in lysol instead of boiling.

The instrument was manufactured by Messrs Wm Skidmore and Co., Ltd., 59, Cemetery Road, Sheffield, 11. A fuller description has appeared in the *British Journal of Radiology*, May, 1946, and I am indebted to the Hon. Editors for permission to make use of the material previously published.

La Ligue Internationale Contre le Rhumatisme has now been constituted under the presidency of Dr Ralph Pemberton, of Philadelphia, and subdivided into a European "Ligue" and an American "Ligue". The British branch will be represented by the scientific advisory committee of the Empire Rheumatism Council with the following officers: *Chairman and National Representative* Dr W S C Copeman, *Treasurer* Dr G D Kersley, *Secretary* Dr Oswald Savage. A European congress has been arranged in Copenhagen for September this year and an international congress in the United States for 1949. As far as possible all old members and others who may be interested have been circulated, but the Ligue is anxious to enrol any medical men concerned in the problem of rheumatism. Further details will be sent on application to the organizing secretary, Empire Rheumatism Council, Tavistock House (North), Tavistock Square, London, WC1.

Reports of Societies

ANAESTHESIA FOR CAESAREAN SECTION

A discussion on anaesthesia for caesarean section took place at a meeting of the Section of Obstetrics and Gynaecology of the Royal Society of Medicine on March 21. The subject excited unusual interest, the seating accommodation in the Barnes Hall was extended to capacity and over 100 members stood throughout the proceedings. The chair was taken by Mr WILLIAM GILLIATT.

Spinal Anaesthesia

Mr RUFUS THOMAS said that the criteria in anaesthesia for caesarean section must be primarily the safety of the mother and child and, subject to this, ease of operating for the surgeon. Nearly all his caesarean sections for nine years had been done under spinal anaesthesia with "nupercaine." He admitted that spinal anaesthesia was not suitable for any and every woman. It was said that the pregnant woman at or near term was susceptible to the influence of cocaine products, "nupercaine," however, was a quinoline product not related to cocaine compounds. It was also said that collapse and death were liable to occur from a sudden drop in blood pressure. This might be so if proper precautions were not taken, it was a danger to be avoided first by giving a vasopressor before the injection, by having the blood pressure recorded at five-minute intervals throughout the operation with injection of a vasopressor if the systolic pressure dropped below 90 mm Hg and finally by the elementary precaution of not using spinal anaesthesia in unsuitable cases. It was dangerous to use it in severe anaemia or low blood pressure unless and until the patient's condition could be restored by blood transfusion.

With these precautions spinal anaesthesia was safe and easy to administer. The difficult cases were those with spinal abnormalities. The patient herself felt nothing after the initial prick of the needle. She was, of course, conscious. She heard the baby cry at birth she could be told its sex, could see the baby herself if she desired and could see her husband at once. The anaesthetic had no effect on the baby. He had heard many infants cry lustily before being delivered from the uterus. The surgeon moreover, had the maximum of operative comfort. The muscles were relaxed, the abdomen quiet, and access to the lower segment was greatly facilitated. Some operations were almost bloodless. The placenta often delivered itself, and closure of the uterine and abdominal incisions was very easy. After operation vomiting and distension were rare and chest complications practically non-existent. He was able to speak of 346 caesarean sections under "nupercaine." There had not been a maternal death under or due to the anaesthetic. The number of infants delivered (including four sets of twins) was 350 of which 2 were stillborn and 10 died later, an infant salvage rate of 96.5%. The chief indication for operation was disproportion, but a "spinal" had been used in practically all the recognized indications for caesarean section, including a number of cases complicated by ovarian cysts and 58 cases of placenta praevia. Caesarean section under spinal anaesthesia was carried out twice for 41 patients and three times for 5.

Caudal Anaesthesia

Mr J. H. PHEL reported a small series of cases in which caesarean section had been carried out under caudal anaesthesia. He could not claim that this was a perfect method, but it was a valuable addition to the anaesthetist's technique, giving a systematic and unhurried approach to the lower uterine segment. The dangers of ether, chloroform and "pentothal" (thiopentone) in producing foetal narcosis needed no emphasis. There was a growing conviction both in America and in this country that general anaesthesia was not advisable for caesarean section. The Philadelphia General Hospital reported that fewer and fewer women were being subjected to inhalational anaesthesia. He was prepared to admit the advantages of spinal

anaesthesia, and some American and British figures were excellent, but it was difficult to rid one's mind of tales of disaster. The caudal approach completely eliminated meningitis and other risks. But it was a method which called for great care and experience if good and certain results were to be obtained by injection into the sacral canal. From 20 to 40 minutes were required from the start of injection until the patient was ready for the surgeon.

He described 50 cases operated on at King's College Hospital, with no maternal mortality and no more morbidity than in caesarean section in general. There were no stillbirths, but there were three neonatal deaths, due to prematurity in one case and to a diabetic condition of the mother in two. Haemorrhage was minimal. The baby cried immediately, there was no narcosis or anoxia. Atelectasis and pneumonia following inhalation of liquor were reduced to a minimum. The Trendelenburg position could be safely used—a small but important advantage. Various methods of premedication had been tried, but patients were far less worried if they had no premedication at all than if they had small doses of drugs which rendered them more excitable. Apart from local abnormalities and difficulties in locating the sacral hiatus, the two most important contraindications were recent haemorrhage and low blood pressure. Patients should be given 1/4 gr (16 mg) of morphine as soon as the child was born. The most important drawback to the method was the expertness demanded in administering the injection, nevertheless he urged that it be given a more extensive trial especially by those who were of opinion that spinal anaesthesia was dangerous for women during pregnancy.

Dangers of Inhalational Anaesthesia

Mr C. MACINTOSH MARSHALL said that there were several reasons why inhalational anaesthesia must be judged unsatisfactory and even dangerous. Most inhalational anaesthetics induced some degree of anoxia. This was of little importance as a rule but sometimes as a result of laryngeal spasm or vomiting the anoxic state was quickly reflected in the infant. In addition, many babies came under the influence of the anaesthetic and some resuscitation was required, and occasionally might not be effective. At the same time, in the case of the perfectly sound woman operated on before the onset of labour, these dangers were not likely to arise given an expert anaesthetist. This last qualification was important, because the great majority of anaesthetics for caesarean section were given by the residents in the various hospitals. When, on the other hand, labour had been prolonged, poor uterine action had been a prominent feature, a large amount of sedatives had been used, and extreme moulding was present, the dangers were enhanced and general anaesthesia was absolutely contraindicated. The foetal risk required no emphasis. The only justifiable choice lay between spinal and local anaesthesia. Spinal anaesthesia was almost ideal, but deaths were still reported in literature, and, as he had reason to know, not all the deaths under spinal anaesthesia in caesarean section found their way into the literature. For his own part he had never seen spinal anaesthesia have the slightest adverse effect on the foetus, and no doubt accidents could be avoided, but there were fatal cases.

Local anaesthesia was the method of choice for the intra-peritoneal lower segment operation. He hated local anaesthesia—always had hated it—but he had to try to do what he believed was safest for the mother and child, and among the hundreds of contributions that might be written on the subject of that night's discussion he did not believe that there could be one on the dangers of local anaesthesia in caesarean section, because those who used the method would have no cause to make such a contribution and those who had not used it would not have the courage to do so. He pleaded therefore that local anaesthesia should be considered, particularly when it was important to give the premature child every chance of survival. It promised the normal and therefore the best, oxygen supply in the mother's blood so long as the baby was dependent upon the placental circulation. For many years he had given no pre-operative sedative, but to ameliorate the rigours of the local anaesthetic he had sometimes given a little "pentothal" (thiopentone) just before incision of the uterus. So far he had seen no harm to mother or child.

Experience with Various Methods

Miss KATHARINE LLOYD-WILLIAMS brought forward the records of 305 cases from the Royal Free Hospital. Of these cases 224 related to the pre-war period 1931-9. The anaesthetic procedures adopted had gone through various changing phases which she described. At one time she gave nitrous oxide and oxygen until the baby was born then went on to chloroform, and after delivery completed the anaesthesia with gas and oxygen and ether. She stressed the need for complete confidence between the surgeon and the anaesthetist. Later she had tried spinal anaesthesia with results which from the surgeon's point of view were very satisfactory. Spinal anaesthesia became the routine method in her department, using a solution of 1 in 2,000 "nupercaine," preceded by a small dose of "omnupon" and scopolamine and followed post-operatively by paraldehyde. During the war years certain modifications were made, cyclopropane was tried, but was not a popular anaesthetic. She described in detail the present routine method in which thiopentone was used with gas and oxygen. "Omnupon" was given intravenously after delivery, and the operation was completed with a further dose of thiopentone if necessary. She concluded with the observation "As I grow older I ask myself, before giving an anaesthetic, would I like it myself? So far as concerns spinal and local anaesthetics, which for special cases are admirable, my answer is No."

Dr MASSEY DAWKINS said that the question as to which was the best form of anaesthesia for caesarean section must evoke considerable argument, and every known method had its advocates. A search of the literature had brought to light only one large series of cases in which the results were tabulated according to the anaesthetic used—he referred to that published by Irving, of Boston. He went on to give a closely detailed account of the various procedures followed at University College Hospital, including the use of epidural analgesia in caesarean section. Gas and oxygen and ether were most often used. Local anaesthesia had not been entirely successful; only 37% of the patients were able to stand the operation without further anaesthesia. He concluded by saying that he had yet to meet an anaesthetist who would choose to have a spinal anaesthetic for himself, and he added that the anaesthetist had failed in his duty towards his patient if the baby was unable to cry on delivery.

More Advocacy of Spinal Anaesthesia

Dr J. N. CAVE supported the case for spinal anaesthesia. If an inhalational anaesthetic was used the least amount possible should be given in the shortest possible time before the foetus was delivered. He was convinced that, when there was no contraindication, a spinal anaesthetic gave the greatest chance of a successful delivery with a minimum of risk.

Mr H. J. MALKIN gave a preliminary communication on experience at Nottingham with spinal anaesthesia in caesarean section. For the last eighteen years he had used spinal anaesthesia almost exclusively for major gynaecological and obstetrical operations. He had particulars of 767 consecutive unselected cases of caesarean section in 736 of which spinal anaesthesia had been used. There had been 8 maternal deaths, none of which could be said to be due to spinal anaesthesia *per se*. All types of cases appeared in this series including emergency operations. Mr COCHRANE mentioned 517 cases in which spinal anaesthesia had been employed. The drug used in the large majority of cases was a procaine derivative. No death was recorded in this series nor any particular collapse, which suggested that procaine derivatives were not as noxious for the patient as was sometimes supposed. Very small doses were used and gave 40 minutes' operating time.

Mr J. A. STALLWORTHY complained that speakers had not differentiated between the lower segment and the classical operation. These constituted completely different entities. Nobody had mentioned the danger of asphyxia of the child due to spinal anaesthesia. The better the spinal anaesthesia the more the uterus was cut off from central control and the more it was likely to go into spontaneous contraction. He had seen foetal distress become immediately apparent, and on two occasions it was impossible for the child to breathe in a lower segment

operation because the uterus was in atonic contraction. It seemed to him that what was much more important than the virtues of one particular type of anaesthetic was the choice of anaesthetic.

The chairman, Mr GILLIATT, in closing the discussion, said that anaesthetists were dissatisfied with the older and more usual methods employed in general surgical procedures. Some of them had carried out the operation with complete satisfaction to the patients when the anaesthesia was administered by any of the different methods advanced that evening. But he could not help feeling a distinct liking for an anaesthetic which did not involve inhalational methods. He felt that many of them would go away dissatisfied with the methods to which they had been accustomed, but stimulated by the accounts of methods so strongly recommended by others.

TUBAL PATENCY TESTS

At a meeting of the Devon and Exeter Medico-Chirurgical Society on March 20 Dr MARGARET H. JACKSON discussed the value of tubal patency tests in the diagnosis and treatment of sterility. She referred to the pioneer work in this field of Ruben, Bonnet, Gordon King, Sharman Meaker, Sicard and Forestier. Tubal morbidity as a factor in infertility was estimated by some of those authorities to be more or less important in nearly 50% of all cases. In a series of 570 cases in which she herself had carried out tubal patency tests Dr Jackson did not place the incidence of all kinds of tubal morbidity (including complete occlusion partial or temporary occlusion by spasm or stenosis, and lack of normal tubal peristalsis) much above 30%, a figure lower than that of most workers. Moreover, of these total organic occlusion after repeated patency tests was present in only about 10%. If the tubal patency tests were not carried out as a routine an essential causative factor in some cases of sterility would be missed. It should be remembered that the indications for testing tubal patency were not only diagnostic but also therapeutic, for a much desired pregnancy not infrequently followed. Acute pelvic infections contraindicated patency tests.

The best time to do them was during the middle third of the menstrual cycle, well away from menstruation, as near ovulation as possible and preferably just before it. With the patient in the lithotomy position a bivalve plastic speculum was inserted. Not more than 150-200 ml of CO₂ should be used and pressure should never exceed 210 mm Hg. Gentleness and asepsis were essential, antispasmodics should be given whenever there was evidence of spasm, but anaesthesia, with a very few exceptions was unnecessary—indeed it was a disadvantage, because the patient's co-operation was required. Moreover anaesthesia was of no value in the relief of tubal spasm. Pain was slight—rather like that of mild dysmenorrhoea—unless there was obstruction or unless pressure was raised unduly where upon mid-hypogastric pain, sometimes referred to the sacrum or iliac fossae ensued. Late effects included referred shoulder pain on sitting up which was transient and seldom severe, or after lipiodol, pelvic and sacral aching.

Repetition of Tests

The importance of carrying out repeated tests before accepting a diagnosis of complete occlusion could not be over-stressed. Tubal insufflation and lipiodol injection were complementary tests. Insufflation was inexpensive not troublesome and took only about 15 minutes. With a regularly tested kymograph apparatus peristaltic movements, spasms and stenosis of tubes could be accurately recorded. A vulsellum hardly ever needed to be used. By insufflation alone one could not be sure if both tubes or only one was patent, nor could a block be located. Air embolism and sepsis were possible but avoidable dangers. By means of utero salpingography the shape size and position of the uterus and of the cervix could be visualized. Filler defects and spasticity shown, fixation of the uterus demonstrated by screening, the length and tortuosity of tubes and points of obstruction or occlusion noted. Moreover lipiodol had a therapeutic effect. In discussing the aetiology of tubal morbidity Dr Jackson emphasized the importance of tubal culosis of the uterus and tubes which was often "silent" and of which no history could be obtained.

Correspondence

The Toxicity of Iron Compounds

SIR—The paper by Dr Gilbert Forbes (March 22, p 367) has drawn attention to the toxic action resulting from accidental overdosage of ferrous sulphate taken by mouth. No mention is made of the name of the preparation, but we believe we are correct in saying that it was "fersolate" tablets, of our manufacture.

Experiments in progress in these laboratories indicate that for the more soluble iron compounds the toxicity is closely correlated with the iron content (calculated as ferrous iron) and strongly suggest that the action is due to the formation of ferric chloride in the stomach. The iron compounds were given, either in solution or suspension, to fasting rabbits by means of a stomach tube, the doses were adjusted to body weight. According to the dose, the animals either died in a few hours or recovered completely. The post mortem findings for those that died were completely in agreement with those of Forbes, the cause of death being haemorrhagic gastritis. The animals that recovered were quite well on the following day, daily blood counts and urinary examination showed no abnormal findings. In some cases but not all, the stomachs of these animals showed signs of irritation at the great curvature.

The results so far obtained indicate that the fatal dose of ferrous sulphate in rabbits is higher than those reported by Forbes for guinea pigs. We find that "fersolate" tablets compare favourably for toxicity with other iron compounds so far tested and the presence of small amounts of copper and manganese sulphates does not increase the toxicity, which is due to ferrous sulphate. The toxic effect of the iron in Bland's pills is less than half that of other ferrous salts, but relatively higher doses are required for haemopoietic action.

The lower toxicity of Bland's pills may be due to the sodium sulphate in this preparation having a cathartic action that hastens the excretion of the iron. Rabbits treated with high doses of Bland's pills had a profuse diarrhoea within half an hour of dosing. It would appear, therefore, that a gastric lavage with an alkaline solution would be of value after accidental overdosage with ferrous sulphate. This would neutralize the acidity of the stomach, cause precipitation of ferrous carbonate, and prevent the formation of ferric chloride and retard the absorption of iron.

The results of further experiments, now in progress, will, it is hoped, be published in detail later.

Ferrous sulphate is one of many medicinal substances having undesirable effects when taken in grossly excessive quantities. We consider that Dr Forbes's paper serves to emphasize the need to keep such preparations out of reach of young children, and to guard against overdosage—I am, etc.

Gilco Laboratories Ltd
Greenford, Middlesex

G F SOMERS

SIR—Dr Gilbert Forbes (March 22, p 367) has written a very important paper which has wide reaching implications. Have we not been assuming too much that "harmless" drugs are innocuous even in large doses and that the excess will be excreted without danger? The outstanding example is the vitamins which are found only in traces in natural products, and yet are prescribed medicinally in enormous quantities.

To return to the ferrous sulphate question I remember some 12 years ago being stimulated by Dr Helen Mackay's papers on anaemia in infants to order massive doses of ferrous sulphate as a routine procedure during the last months of pregnancy. After some months I abandoned this as a number of women complained of headache, nausea and malaise and if the iron was continued developed a mild albuminuria. I was convinced that there was an association between these liver and kidney symptoms resembling a pregnancy toxæmia and the excessive iron intake but I must acknowledge that I did not find anyone to agree with me. However I have never given large quantities of iron in pregnancy since, and in the light of Dr Forbes's cases

with the reported damage to liver and kidneys I venture to bring up this theory once more and to ask whether anyone else has had a similar experience?—I am, etc.,

London W 8

VIOLET RUSSELL

Retrodisplacement and Fertility

SIR,—There is not the slightest doubt that retrodisplacement of the uterus is a cause of sterility. A woman with a backward displacement of the uterus can become pregnant but if she is sterile and a backward displacement is present, the correction is followed by pregnancy in a very large number of cases. Needless to say, full investigation of both male and female is a necessity—I am, etc.,

Dublin

BETHEL SOLOMONS

The "Costoclavicular Syndrome"

SIR,—Prof E D Telford and Mr S Mottershead raise in their paper (March 15, p 325) several interesting points and advance new concepts of great importance to a proper understanding of the various factors involved in cases of brachial neuralgia. Probably owing to the paper shortage clarity has been sacrificed to compression in certain places.

The authors describe the operative findings in fourteen cases associated with cervical rib and extensive arterial thrombosis, except in two cases the thrombosis extended no higher than the lower border of the pectoralis major. Are these findings meant to imply that the cervical rib played no part in the syndrome and that no case of arterial damage due to cervical rib was found in this extensive series? Is it believed that the arterial damage was due to compression between the heads of the median nerve and that this was due, either directly or indirectly, to the fact that the cervical rib altered the relationship between the plexus and artery?

The stated "textbook picture of neurovascular bundle compression" fails to convey what is found in practice. In our experience there is no such picture. These cases differ considerably in history, symptomatology, and signs, and this difference has valuable diagnostic implications. The authors are undoubtedly right in casting doubt as to whether their remaining 69 cases of cervical rib were in fact correctly described. Prof J R Learmonth's recent paper in *Thorax* undoubtedly gives a balanced judgment of this problem.

We believe that the case in which the axillary artery was compressed by the two heads of the median nerve is the first to be described and as such is of considerable importance. It might be helpful to consider this concept from its obverse angle. Consideration of the respective resistances of artery and nerve would lead to the expectation that symptoms would arise from the nerve rather than the artery in such a case. From the rather meagre clinical data provided it appears likely that this in fact happened. It might be preferable to contend that the median nerve was compressed by the artery. In fact quite possibly this man's symptoms might have been alleviated by resection of his first thoracic rib, as this would have led to alteration of the artery-plexus relationship.

The challenging statement that in postural manoeuvres of the shoulder resulting in obliteration of the radial pulse the axillary pulse can still be felt cannot be allowed to pass unquestioned. A small personal experience does not suggest its general validity and it is contrary to certain published evidence. It is not clear from the text or the table whether the authors in fact ascertained in each case where the radial pulse was obliterated that the axillary pulse was still present and undiminished. Further information on this point would be welcome and in particular if in fact all cases had not been examined, on which cases this statement was founded. Further, the statements in the summary, paragraphs 2 and 4 are contradictory. Paragraph 4 is almost certainly a misprint as the references quoted include several undoubted cases of costoclavicular compression noted at operation. The role of costoclavicular compression in causing a rise in venous pressure in the arm requires consideration (Sampson *et al* 1940). The evidence as a whole is suggestive that costoclavicular compression is common and cannot be disregarded. It is noteworthy that the rise of venous pressure on bracing back the shoulders cannot be attributed to median nerve compression. It is considerably lessened if the first rib is missing as in thoracoplasty. In these cases the average rise

in pressure was 2.3 cm of water, while the rise in 26 normals was 6.7 cm of water

The section dealing with the anatomical dissections is interesting and informative but, in a way, unsatisfactory. A considerable amount of work has not been utilized to its full extent. Nerves are described as being "tightly stretched"—tension can be measured, the clavicle moves from the rib—distance and angles can be determined. Kelvin, throughout his life, stated a great though limited truth: "Science is measurement." There is no doubt that the rational assessment of anatomical problems is profoundly aided by the discerning analysis of even necessarily imperfect measurements. That this problem is not easy is appreciated, since we have been interested in its complexities and difficulties for some time. Telford and Mottershead have undoubtedly done a first-class piece of work, and this is properly acknowledged in your leading article, but their answers to some of the questions we pose would also be of great interest.—We are, etc.,

London W 1

ERNEST FLETCHER
ANTHONY FLETCHER

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Curare

SIR,—Dr Massey Dawkins (Jan 18, p 111) has drawn attention to a condition of shock, as reported to him by nurses and ward sisters, among patients who have received curare, which, he says, is probably due to insufficient anaesthesia. The letters from Dr A J Gray (Feb 1, p 196), Dr H G Kahlenberg (Feb 8, p 234), and Dr G V S Wright (Feb 15, p 268) point to this condition of shock as being due to the profound muscular relaxation and anoxaemia from depression of respiration. Dr D S Jones (Feb 15, p 269) suggests that post-anaesthetic complications may be due to an overdose of curare. From this one infers that the condition of shock results from overdose of curare.

From these three theories surely far the most plausible is the second as proposed by Drs Gray, Kahlenberg, and Wright. No patient should ever be allowed to return to the ward in such a condition, no matter what anaesthetic has been used. Precautions must be taken in the theatre during and at the close of the operation to counteract it, otherwise such excellent drugs as cyclopropane and curare become a veritable menace and fall into undeserved disrepute.

Certain points in the induction, maintenance, and recovery from anaesthesia where curare has been used seem pertinent. Where maintenance is to be by "pentothal" and endotracheal oxygen it seems important to administer enough curare to obviate laryngeal spasm and straining at the commencement of the operation, too little may lead to difficulties in intubation, with subsequent mis-use of the drug's potent qualities and an upsetting of technique. Controlled respiration is then performed, and as soon as automatic respiration is resumed the partial rebreathing technique is resorted to, oxygen being the only gas inhaled. The soda lime is then used in accordance with the desirability or not of quiet breathing. In this way the carbon dioxide in the circuit causes dissociation of oxygen from oxyhaemoglobin in the tissues. Tissue asphyxia and hypotonicity with diminished venous return are mainly due to depressed respiration leading to anoxaemia. This I submit is most often caused nowadays not from overdose of drugs but from the use of prolonged carbon dioxide absorption and endotracheal tubes.

Except in the case of certain operations, among which I would include those demanding the full Trendelenburg, the use of an endotracheal tube certainly predisposes to diminished respiratory excursion from the necessity of having to use more curare. It seems therefore wiser not to use an endotracheal tube as a general rule, thus cutting down the amount of curare required, using only sufficient to procure adequate muscular relaxation, and to use only minimal doses of "pentothal." An endotracheal tube is not normally necessary provided an adequate airway is ensured, as in any case curare counteracts reflex laryngeal spasm even though a muscle-relaxing dose might not be sufficient to allow direct laryngeal intubation.

During maintenance the soda lime should be cut out of circuit and the tissues given the benefit of carbon dioxide either self-generated in a cyclopropane anaesthesia or from a cylinder with the expiratory valve open in a "pentothal" oxygen administration. With cyclopropane maintenance only sufficient curare is used to procure relaxation and the soda-lime is periodically cut out when ever the respiratory excursion can be deepened. Air is admitted to the circuit before the close of the operation and further amounts of carbon dioxide used to help eliminate the anaesthetic. If respiration is still depressed there should be no hesitation in giving physo-

stugmine and atropine intravenously before returning the patient to the ward.

Finally in cases where respiration is markedly depressed or where the blood pressure is not within 10 mm Hg of the pre-operative level and where the pulse pressure is below 30, the usual clinical evidence of shock being present, intravenous plasma or adrenaline drip should be instituted without delay. Curamine and oxygen are prescribed and house surgeons warned to withhold the use of morphine until the patient has fully recovered and it is certain that any restlessness is due to pain. For less serious degrees of shock warmth and raising the foot of the bed and a rectal saline drip are measures to be instituted. As soon as possible the patient should be encouraged to sit up and moved from side to side and remedial chest exercises instituted, as pulmonary complications are prone to develop following upon such a condition of shock.

I have been interested to find that in one or two cases this condition of shock has been associated with a marked diminution in pulse rate to the region of 50 beats a minute. This is a common finding in cyclopropane overdose and may possibly be an indication of "pentothal" overdose as well, though I have not been conscious of administering an overdose in this respect. Again I can only surmise that the condition is due mainly to anoxaemia or oxygen lack in the tissues, occasioned by diminished respiratory exchange from too much carbon dioxide absorption, leading to a diminution in peripheral resistance. Curamine acts centrally so must be reinforced with an additional supply of oxygen. I would be interested to hear whether other anaesthetists have also experienced this state of affairs.

—I am, etc.,

Bristol

W M MAIDLOW

Clinical Freedom and the Board of Trade

SIR,—The Minister of Health recently declared that "it is a basic principle of the new Service that there should be no interference with the clinical freedom of any doctor—specialist or general practitioner." Why then has the Board of Trade this week issued an instruction as to the type of case for which a spinal support may be prescribed (*Supplement* March 15, p 33)? Thirty-nine diseases and deformities are listed, ranging from actinomycosis of the spine to ureterostomy. Apparently there will be no problem in securing a surgical appliance for spinal neurosis! Many of us may think that no treatment could be worse but at least the Board of Trade has no objection. It is also gratifying to learn that a surgeon will have no difficulty when he makes a diagnosis of actinomycosis of the spine (of which I know of only six records in the literature of the world) a simple prescription will suffice. But for the scores of patients seen week by week and month by month with prolapse of an intervertebral disk, such a prescription will not be accepted. The surgeon must prepare "a fuller medical certificate," give "the precise condition," add "sufficient detail" send it to Horseferry Road where the Board of Trade will examine it, and submit it to the medical advisers of the Ministry of Health who in their wisdom will deliberate and in due course pass judgment, and then send it back to the Board of Trade for endorsement, who will return it to the surgeon and possibly grant permission for him to refer it to his instrument maker. Does anyone believe that such a proposal is calculated to promote honesty in the minds of surgeons, or is it obvious that sooner or later the alternative of subterfuge will be adopted, and no matter what the true diagnosis may be, a suitable label will be found in one of the 39 listed conditions which is less of an untruth than others and the prescription made accordingly?

In short I do not complain that one of the most common of all spinal disorders has been left off the list, I complain that such a list has been made at all. I complain of legislation of such a type as to bring legislation into contempt. The object could have been achieved more successfully by reminding doctors that certain materials are still in short supply and that care is still needed in prescribing spinal supports and corsets. A simple letter of 20 words, conforming to the traditions of the profession, would have done much more than this blundering 500 word document with its central direction and civil service control.—I am, etc.,

London W 1

REGINALD WATSON JONES

Certificates for Corsets

SIR,—With laudable objective in mind brewers allocated a proportion of available supply of spirits for medicinal use supplying and designating same as such and providing such

dition to the quota available for ordinary use to the distributor. Only they forgot that an unscrupulous publican can inhibit all ordinary sales and provide distribution only by provision of a medical certificate for same, and as his supply of the latter is reimbursed for each medical certificate provided, the more medical certificates he receives the greater facility he is provided with to dispose of his weekly quota at gratifying prices to himself. That honest hostellers do exist distributing their quota in fair portion to all their customers while still reserving a small percentage for immediate essential medical use, rather proves that the original reservation is not essential nor in fact desirable.

This allegorical approach enables me to state with conviction that I have never seen half a valuable page of the *Journal* put to a greater degree of useless blather than is contained in the supplement of March 15 (p. 33) describing what is apparently a face-saving measure for the original restrictions imposed on such an essential female garment as a corset, such measure in any case still stimulating the corsetiere to obtain a quota-free corset for her client in preference to the private made-to-measure article, as the former is still apparently available free of purchase tax.

I note these arrangements have not been drawn up in consultation with the manufacturers, and venture to suggest that their advice might have been taken as to how they have successfully surmounted the prolonged epidemic of "severe isceroptosis" despite their shortage of skilled labour. The matter undoubtedly may now be left to their initiative in the confidence that essential demands will be met and the initiation of isceroptotic anxiety left to the hands of the charlatan—I am, etc.,

Tipton Staffs

L. H. EUNSON

Diet and Canine Hysteria

SIR—Sir Edward Mellanby's notion that canine hysteria was introduced by feeding growing dogs on agenzized flour (Dec. 14, 1946, p. 885) cannot be reconciled with experience of the behaviour of healthy dogs or the pathology of those diseased dogs which exhibit canine hysteria. It is very difficult to assess Sir Edward's data, since he omitted to correlate his clinical observations with the ante- and post-mortem pathology of his laboratory dogs and rats. Moreover, his statement that fits were observed in the animals receiving treated [agenzized] flour and were never seen in those having untreated flour was falsified by his earlier statement that fits could often be produced by feeding agenzized flour [my italics]. It would seem that some of the dogs which were fed on agenzized flour did not show fits, but I cannot find any description of them; they are not illustrated in Sir Edward's three tables, they obtained even less notice than the rats which were uniformly negative. This evidence should have been detailed, for it is consistent with the anomalies of naturally occurring canine hysteria of which I will cite two examples from my records.

(1) No further fits have been observed in the dogs whose diet has been changed from biscuit to meat, whereas fits have persisted in some of the dogs whose diet (biscuit) has been maintained. Some have been misled by this phenomenon into attributing the cause of canine hysteria to certain dog biscuits. But I have noted canine hysteria in dogs which since weaning had been fed exclusively on meat. (2) No further fits have been observed in dogs from which roundworms have been expelled, whereas fits have persisted in some of the untreated dogs, although no change has been made in the diet. Many have been influenced by this phenomenon into attributing canine hysteria solely to roundworms. A full understanding of the clinical phenomena the pathology can be fully studied.

My observations of naturally occurring canine hysteria have been incorporated in papers on the B.H.S. infection which is a fully adopted abbreviation for the infection by various well-defined groups of the *β* haemolytic streptococcus (Hare and Hare, 1946). Canine hysteria is not a disease entity, but an event which may occur in the course of a particular infection, it is a type of spasmophilia which is expressed by the infection of dogs infected by the B.H.S. and roundworms (*Toxascaris* and *Oxyuris* sp.). The essential pathology of which has been destroyed within 24 hours of showing canine hysteria is that of the B.H.S. infection plus the

presence of a variable number of roundworms in the duodenum—i.e., chronic tonsillitis, hyperplasia of the reticulo-endothelial system, catarrh of the pylorus of the stomach and duodenum, albuminous degeneration of the liver and kidneys, and, as first recorded by the late Prof. John Evre (1928), toxic encephalopathy.

In my cases I have not observed 'loss of consciousness' and 'epileptiform convulsions,' which Sir Edward reported in some of his dogs. The label 'epileptiform convulsions' (without loss of consciousness) was applied by nineteenth-century French and British veterinary authors to what is now termed canine hysteria. More recent work on the pathology has clarified the differential diagnosis of at least four distinct types of spasmophilia of dogs, one of these types being epileptiform convulsions which are now recognized as due to the B.H.S. infection complicated by coccidiosis. Unfortunately some authors carelessly apply the word 'epileptiform convulsions' (with loss of consciousness) to the behaviour of dogs which are in the condition of hepatic and renal failure. This is the pathology of the terminal stage of several diseases, one of which is the conjoint B.H.S. and roundworm infections.

From Sir Edward's statement that "a time may come, however, when a dog which seems to be acquiring immunity suddenly suffers the most severe epileptiform fits and dies" I infer that his dogs, to which he attributed "epileptiform convulsions" and 'loss of consciousness,' were in a condition of hepatic and renal failure. Sir Edward's description of his dogs' behaviour, apart from "epileptiform convulsions" and "loss of consciousness," seems to me to be consistent with the symptomatology of naturally occurring canine hysteria, which was described in French and British veterinary literature of over 60 years ago. Sir Edward has been gravely misled into attributing our knowledge of canine hysteria to American sources of the past 30 years.

I find further support for my inference that Sir Edward's dogs were suffering from the B.H.S. and roundworm infections from his description of "the actual observed state of the affected animals" in such phrases as 'the attacks seem to represent temporary exacerbations superimposed on a chronic abnormal condition', "in young puppies the attacks came on insidiously and usually took some weeks to develop", "lactating bitches appear to be particularly prone to hysterical fits". I accept Sir Edward's diagnosis of his dogs' behaviour as canine hysteria, not his startling notion of its aetiology. In my opinion he experimented on diseased dogs and mistook the expressions of their disease for the consequences of his dietary changes—I am, etc.

TOM HARE

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Arsenical Encephalopathy

SIR—The report of a case of arsenical encephalopathy and its treatment by Drs. G. Hipps and R. Goldberg (March 8, p. 296), calls for some comment. Though a case of this nature may be rare in this country it can by no means be described as 'a rare clinical condition'. Such cases were commonly met with in India Command in the years 1942-5 and a large number of deaths occurred from post-arsenical encephalopathy during that period. The condition was almost exclusively confined to Indian O.R.s, the majority being natives of Southern India. Though the diet of Indian troops varied a good deal in its constituents from that of British O.R.s, the part played by sub-clinical vitamin deficiency or by deficient intake of amino-acids containing the essential -SH grouping could not be determined in these fatal cases.

Though symptomatic treatment of effects due to organo-arsenical intoxication is an important feature in the later stages of the syndrome it is now known that specific treatment of the underlying chemo-pathology at an early stage will produce positive results. Recent work on the toxicity of arsenical compounds when injected into the body confirms the work of Voegtlin and his colleagues (Voegtlin, Dyer, and Leonard, 1923, 1925) who showed that organic compounds of the type RAsAsR were inactive in that form but were oxidized in the body to the form RAsO, and that only when they had undergone this change did they exert their toxic action either on the parasites or the host. They showed further that the

arsenoxide so formed reacted with sulphhydryl groups in the body tissues and in the spirochaetes. Hogan and Eagle (1944) showed that the toxicity of any arsenoxide depends on its constitution and its ability to combine with essential functional groups in vital organs.

Many of the enzymes concerned with carbohydrate metabolism are known to be inhibited by reagents which react with sulphhydryl groups (Cori, 1946), and detailed work on this subject has been carried out by Barron and Singer (1945) using a variety of reagents. Glutathione is one of the most important substances in the body containing the thiol group. It is probable that the vitamin protein enzymes are similarly adversely affected by organo arsenicals, for it is known that arsenic interferes with the conversion in the liver of vitamin B₁ to its co enzyme form. The poisoning action of arsenoxide on glutathione is probably one which involves oxidation of its thiol group to a disulphide, resulting in the production of oxidized glutathione. This in turn will bring about the inactivation of succinic dehydrogenase, and as glutathione acts as a catalyst for glyoxalase, the action of this latter enzyme will be also in abeyance. Damage even more widespread will follow, the presence of the sulphhydryl group in several oxidizing enzymes, as well as in several proteolytic and other enzymes, has been shown to be necessary for their activity (Bersin, 1935, Hellerman, 1937, Barron and Singer, 1945). In view of the fact that oxidizing agents in the cell tend to inhibit the activity of -SH enzymes, it is probable that one of the main functions of glutathione in cellular systems is concerned with the continuous reactivation of the -SH enzymes. Its capacity to bring about such a reactivation through its powerful reducing action has been demonstrated in many experiments.

Once enzymic balance has been upset recovery is very possibly hard to effect, and reactions will proceed in one direction faster than metabolism can control them. Lactic acid synthesis is retarded to such a degree that enzymic control in other directions is affected by the building up of aldehydic compounds. It is postulated that this is due to the inactivation of glyoxalase and succinic dehydrogenase, with a subsequent block in the tricarboxylic acid cycle.

The following chain of events leading to the development of arsenical encephalopathy has been suggested by Lydon: (1) Interference with cellular metabolism. (2) Accumulation of metabolites in CNS cells (which are most sensitive to changes in oxygen tension). (3) Increased retention of fluid by cells, with oedema of tissues. (4) Interference with normal capillary circulation. (5) Congestion and subsequent focal necrosis. The characteristic pathological changes found in fatal cases support this theory.

The immediate treatment of post-arsenical encephalopathy should be one which aims at preventing the establishment of the vicious circle mentioned above and opening the way for the restoration of the metabolic sequence known as the Krebs tricarboxylic acid cycle. While it has been shown that the toxic action of arsenoxide is inhibited by the intravenous administration of reduced glutathione (Voegtlin *et al* 1925), recent studies have proved that the most effective compound in use as an antidote against heavy metal poisoning is 2,3 dimercaptopropanol (BAL), which in dogs is many times more effective than glutathione (Long and Farah, 1946). It is recognized that these compounds exert their maximal therapeutic action when given at the earliest possible opportunity after a diagnosis of organo metallic intoxication has been made. As excess of succinate protects its dehydrogenase from the inhibitory effect of oxidized glutathione, the combination of a succinate and an organic thiol compound given parenterally should in theory, give the maximal therapeutic result if administered immediately arsenical intoxication is suspected.

The practice of using intravenous glucose does not appear to be physiologically sound in view of the fact that a disturbance of carbohydrate metabolism is occurring. Double-strength plasma would seem to be the agent of choice in counteracting cerebral oedema. The use of a compound such as calcium thiosulphate does not present an available thiol radicle but merely introduces sulphur in inorganic form. One of the organic thiol or di-thiol compounds mentioned above will produce a far greater and more rapid therapeutic effect. These compounds are now quite easily obtainable—I am, etc.,

E A J BYRNE

Lancaster

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Treatment of Post-operative Pulmonary Atelectasis

SIR,—The annotation on a new treatment for post operative atelectasis (March 22, p 386) prompts me to inform you of a method of dealing with this condition which I have used occasionally during the past two years. The method is to stimulate coughing by the introduction of 1 ml of water by means of a syringe, into the respiratory passages, the need being passed into the trachea at about the level of the first ring—that is, below the cricoid cartilage. This method is intended to supplant bronchoscopic aspiration, which, as observers agree, is the ideal method of treatment, and which should be undertaken as soon as signs of atelectasis appear, but the introduction of water may serve as a simple substitute if the facilities for bronchoscopic aspiration are not available.

The last case which I dealt with by this means was a man of 44 who had had a Polya gastrectomy for duodenal ulcer on March 4, 1947. When I visited him on the evening of March 4 he had an atelectasis of the left lower lobe. The surgeon who had operated on the case had left instructions that he was not to be disturbed, and, as he was not to be found, I decided to employ the water technique, though I should have preferred to use the bronchoscope. The effect was excellent: after a violent spasm of coughing, in which considerable sputum was brought up, he stated that he felt better, and his dyspnoea disappeared at once. He continued to bring up sputum for a few days, but all signs of atelectasis had gone, and the temperature, which had been raised on the evening of March 4, became and remained normal.

The birth of this method occurred when I was anaesthetist to a surgical team for chest surgery in the B.L.A., the surgeon in charge being Major J Leigh Collis, of Birmingham. A patient was brought in with collapse of the right lower lobe, the cause being a piece of tinned bacon which he had inhaled. I anaesthetized the patient for bronchoscopy by swabbing the pyriform fossae with 15% cocaine, and then introduced 1 ml of the same fluid into the trachea through the top ring. The patient immediately coughed and expelled the greater part of the inhaled bacon. This suggested to Major Collis and myself the method of causing expulsive coughing which I have described above.

I am tempted to make two comments on Grandstaff's work to which your annotation was directed. First, although I have not seen the original article, I find great difficulty in believing that of a total of 2.6% of respiratory complications following operation (an extremely low figure), two thirds be pneumonia. My own experience, in common with everyone else whom I have consulted, shows that atelectasis is by far the commonest of major respiratory post-operative complications, and that the pneumonia rate is only a very small fraction of this. Secondly, while not denying the possibility remote though it appears to be, that analgesia of the larynx may cause dilatation of the bronchi, it would hardly appear that this of itself would cure atelectasis. It is also necessary that the offending plug be removed, either by aspiration or by coughing. With all due deference to the author of your annotation, swabbing of the pyriform fossae does not "inevitably produce severe coughing", in fact, it practically never does. For this reason Grandstaff's method might well be improved by stimulation of coughing by some such means. I suggest

While on the subject, I should like to mention a point of diagnosis which I have never seen in print. The dyspnoea of atelectasis is always more severe than the physical signs, and it appears to warrant, and the sudden onset of severe dyspnoea after operation is strong presumptive evidence of atelectasis.

It is a very encouraging sign that attention is now being directed to the diagnosis and treatment of post operative atelectasis. Lives have been saved, and many days of convalescence averted, by the prompt use of the method. It is most necessary that all anaesthetists should become conversant in the use of this instrument, and also expert diagnosticians in thoracic disease. Too often, even now, surgeons are content to classify all cases of atelectasis, bronchitis, pneumonia, what have you as "anaesthetic chests" and to bother no more about them.

In conclusion, while stressing the need for early bronchoscopic aspiration, let it not be forgotten that postural coughing

Where respiratory
infections are present

Immediately active, 'Endrine'
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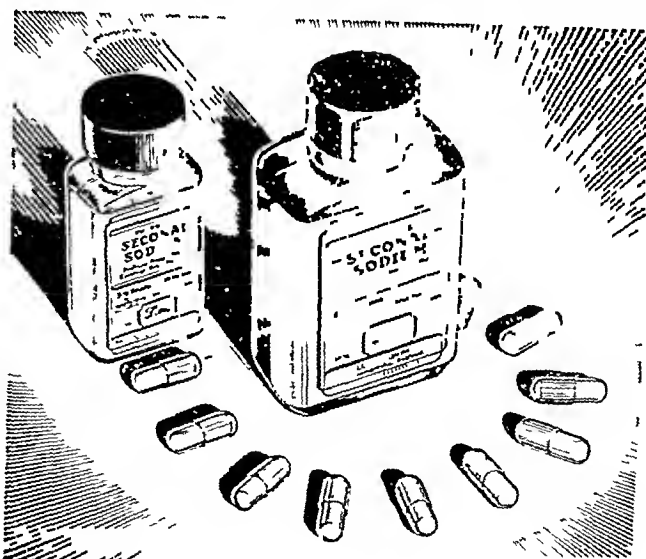
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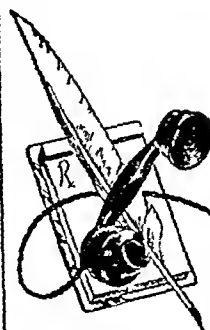
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References: Shortage of space precludes list of references but full documentation may be obtained on application to Clinical Research Dept 11A



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stimulant cough medicines, breathing exercises, and carbon dioxide also have their place in the treatment of post-operative atelectasis—I am, etc.,

Newcastle upon Tyne

M H ARMSTRONG DAVISON

Penicillin for Breast Abscess

SIR,—A recent article by Florey, MacVine, and Bigby (Dec 7, 1946 p 845) stimulates me to present the results of series of cases treated by one method which they employed—namely, aspiration of the abscess and injection of penicillin solution into the cavity. The technique employed was essentially similar to that which they advocate. The cases referred to presented themselves mainly in the spring of 1946, when the shortage of beds was extremely acute. Previous work on the value of penicillin used locally in abscess cavities of various types, both acute and chronic infected with the staphylococcus and particularly the occasional reports of breast abscess treated by such methods, suggested that these cases might respond to local penicillin. They were therefore treated as outpatients in the casualty department of the Royal Infirmary, Leicester.

The series consisted of 24 cases of whom 15 were primipara and 9 were multipara. Of the latter, two presented with abscesses in both breasts, and four gave a history of mastitis in a previous pregnancy, including both the bilateral cases. About one third of the mothers had not persisted with breast feeding for more than a few days, and subsequently had not regularly emptied the breasts.

The abscesses were first seen in various stages of suppuration from early localization to obvious fluctuation. All cases were treated as follows. Aspiration of the abscess was carried out using a wide bore needle and with full sterile precautions. Pus was found in every case. The pus was replaced with calcium penicillin in normal saline in amounts varying from 50,000 to 200,000 units through the series. A light general anaesthetic was employed with very nervous patients. Cultures of the pus were made in each case and all yielded penicillin-sensitive *Staph aureus*. The procedure was repeated in 24 hours in all cases. In 19 cases, including one bilateral relief from pain was considerable within the first 24 hours of treatment. In the remaining five cases the abscesses remained large, and further daily aspirations up to the fifth day were made. These were all late cases when first seen, with well established cavities. Two eventually healed after discharging freely from the sinuses which had formed along the needle tracks. The remaining three required incision and drainage.

Of the 19 cases which cleared up satisfactorily, 2 relapsed, one after 10 days and the other after 16. Both were given two further aspirations and injections of 100,000 units of penicillin, after which they healed with no further trouble. *Staph aureus* was again grown from both.

All the cases in the series were given a routine course of 30 mg of stilboestrol spread over five days and the normal breast was manually expressed until the flow ceased. In the 19 cases which responded well the total duration of treatment until complete recovery was approximately two weeks, although in some cases a firm painless nodule could be felt up to the fourth and fifth week. The quantity of penicillin injected appeared not to affect the recovery time to any marked extent. In about half the cases particularly those from which fairly large quantities (more than 5 ml) of pus were aspirated, sinuses formed along the needle track and pus discharged freely. All dressings were therefore performed with a completely sterile technique.

(1) The series is too small for generalization, but it seems clear that in cases seen early in the stage of localization, when the volume of the abscess is small, this method of treatment is a satisfactory one and an improvement on surgical methods, however in late cases where large cavities are present it would appear not to be efficacious except as an adjunct to incision and drainage. In this case the intramuscular route is probably the best method of administering the penicillin.

(2) These cases can often be treated in a satisfactory manner as outpatients without surgery, particularly in view of the present bed shortage.

(3) Inquiries among several practitioners in the district suggest that the aetiology of many cases in an industrial town such as this is closely connected with the fact that many women resume work shortly after the puerperium and find it inconvenient or impossible to continue breast feeding. They do not, however empty the breasts adequately and stagnation of milk occurs.

I am indebted to Mr Rizelle the surgeon in charge of the casualty department for permission to publish this article and for his advice at all times—I am, etc.,

West Drayton, Middlesex.

S J KRISTER

Co-opted Members on Negotiating Committee

SIR,—It may not be obvious to everyone that the subcommittees of the Negotiating Committee contain the names of many co-opted members, but it is a fact which, I think, needs definite stressing. It is no doubt necessary to adopt this procedure in order that each particular division of practice should receive the fullest consideration in relation to the Act.

In view of the amount of careful thought time, and trouble which have been bestowed on the negotiation and election of the Negotiating Committee it is to be hoped that the votes of such co-opted members will in no case outweigh those of the elected members, especially when one remembers that the report of the Negotiating Committee on a previous occasion was in fact the report of a small subcommittee which was put quite formally and without the opportunity for discussion, to the full Negotiating Committee before being considered by the Council—I am, etc.,

Hungerford Berks.

D H STUART BOYD

National Health Service Act

SIR,—Dr D G ff Edward (March 15, p 352) contends that we ought not as a profession to oppose the new medical service Act because to do so is undemocratic. May I try to expose the fallacy of such argument? Many besides him are bemused by it nowadays. In fact the general cry is for democracy as the universal cure-all.

A little reflection will show that a whole-hog version of it can never achieve real efficiency in government for the simple reason that its actions can only be the resultants of the more or less fused ideas of every individual on the electoral roll. Some may be very well informed and well balanced while others will be comparatively ignorant or stupid or both. Efficiency under the democratic system is only to be achieved when people will curb themselves and refrain from interfering in matters they do not understand. On the other hand, those who do understand should assert themselves and explain to persuade and be prepared to lead their fellows. That is what our position should be. The general mass of the people is as profoundly ignorant of the working of our profession as it is of the science and art of medicine. If we keep silence we let the whole affair go by default, for we have abundant evidence that the Government itself is little if any better informed in this business than the 'man in the street'.

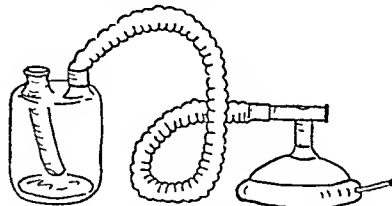
Anyone desiring to study this matter further will do well to read *The Limits of Pure Democracy* by W H Mallock, Chapman and Hall, 1918—a veritable mine of information and sound thought—I am, etc.

Doncaster

W REGINALD WILSON

Trichlorethylene in Midwifery

SIR,—Perhaps some of those who have inquired about the use of trichlorethylene in midwifery might care to try the simple, cheap apparatus which I described in 1944 in the *Journal of Obstetrics and Gynaecology*.



The first apparatus was improvised in a few minutes and could be again by anyone wishing to try the method. The concertina rubber tube is disconnected from a standard Boyle's gas-oxygen machine, complete with face-piece and three-way gas-cock. The free end of the tube fits nicely over one neck of a 16 oz (450 ml) Woulfe's bottle. A piece of standard rubber drainage tube is inserted into the other neck of the bottle so as to fit closely and reach to within about two inches of the bottom. It is then cut off flush with the neck, the natural curve of the tubing being allowed to direct it to the centre. The mask must be of the inflatable rim type and in good condition. In the absence of positive pressure from gas cylinders, etc., the

amount of the drug inspired depends entirely upon the gas-tight fit of the mask. One ounce (28.4 ml) of trichlorethylene poured into the bottle makes the apparatus ready for use. The three-way tap is kept permanently in the "valves" position so that the patient inspires over the trile and expires into the air. To make the apparatus more foolproof, so that the analgesia can be self-administered, a special gas cock, made for me by A. Charles King, Ltd., can be used. With this the tap position cannot be varied and the valves are of a special low-inertia type.

The cost of the apparatus, using new parts throughout, was about 50s in 1944, which is 'udicrously low compared with that of any other machine. In addition to the above a small wooden box, in which to stand the Woulfe's bottle to prevent its being knocked over, can be used if desired. The diagram will perhaps eke out the deficiencies of the description—I am, etc.,

Stockport Cheshire.

WALTER CALVERT

REFERENCE

Calvert Walter (1944) *J Obstet Gynaec Brit Emp* 51 140

Shortage of Nurses

SIR—There has been a great deal of prominence given recently to the shortage of nurses, which, as Dr Leonard Ley says (March 15, p 355), is already serious. I have not so far seen any helpful constructive suggestions from the General Nursing Council itself. In this profession good pay, food, and accommodation are not *all* that is necessary to attract younger men and women. Happiness, peace of mind and interest in one's work are far more valuable to the individual than "good hours of work."

I think a great many suitable, capable, practical nurses are lost to the profession on account of the excessive amount of book work and lectures—often far too advanced and detailed for the needs of a good practical nurse. How often do the lectures and tutorials interfere with the continuity of their ward duties and so damp their interest? These young keen recruits are given lectures on all sorts of quite new subjects and have to copy out their lectures afterwards in their "spare" time. These lectures may then be "corrected" by the sister tutors—surely a very boring process for both parties. Far better give them questions to answer on paper if they must have 'home work' and let the sister tutor correct these. The introduction to the theory of nursing is far too rapid and too short, and I think the suggestions in the last two paragraphs of Dr Ley's letter are suggestions on the right lines.

There seems to be a lack of appreciation on the part of the General Nursing Council of the fact that recruits in former days were mostly from the 20–30 year-old group, whereas now they range from 17 years upwards. What is the use of trying to teach these young people about the circle of Willis, the functions of the pituitary and suprarenal glands and the endocrine secretions, the sympathetic nervous system, or about cisterns, traps, drains, water standards of purity for domestic use, and "parasites" (just as a whole—no detail in the syllabus) all of which are included in the General Nursing Council syllabus?

A great opportunity was lost during the war by not giving those women who were "directed" into or chose nursing in preference to the Services the opportunity of learning more about nursing proper. A question to all those who were directed into nursing duties during the war should prove helpful and enlightening to those who are worried and puzzled by the position. As I have written elsewhere on a previous occasion the questions must be searching for the truth and should include such questions as: Why did you prefer nursing to the Services? How much actual nursing did you do and over how many years? Were you asked if you would like to become a trained nurse or were you offered any suggestion that you should sit the preliminary examination? Would you still take up nursing if you were allowed a year or more off the training period on account of your war service? What suggestions would you make to attract more recruits to the nursing profession? Surely such a questionnaire if properly analysed would provide ideas for the better recruitment of nurses—I am etc.

Aberdeen

W M GRAY

Obituary

SIR JOSEPH BARCROFT, CBE, FRS

Sir Joseph Barcroft died suddenly at Cambridge on March 21 at the age of 74. He was one of the great figures in British physiology. His classical researches were on the respiratory function of the blood, and in the course of his investigations he devised among other instruments, the Barcroft apparatus, a differential manometer for measuring gases in small samples of blood. His work in this field is familiar to every medical student. Sir Joseph Barcroft was professor of physiology at Cambridge from 1926 to 1937. After his retirement he began a new career of research in animal biology, to which he contributed almost as much as to human physiology.

Joseph Barcroft was born on July 26, 1872, a son of the late Henry Barcroft, of Newry, Co. Down. He was educated at Bootham's School, York, and at the Leys School, Cambridge, before entering King's College, Cambridge, where he was a prizeman and exhibitor in 1894. He took a first in both parts of the Natural Science Tripos and graduated in 1896. He was awarded the Gedge Prize in 1900, the year in which he was elected FRS, and only shortly after his election to a fellowship at his college. While reader in physiology in the university he soon became known as an able lecturer and research worker. He was Oliver Sharpey lecturer at the Royal College of Physicians in 1915 at a time when his war work was fast making him one of the leading authorities on defence against gas. He was president of the physiological section of the British Association in 1920 and Fullerton Professor at the Royal Institution from 1923 to 1926. Whereas his work before the war had been mainly concerned with the action of haemoglobin as a carrier of oxygen, his interest now shifted to various problems of blood flow and respiration. Later still he worked on the physiology of the nervous system as controlling respiratory movement.

In 1925 Barcroft, on the death of Langley, succeeded to the chair of physiology in Cambridge. Throughout an active life he played a prominent part in maintaining the high tradition of the Cambridge School of Physiology. As head of a large laboratory he found time to take a lively interest in many different investigations, without actively interfering with the natural development of the ideas of his colleagues. His own contributions were many, but perhaps his greatest influence on physiology was through his encouragement of the work of younger men. His enthusiasm, his good humour, his attractive style of writing and speaking and his unusual gift for putting the complicated results of profound thought into the simplest possible language inspired many with a love of his special subject. Though he was not a medical man much of Barcroft's work was with human subjects and much of it a dramatic quality that excited interest in other than academic circles. Thus for many years he represented Cambridge Oxford in favour of the view that the passage of gases through the epithelium of the alveoli of the lungs was a simple physical process and that even under adverse conditions the lungs not take up oxygen unless the oxygen pressure in the air greater than that in the blood. In the course of his work on this subject he led an expedition up the Andes at one time and on another occasion he exposed himself to low oxygen pressure for several days in a glass box in his Cambridge laboratory.

He was knighted in 1935 and in 1937 he was succeeded by Prof E D Adrian. At this point in his life he had already received marks of distinction from many foreign societies.



W. L. G. G. G.

He had been a member of the chemical warfare committee at the War Office and had been made a CBE in 1918. He had honorary degrees from half a dozen universities and he might well have rested on his undoubted laurels. Instead he applied to animal biology all the vigour, skill, and enthusiasm which had formerly been directed to the problems of human physiology. Fundamental research on the large domesticated animals had been somewhat neglected in this country, and it was in 1941, at the age of 69, that he became Director of a new Unit of Animal Physiology for the Agricultural Research Council. He introduced new techniques for watching developing embryos, and he took up an old problem in a new guise—that of the oxygen supply to the foetus *in utero*. Soon a stream of interesting results and papers began to come from his unit. The first volume of his *Researches on Pre-natal Life* has only recently been published and is perhaps the first book of its kind. It deals with the development of function in the progress of foetal life and describes for the most part investigations made in the schools of physiology and agriculture in Cambridge either by Barcroft or by his colleagues and pupils. Most of this work was done upon foetal sheep. There is a comparison between placental and foetal growth in the sheep. There are experiments showing the variation in fats and sugars as between the maternal and foetal blood. There are chapters on growth, and on the relation between maternal nutrition and foetal development. Numerous experiments are described on the transfer of blood from the placenta to the foetus at birth. Like his earlier books, this last contribution bears witness to the breadth of his interests and to his experimental ingenuity. In the midst of all this work he found time to test Anderson shelters on the range at Woolwich and to experiment with dehydrated meat.

Barcroft's teaching, like his research, made no parade of learning. In the physiological laboratory at Cambridge he was always ready to help an undergraduate with the most elementary experiment and with a simple friendliness that immediately put the student at his ease. In 1943 he received the Copley Medal, the highest award which the Royal Society can give. During his 74 years of active life there were few honours which had not come his way. But physiologists all over the world will remember him as "J.B.," a worthy successor to Michael Foster and Langley.

Prof Thomas Nicol writes: Dr R. J. GLADSTONE was a much loved and respected member of the Anatomical Society and will be greatly missed by his many admirers and friends. Especially do we feel his passing a personal loss at King's College, London where he had worked since 1912. Even during his retirement he remained attached to the anatomy department and produced a beautiful series of illustrated sections of embryos, which is of great value for teaching and research. This work was completed only just before his death. His wide knowledge of biology and comparative anatomy, his great artistic gifts and his constant thirst for further information resulted in many contributions to anatomical knowledge, and these are especially valuable because of his critical judgment. He was always a champion of the young man and there are many who will for ever owe him a great debt. His willingness to help others was one of his outstanding qualities. We extend to his widow and family our deepest sympathy in their irreparable loss.

Dr RICHARD RICE died at his home in Harwell, Berkshire, on March 7 aged 88. He qualified at Charing Cross Hospital in 1879 and was in general practice until January 1945. He married in 1885 Helen, daughter of the late Col W. A. Ross of the Bengal Artillery, and is survived by four of his seven children. He had been a member of the British Medical Association for over sixty years.

A. A. B. writes: Richard Rice possessed a radiantly healthy mind and body. For sixty-two years he practised at Harwell, giving unstinted service to the people in the surrounding countryside. His powerful personality combined with a deep understanding of men and women, his industry and sustained professional skill had made him loved and respected by thousands. For many years there was no other doctor within a radius of seven miles and so an eminently sound clinician soon became an outstanding practitioner and obstetrician. During his whole career he seldom took a holiday. He was an energetic and faithful churchman and a churchwarden of the parish church for over half a century. He sang in the choir until he retired from practice, and for many years was

choirmaster. There were few positions of trust locally which he had not held at some time. For years he hunted twice a week during the season. An endearing side of his character was his championship of the young in any discussion, and his enduring love for small children. To accompany him on a long country round into the downland villages was an unforgettable experience. The bare bones of general practice became miraculously clothed as he recounted incidents of vivid interest from the past.

Dr Margaret L. Weir writes: It was with a feeling of great personal loss that I heard of the death of Dr Richard Rice. I had the privilege of being his first assistant and partner. Dr Rice was a clinician of the highest order and a man of unflinching integrity. He combined professional skill with a clear, sympathetic understanding of his patients and gave himself unsparingly to the service of all classes of the community, who in return gave him their deepest trust and love. As a family doctor he had an extensive maternity practice, and in this particular branch he will be long remembered for his high professional ability, kindness and infinite patience. During his few hours of leisure he read extensively, taking a keen interest in every new development of medical science. He was a great lover of Nature, and got much happiness and peace in his garden among his roses.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

The following degrees were conferred on March 15

MD—*F. S. Maclean J. W. Crofton
M. Chir.—A. S. Till
M. B. B. Chir.—*W. B. Webb

* By proxy

UNIVERSITY OF LONDON

Edward Tenney Casswell Spooner, M.D., has been appointed to the University Chair of Bacteriology and Immunology tenable at the London School of Hygiene and Tropical Medicine from Oct. 1.

Robert Henry Stewart Thompson, D.M., has been appointed to the University Chair of Chemical Pathology tenable at Guy's Hospital Medical School from Oct. 1.

Hans Gruneberg, M.D., has been appointed to the University Readership in Genetics tenable at University College from Oct. 1, 1946.

UNIVERSITY OF LONDON

Alan Kekwick, M.B., B. Chir., M.R.C.P., has been appointed to the Chair of Medicine tenable at the Middlesex Hospital and Medical School from Oct. 1, 1946.

UNIVERSITY OF LIVERPOOL

The following candidates have been approved at the examinations indicated

MD—Anne E. McCandless, H. Peaston, T. G. Richards, A. G. Rickards, M. B. Ch.B.—13J. C. Davis, 12J. Janet H. Mountford, 13H. H. Whincup
FINAL M.B. Ch.B.—Part III—Olive M. Bell, J. H. Brenner, G. B. Brown, Mary E. Casper, Beryl G. Castell, J. B. Cowie, W. M. Edwards, Jeanne A. Elphick, D. W. A. Evans, A. J. Farmer, I. L. Francis, H. J. Gilbride, T. H. H. Green, P. Hampson, M. F. Holt, Joan M. Hughes, E. Jones, Meira Jones, S. Kalinsky, H. Keidan, F. D. Kitchen, Edith G. Mercer, Alicia J. Middle, J. Moloney, Dorothy M. Morris, Jones, J. M. Old, W. L. Owen, Dorothy C. Peterson, Helen Poole, J. S. Porterfield, J. K. M. Rawlinson, Elizabeth Rhind, L. Robinson, D. L. Sharples, K. S. Shaw, W. B. Smellie, R. J. Smith, Elizabeth Taylor, W. A. L. Thompson, B. Towers, Pamela J. Tyson, D. G. Walker, Barbara M. Webber, D. J. West, D. P. C. Williams, Jessie I. Young.
Medicine and Obstetrics and Gynaecology—F. G. Anderson, I. S. J. Crosbie, Elizabeth Howarth, J. E. Ridine, Audrey A. Shone, M. H. Turner, Medicine and Surgery—E. Dewsbury, Nancy V. Dilling, Sheila K. Frazer, A. B. Jones, F. P. Lennon, G. C. Snee, L. C. Wolfman, Surgery and Obstetrics and Gynaecology—W. Ellenbogen, G. I. T. Griffiths, G. L. Levy, G. H. Lucas.
DPM—Part I—A. R. Unsworth, P. Weyman.
CERTIFICATE IN PUBLIC HEALTH—G. Davies, Barbara W. Gerrard.
1 With second-class honours. 2 Distinction in surgery. 3 Distinction in obstetrics and gynaecology.

UNIVERSITY OF MANCHESTER

At a special meeting of the University Court held on March 21, authority was given for the conferment, on May 21, of the honorary degree of D.Sc. on Prof. Edgar Douglas Adrian, O.M., M.D., F.R.S., F.R.C.P., for contributions to the study of physiology. The following candidates have been approved at the examination indicated.

DPM—Part I—G. Christie, A. Clark, H. A. Cole, R. Cotter, R. C. Cunningham, S. Falk, F. Howarth, I. McD. Kerr, M. G. McColl, R. S. Williams.

UNIVERSITY OF SHEFFIELD

The following appointments were made at a meeting of the University Council held on March 21. Honorary Lecturer in Venereal Diseases—Douglas Ogilvie Stevenson, M.B., Ch.B. Tutor in Child Health—Cynthia Mary Redhead, M.B., B.S. Assistant Tutor in Obstetrics—Samuel James Barr, M.B., Ch.B.

UNIVERSITY OF BIRMINGHAM

Lancelot Hogben, D Sc, FRS, Mason professor of zoology, has been appointed to the Chair of Medical Statistics in the University

UNIVERSITY OF EDINBURGH

The seventh Sharpey Schafer Memorial Lecture will be delivered by Dr Charles H Kellaway, MD, FRS, FRCP, FRACP, director in chief, Wellcome Research Institution, London on Tuesday, April 22, at 5 p.m., in the University New Buildings, Teviot Place, Edinburgh. His subject is "The Perfusion Experiment in the Study of Tissue Injury". All interested are invited to attend the lecture.

UNIVERSITY OF GLASGOW

A series of papers will be read in the Department of Ophthalmology of the University on Wednesdays, at 8 p.m., from April 9 to 30, both dates inclusive. The general arrangements will be similar to those in the series held last year, and the meetings will be open to all medical practitioners and senior students interested in ophthalmology. Details will be published in the diary column of the *Supplement* week by week.

CONJOINT BOARD IN SCOTLAND

The following candidates, having passed the final examination, have been admitted LRCP Ed, LRCS Ed, LRFP & S Glas

J D Bowie, Audry G Burdett J G W Cunningham M Devlin Pearl I Evans W Frame J M Gillies S J Glueck A J Graham F H Hamill Winifred M Hiscock R J Kleinglass G Metz W C Palmer E L Peel N W Preston I M Ratner J M Raynor Eva Revesz S Rose, Georgina M H Smeaton, B Taylor W B Wilder R Wolfson

Medico-Legal

COCAINE IN MISTAKE FOR PROCAINE

The danger of prescribing by telephone was again grimly illustrated at a recent action in the High Court before Mr Justice Hilbery. A patient undergoing a jaw operation at Wellhouse Hospital, Barnet, died after an injection of 80 ml of 1% cocaine solution with 1/20,000 adrenaline. His widow sued the Hertfordshire County Council and Mr Alan Henderson Hunt, the surgeon, for damages.

Mr Hunt said in evidence that on the day before the operation he telephoned instructions to Dr Eleanor Knight, who was not then qualified but was acting as student-house surgeon, to have ready 100 ml of 1% procaine and 1/200,000 adrenaline, adding that the dose of the latter was about 5 minims (0.3 ml). He always, he said, used the name procaine, "novocain" was a German trade name and since the war its use had been discouraged. No prescription was needed for the solution he had ordered, and Miss Knight ought to have known that the cocaine solution was lethal. He also maintained that the pharmacist should, before dispensing the solution, have obtained written instructions and the signature of a qualified person, or have queried the verbal instructions.

The learned judge, after a hearing lasting four and a half days, found that Mr Hunt, Dr Knight, and the pharmacist had been negligent. Although, he said, Mr Hunt expected Dr Knight to use her skill and reason and to bring her mind to bear on what he was saying, he was still under a duty to ensure that he was getting what he ordered. Dr Knight was negligent because she knew the solution was lethal and required for an injection. The pharmacist was at fault for accepting an order by word of mouth for an unheard of dosage for injection of cocaine and adrenaline, and for taking no steps whatever to insist upon a qualified person initialling the order. He had made no attempt to check with Mr Hunt, and had disregarded every sort of ordinary safeguard in the making-up of dangerous drugs, together with the instruction in the *British Pharmacopoeia* that a pharmacist, when required to dispense an unusually large quantity of a dangerous drug should take steps to verify. The hospital was responsible for the negligence of Dr Knight (not then qualified) and of the pharmacist but not for that of Mr Hunt. In addition, it had permitted the use of a dangerous and negligent system under which a pharmacist was able on a verbal order to dispense a phenomenal amount of a dangerous drug without a qualified person's signature and had failed to bring to Dr Knight's attention the rules concerning dangerous drugs. He awarded £2,500 damages and costs, to be shared equally between Mr Hunt and the hospital.

Medical News

Clinico-pathological demonstrations will be given in the Meystein Lecture Theatre of Westminster Hospital School of Medicine (Horseferry Road, S.W.) on Monday, April 14, at 5 p.m., when two cases of hypertension, (1) peri arteritis nodosa and (2) tumour of adrenal, will be shown.

A meeting of the Eugenics Society will be held at the Royal Society's rooms (Burlington House, Piccadilly, W.) on Tuesday, April 15, at 5.30 p.m., when Dr Linford Rees will speak on "The Physical Constitution in Mental Illness". All interested in the subject are invited to attend the meeting.

Lord Rothschild will deliver the annual oration on "The Problem of Fertilization" before the London Jewish Hospital Medical Society at the West London Synagogue, Seymour Place, W., on Thursday, April 17, at 8 p.m.

A general meeting of the Heberden Society will be held at 11 Chandos Street, London, W., on Friday, April 18, at 5 p.m., when Dr Graham Weddell will deliver an address on "The Structure of Striated Muscle in Relation to its Function". A discussion will follow.

A two day conference, intended mainly for teachers and well-workers but open to the general public, on "Education for Family Life" will be held in Manchester on April 21-22 by the Extra Mural Department of the University of Manchester assisted by the British Social Hygiene Council. Lectures will be given by Dr Ethel Duffin, Mr Cyril Bibby, Mr R. Weatherall, and others. The fee for the course will be 5s. Particulars are obtainable from the Director of Extra Mural Studies, the University, Manchester, 13, or from the Secretary, British Social Hygiene Council, Tavistock House North, Tavistock Square, London, W.C.1.

The Royal Free Hospital Old Students' Association reunion dinner will be held at the Café Royal, Regent Street, London, W., on Wednesday, April 30. Tickets 25s (wines exclusive) may be had on application to either of the honorary secretaries of the association, Dr Barbara Mitchell (6, Church Street Epsom) or Mr Jocelyn Moore, F.R.C.S. (4, Devonshire Place W.1).

The New York Academy of Medicine has attained its 100th anniversary and is celebrating the occasion with a series of lectures and discussions in March and April. It has also issued a small illustrated pamphlet outlining the history of the Academy. The Academy was founded on Jan. 6, 1847, "to foster the best ethical relation between the profession and the public and within the profession itself for the continued education of the physician and for the encouragement and promotion of the advancement of the medical science in all its numerous parts and phases". The Academy concerned itself with public health as early as the first year of its life—endorsing a proposed law for the registration of births, deaths, and marriages, demanding legislation to control the import of drugs and urging action for the care of youthful idlers. In the same year, 1847, the Academy appointed a committee to investigate an outbreak of typhus fever and took the unusual step of ordering the report to be printed in the daily Press as well as in medical journals. Not until 30 years after the foundation of the Academy did the library reach any size, but from the small number of 400 volumes in 1875 it rapidly expanded to some 9,000 volumes in 1879, and by 1880 it had acquired 17,000, there are now over 248,000 volumes. The Academy was housed in its present home at 103rd Street and 5th Avenue in 1926.

The Dutch Society of Psychiatry and Neurology will hold an international meeting in Amsterdam from June 13 to 15 to celebrate the 75th anniversary of the Society and several leading psychiatrists and neurologists of England, Switzerland, Belgium and Holland have already promised to read papers. The Dutch hope to have specialists from the United Kingdom, with their wives, at the meeting. Those wishing to be present should communicate with the secretary of the Royal Medico Psychological Association, 11 Chandos Street, London, W.1, by April 15.

Dr William Smith, of London, S.E.3, was elected to the Greenwich Borough Council, South-east Ward at the by-election on March 20. The polling was as follows: Dr Smith Conservative, 2,233; Mr T. Smith, Labour, 976; Mr A. Purvis Liberal. Dr Smith stressed in his election address that local government does not need political parties and that decisions should be reached free of political prejudice.

Under a recommendation of the Wheatley Committee, agreed by the Secretary of State for Scotland, student nurses in general hospitals with a four year training contract who become registered nurses before the end of their contract will, after April, be graded and paid as staff nurses. They will receive a salary of £120 a year with free board, lodging, and laundry.

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended March 15

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year for (a) England and Wales (London included) (b) London (administrative county) (c) Scotland (d) Eire (e) Northern Ireland
Figures of Births and Deaths and of Deaths recorded under each infectious disease are for (a) The 126 great towns in England and Wales (including London) (b) London (administrative county) (c) The 16 principal towns in Scotland (d) The 13 principal towns in Eire (e) The 10 principal towns in Northern Ireland
 A dash — denotes no cases a blank space denotes disease not notifiable or no return available

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* a rise occurred in the incidence of scarlet fever 119, acute pneumonia 118 and cerebrospinal fever 21, while a decrease was recorded for measles 868 and whooping-cough 54

A small increase in the notifications of scarlet fever was recorded in most areas, the largest local rise being 35 in London. The increase in cases of pneumonia was fairly general throughout the country and no large rise was recorded in any area.

The only change of any size in the local trends of diphtheria was a decrease of 11 in London. The notifications of cerebrospinal fever were the largest for any week since the beginning of 1943. The cases notified during the week appeared mainly as single cases spread over almost the whole country. The chief centres of infection were Yorkshire West Riding 12, Warwickshire 11, Middlesex 10, London 9, Glamorganshire 8, and Lancashire 6.

The incidence of whooping cough showed considerable fluctuations in the West Midland counties the cases increased by 57, while the largest decreases were Yorkshire West Riding 41 and Essex 32.

The largest falls in the notifications of measles were Lancashire 293, Middlesex 187, and Surrey 104, the largest increases were Glamorganshire 91 and Gloucestershire 85. The chief features of the notifications of dysentery were rises in Middlesex from 12 to 30 (Southall M.B. 23) and in Lancashire from 4 to 16.

In *Scotland* decreases were recorded for dysentery 22 and measles 19 and there were rises in the incidence of diphtheria 20 and scarlet fever 16. The rise in cases of diphtheria and scarlet fever occurred in Glasgow. No further cases of dysentery were reported from the outbreak in Banff county.

In *Eire* the chief feature of the returns was an increase of 84 in the notifications of whooping-cough, a new outbreak was reported from Tipperary, Roscrea No. 1 R.D., involving 81 persons, and there was an increase from 87 to 102 in Dublin C.B.

In *Northern Ireland* the epidemic of measles in Belfast C.B. continued to subside, notifications decreasing from 165 to 99.

Quarterly Returns for Scotland

The birth rate during the December quarter was 22.1 per 1,000 and was the highest rate for any quarter since 1926. The infant mortality rate was 56 per 1,000 registered live births and was the lowest ever recorded for a fourth quarter. The stillbirths were equivalent to a rate of 32 per 1,000 registered births. Maternal mortality was 2.7 per 1,000 live births and was 0.8 below the average of the five preceding fourth quarters. The general death rate was 12.7 per 1,000 being 0.9 below the five years average. The death rate from tuberculosis increased. For all forms of tuberculosis the death rate was 79 per 100,000 and for respiratory tuberculosis it was 66, these rates being 8 and 9 respectively, above the rate for the fourth quarter of 1945 and 5 and 7 above the five years average. There were 148 deaths from the principal epidemic diseases, they included influenza 62, whooping-cough 33, cerebrospinal fever 21, diphtheria 16 and measles 13.

The preliminary statement for 1946 shows an annual birth rate of 20.3 per 1,000. The stillbirth rate was 32. The infant mortality was 54 per 1,000 live births and was the lowest rate ever recorded. The neonatal death rate was 30 per 1,000 and was 1 above the rate for 1945. The general death rate was 13.1 and was the lowest rate since 1939. Deaths from diphtheria numbered 91, the smallest number ever registered in Scotland. The death rate from respiratory tuberculosis was 64 per 1,000 and from all forms of tuberculosis 79. The former rate was 4 above the 1945 rate while the latter was the same. The marriage rate was 8.9 per 1,000 and was 0.4 above the five years average (1941-5) and 1.3 above the pre-war average (1934-8).

Disease	1947					1946 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever Deaths	107	9	34	7	2	65	7	32	—	3
Diphtheria Deaths	184	9	54	16	—	475	3	55	50	15
Dysentery Deaths	75	7	16	—	—	375	40	49	1	1
Encephalitis lethargica acute Deaths	1	1	—	1	—	3	—	—	—	—
Erysipelas Deaths	—	—	35	5	3	—	—	43	4	5
Infective enteritis or diarrhoea under 2 years Deaths	97	9	15	31	1	72	8	12	38	1
Measles* Deaths	11 269	499	227	26	104	1 605	330	537	43	—
Ophthalmia neonatorum Deaths	78	9	28	—	—	60	2	12	1	—
Paratyphoid fever Deaths	5	—	—	—	—	1	—	1 (B)	—	1 (B)
Pneumonia influenzal Deaths (from influenza)	1 076	81	18	21	7	1 006	62	35	27	4
Pneumonia primary Deaths	80	10	10	—	2	93	9	5	8	5
Polio-encephalitis acute Deaths	—	—	295	48	20	—	68	37	28	15
Polio-encephalitis acute Deaths	—	1	—	—	—	—	—	—	—	—
Polio-myelitis acute Deaths	5	—	—	3	—	4	—	—	—	—
Puerperal fever Deaths	—	—	15	—	1	—	1	16	—	—
Puerperal pyrexia† Deaths	148	7	9	—	1	134	12	21	1	—
Relapsing fever Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever Deaths	1 336	114	215	19	40	1 143	88	164	31	14
Smallpox Deaths	2	1	—	—	—	3	—	—	—	—
Typhoid fever Deaths	6	—	1	—	—	6	—	—	7	1
Typhus fever Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough* Deaths	2 407	252	384	193	17	2 006	178	114	25	6
Deaths (0-1 year) Infant mortality rate (per 1 000 live births)	630	80	85	22	441	51	69	56	22	—
Deaths (excluding still births) Annual death rate (per 1 000 persons living)	7 456	1276	915	194	6 152	984	796	292	181	—
Live births Annual rate per 1 000 persons living	10 166	1586	1164	315	7 685	1228	965	471	252	—
Stillbirths Rate per 1 000 total births (including stillborn)	317	40	38	32	259	29	38	—	—	—

* Measles and whooping-cough are not notifiable in Scotland and the returns are therefore an approximation only.

† Includes primary form for England and Wales, London (administrative county) and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire. Return of births and deaths for Eire for weeks ended March 8 and 15 is not yet available.

Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Treatment of Infertility

Q—A childless woman aged 38 who has been married for 5 years is desirous of having a family. She is perfectly healthy and after thorough investigation no gynaecological defect has been found. The tubes are patent. A course of gonadotrophin did not produce the desired result. The husband's semen is normal. Can you suggest any treatment?

A—Every case of infertility has a cause—indeed, there are often several causal factors present in any one case. Although it is sometimes difficult to find any abnormality, the number of cases in which the findings are negative depends to a large extent on the completeness of the investigation. It would therefore be desirable to know what is covered by "thorough investigation" and on what evidence the semen is pronounced "normal". Has it been demonstrated that the woman is ovulating, and, if so, how often? If she is ovulating, what was the indication for giving gonadotrophin? Has the penetrability of the cervical mucus to spermatozoa been tested? Unless there is some guide to the cause, treatment must be empirical and the result is not likely to be satisfactory. It might be worth while arranging for the woman to keep a daily record of the vaginal temperature on waking, in order to determine the day on which ovulation occurs and the optimum time for coitus. Empirical lines of treatment which might be considered include tubal insufflations of carbon dioxide or injections of lipiodol immediately after menstruation for a few months, and pre-coital douches of 1% sodium bicarbonate or 1% glucose in Ringer's solution.

Pancreatic Grafts for Diabetes

Q—I was interested in the article (Oct 19 1946 p 570) on the successful treatment of Addison's disease by a graft. Have pancreatic grafts been tried in the treatment of diabetes mellitus? Is the possibility that hypofunction of insulin is due to an overaction of the glycotrophic factor of the anterior pituitary likely to militate against the success of such a graft?

A—A successful pancreatic graft has not hitherto been recorded, though such grafting has been attempted. One of the chief difficulties is that the pancreas is a double gland, of which the acinous portion forms 99/100ths and the islands of Langerhans the remaining 1/100th. Since the acinous portion is not wanted by the diabetic patient this will inevitably degenerate and involve the islet cells in a mass of necrotic tissue. The islands of Langerhans can be destroyed by repeated injection of a crude pituitary extract, but it is believed that this does not occur in 75% of patients with diabetes since the islet cells are apparently healthy when examined immediately after death. It may be an important factor in the remaining 25% of patients, where the β -cells are definitely unhealthy. Therefore a graft should not be injured by the secretion of the pituitary gland in the great majority of cases.

Abdominal "Cramps" and Duodenal Ulcer

Q—Where a diagnosis of duodenal ulcer has been established and the patient complains of severe "cramps" in the stomach can you suggest oral treatment (a) for the immediate relief of the "cramps" and (b) for the ensuing period? Injections are impracticable.

A—Persistent pain of colicky type never occurs as the result of duodenal ulceration unless the condition be complicated either by stenosis or by penetration of the ulcer and adherence to neighbouring structures. In either case surgery is indicated. In the absence of information about length of history, vomiting, relation of pain to food, etc., it is impossible to be precise

about treatment. As a temporary measure ext. hyoscine hq. minims 15 (0.9 ml) four-hourly will probably relieve the pain. This is considerably above the B.P. dose and may soon be reduced, provided dryness of the mouth be maintained.

Inheritance of Deaf-mutism

Q—A young woman is engaged to one of two healthy brothers whose parents were both deaf and dumb. Further details are not known. What are the chances of her children being deaf-mutes?

A—The fact that the deaf-mute parents had two normal children suggests that the deafness in one or both may have been due to a non-genetic cause—for example, meningitis or scarlet fever. Alternatively, as has been sometimes suspected in similar instances, the deafness in the parents may have been due to different recessive genes. It would therefore appear that at the worst the two sons are carriers of the gene, but unless the young woman herself also happens to be a carrier of the same gene all children will be normal. Unless she is a blood relative of the man, or unless she has a history of deaf-mutism in her own family, the chance of her being a carrier is small and so the chance that a child of this marriage will be a congenital deaf-mute should be no more than one in some hundreds. It would be well to point out that there is a greater risk of a deaf-mute's appearing than in a marriage with no history of this kind, because however small a chance may be it will come off occasionally. But it should be emphasized how small the risk appears to be—considerably smaller, in fact, than the risk that any random pregnancy may end in a congenital malformation of some kind or other.

Discharge from the Nipple

Q—A married woman aged 44 who has no children but who has had several miscarriages for six months has noticed a serous discharge from the left nipple sometimes negligible in quantity but at times profuse. There is evidence of mastitis. What is the treatment?

A—A discharge from the nipple is due to irritation of a duct and almost always comes from the same duct. If it is turbid it may be due to changes related to chronic mastitis in which case the treatment is that of the underlying chronic mastitis. If it is blood-stained it is evidence of a papilloma in the duct. In this case the duct may be identified by sealine it with collodion so that it becomes dilated. At operation a strand of silkworm gut may then be passed down the duct, or it may be possible to follow it by its distension and discoloration. If this manoeuvre fails a local amputation of the breast is needed. If the condition is neglected it may become carcinomatous. A clear serous discharge is more likely to be due to papilloma than to chronic mastitis. It is not an urgent indication for operation but should be watched, operation will probably be needed eventually.

Marriage after Tuberculous Peritonitis

Q—A woman of 28 had tuberculous peritonitis of unknown origin twelve months ago. The ascites was drained midway between the umbilicus and pubes. She spent eight months in the sanatorium. Now the temperature and pulse are normal and there is no sign of the disease anywhere. Her nutrition is excellent but the erythrocyte sedimentation rate is slightly raised. She is anxious to know if she is suitable for marriage from the point of view of health and sterility.

A—The patient's physical fitness for marriage depends to a large extent on what will be her living conditions afterwards. If she can continue an easy life there is probably no objection to marriage. If, however, she will be expected to undertake all the household work and to assume the many worries associated with housekeeping then deferment of marriage for at least a further year seems desirable. If she gets married pregnancy should be postponed for not less than two years lest the pregnancy and labour or the added work involved looking after the baby reawake a quiescent lesion. But the question implies it is highly probable that the woman is either sterile because the tubes are likely to have been infected or to have been occluded by peritoneal adhesions. This is

inevitable, however, and could be demonstrated only by some test of tubal patency, salpingography probably being the best. Endometrial biopsy to exclude tuberculous endometritis might also be considered. However, all such procedures are best avoided at this juncture, for they may reactivate the disease, indeed, unless her prospects of marriage are dependent on her fertility, there is much to be said for a policy of non-intervention until the marriage has proved unfruitful. The situation should of course, be explained to the prospective husband.

MCV in Pseudo-aplastic Anaemia

Q—*Damashek and Schwartz (Medicine 1940 19 231) point out that the macrocytic character of haemolytic anaemias is due to the presence of immature but normal erythrocytes in the circulation. Is the same explanation applicable to the high mean corpuscular volume of the erythrocytes in cases of pseudo-aplastic anaemia during a relapse?*

A—Haemolytic anaemias are not necessarily macrocytic, for instance, in familial acholuric jaundice there may be microcytosis. The macrocytosis, if present, is probably due to at least two different factors. The most important is megaloblastic hyperplasia of the bone marrow associated with disorders of liver function, which can be demonstrated by investigation of liver efficiency. The second factor may be the presence of immature but normal erythrocytes. The latter cannot be the cause of a high mean corpuscular volume in cases of pseudo-aplastic anaemia in relapse, since in aplastic anaemia few if any young red cells are found in the peripheral blood. The question is, however, difficult to answer as the criteria for making a diagnosis of pseudo-aplastic anaemia are not given.

Trigeminal Neuralgia

Q—*Is trigeminal neuralgia indicative of a psychogenic disease or merely the natural consequence of a deterioration in the physical condition of the patient? Can a state of complete remission be attained by psychiatric treatment?*

A—Genuine trigeminal neuralgia is not a psychogenic affection, and psychological treatment is not indicated. At the same time this disorder can scarcely be laid at the doors of any "deterioration in the general condition." Aetiology and pathogenesis are admittedly obscure, and the patient may be in good health apart from the presenting symptom—in the early stages at any rate.

Attacks of "Narcolepsy"

Q—*Could you advise me as to the treatment of a lady aged 40 who has had attacks of narcolepsy for the last forty years? She sleeps well at night but continually falls asleep during the day while sitting down. Amphetamine has had no effect. She has no past history of importance but now has a mild generalized arteriosclerosis with some hypertension.*

A—Narcolepsy in a woman of 70 must be a most unusual occurrence and when in addition, the patient is said to be resistant to amphetamine the diagnosis is rendered even more doubtful. Could not the case be one merely of "somnolence" or a cerebral arteriopathy? Another question arises as to whether such a patient actually needs any treatment at all. Other pharmacological means for promoting wakefulness are, of course, ephedrine and also caffeine.

Contraception

Q—*What is the most efficacious means of contraception in a married woman aged 25?*

A—A "Dutch cap" vaginal pessary used in conjunction with chemical contraceptive jelly or soluble pessary is the most satisfactory appliance as a rule. The size of the "Dutch cap" must suit the individual patient and care must be taken to instruct her in its use. The wearing of a condom by the male partner to some extent from the pleasure of coitus and is intensive but it has the great advantage of simplicity and is effective, but not absolutely safe—the choice depends much on the views of the couple concerned.

Letters and Notes

Control of Measles

Dr A CRAWFORD MAYER (Brackley, Northants) writes: From the pen of one of the elder members of our profession, and one so well qualified, we should perhaps expect a more valuable contribution to our fund of medical knowledge than is provided in the short statement by Mr Elwin Harris on the control of measles (March 8, p 323). The articles referred to by Mr Harris recommended the oiling of floors, bed clothes, etc., in an attempt to reduce the bacterial content of the air. Mr Harris apparently wishes us to believe that he achieves that object more simply by oiling the patient, a recommendation which conjures up in my mind the vision of his measles patients lying naked in bed, their well oiled bodies serving as an area of attraction for the bacteria of the sickroom. If on the other hand Mr Harris allows the oiled bodies of his patients to be covered by bed clothes, I cannot understand how the oil can affect the bacterial content of the air. In support of his contention your correspondent remarks that he cannot recall a single case of otitis media complicating measles in his 22 years of general practice. As a scientific observation this statement is, I submit, of doubtful value. In science the verb should be "record," not "recall." In experimental science control cases are necessary. In my 12 years of general practice I also cannot recall a complicating otitis media and yet none of my patients was treated by oiling. Perhaps my cases are the control required to allow us to assess the scientific value of Mr Harris's observations.

Endogenous Depression in General Practice

Dr C A H WATTS (Ibstock, Leicester) writes: I am obliged to Mr H I Deitch and Dr P E F Frossard (Feb 1, p 208) for their information as to how psychiatric cases are dealt with in their parts of Britain. It is gratifying to find that there are more progressive systems than exist in this part of the world. I am in country practice near a large town with a very fine general hospital, but there is no psychiatric department worthy of the name. One day in each fortnight is allotted to country patients. If any case needs treatment he is referred to the local asylum. There is a university centre within forty miles, but again there are no facilities for ECT or specialist treatment. I have found a psychiatrist who will give convulsive therapy privately, but his fees are far beyond any working-class practice. The only place to which I can refer cases is the mental hospital, which has no OP department. I think that to send mild depressives and anxiety states to an asylum is like referring all skin conditions to a Lock Hospital. I agree with Dr A Lionel Rowson (Feb 15, p 271) that it is high time the whole system was revised. Mental hospitals should house only incurables. No case should be referred to such an institution until every available measure has been taken to effect a cure in the psychiatric wing of a general hospital. OP departments in mental hospitals should be encouraged as a temporary measure until general hospitals have facilities and accommodation necessary. Psychiatry is very much the Cinderella of medicine.

Endocrine Receptors

Dr H BAB (London, NW3) writes: The theory of special receptors in tissue cells upon which the effectiveness of hormones depends, established by Mr Aleck Bourne (Jan 18, p 97) is related to the fact sometimes pointed out in the past by various authors that hormone activity may depend on either deficiency of hormones, or inability of a hormone to act upon a particular tissue (e.g., the pituitary thyrotrophic hormone in the exophthalmic ophthalmoplegic group, as discussed by Dr S L Simpson Feb 15, p 270). In 1917 I described nasal bleeding caused by oestrogen from the ovary in cases of amenorrhoea or oligomenorrhoea due to a hypoplastic uterus. Vicarious epistaxis is a substitute for uterine bleeding and a supplement in oligomenorrhoea. Certain chemical substances are capable of acting upon cells only if the cells possess suitable specific receptors. This factor determines the normal metabolism of nutrition and respiration. The same principle may be seen in the ovum that can be fertilized only by spermatozoa of the same or closely related species, in potassium cyanide acting only on certain cells and in penicillin destroying certain micro-organisms and being harmless to others. There is a universal phenomenon, the principle of receptor activity in cell biology.

Bleeding Tooth sockets

Dr JOHN CAMBROOK (London W1) writes: There are certain measures I think should be added to your reply to the above question in the issue of March 8 (p 322). Haemorrhage from tooth sockets arises either from the soft tissues or the bony socket itself. Pressure either side of the socket with the thumb and forefinger

will markedly diminish the flow in the first type. In these cases a stitch passed through the gum either side of the socket and drawn tightly together coupled with biting upon a bolus of cotton wool will usually suffice. Where haemorrhage is from the socket proper, the effect of biting upon a bolus coupled with the use of a four-tailed bandage if necessary should be tried. Where this is unsuccessful a mushroom shaped plug of cotton wool of such a size that the head can amply cover the socket and the stalk $1\frac{1}{4}$ in (0.63 cm) long is prepared. This is soaked in hot snake venom and the stalk placed in the socket so that when pressure is applied the venom mixes with the blood in the socket as it is occluded. Hot venom is used as its coagulative power is greatly increased for a few minutes before it becomes inactive, and it is during the first five minutes that its action is most helpful. When bleeding ceases the plug is left *in situ* so as not to disturb the clot, and it falls away after a few hours. In cases where the socket is already occupied by clot I have been successful in many cases by injecting venom into the socket and then using occlusion to prevent the escape of the mixed venom and blood. In cases where haemorrhage has been persistent the injection of morphine $1\frac{1}{4}$ gr (16 mg) has much to be recommended in calming the patient and lessening the bleeding. Finally, all patients should occupy an upright position, even in bed until all danger of haemorrhage has ceased.

Sulphonamide Snuff for Colds

Dr J F BUCKMASTER (Berkhamsted) writes. The reply to a question about sulphonamide snuff for colds (March 8, p. 322) suggests that the writer has had little practical experience of the use of sulphathiazole (with or without penicillin) in the common cold. Since Delafield, Straker, and Topley wrote their paper in the *British Medical Journal* 1941, 1 145, six papers have been published describing over 700 treatments with antiseptic snuffs. Dr Kenneth Hazell and myself did a large scale experiment and satisfied ourselves and our patients that the powder spray method materially shortened and mitigated the common cold by reducing the secondary bacterial invasion. In our experiment a total of 2 g. of snuff was given over a three day period (some patients needed a little more for an extra 2 days). It is unlikely that any toxicity could arise even if the snuff were taken continuously for three weeks. Further, it is unusual for an adult to swallow mucus, and if the writer would try the experiment he would find that most of the snuff is blown out on the handkerchief. He would also find that the snuff so reduced the secretion that the necessity for blowing the nose arose only four or five times a day in the acute stage. He might even notice that congress with his fellows was less onerous and that at night a clear nasal airway was of some benefit, even if he slept alone. In the 1st sentence of the answer the writer suggests (perhaps unwittingly) that the snuffs are of some value in the secondary bacterial invasion of the common cold. In this I agree. Perhaps he would try some sulphathiazole and penicillin. It is a harmless procedure.

Intravenous Procaine

Dr E FALKNER HILL (Manchester) writes. In answer to the question "What is the action of novocain (procaine) when given intravenously?" (Feb 15, p. 282) your correspondent says, "There are no records of a suitable dose for intravenous injection." In *Curr Res Anaesth* (1946, 25, 1) he will find a paper in which a number of cases are described and the dose given in each case. Some 15 years ago I had occasion to inject 0.3 g. of procaine intravenously in the course of 10 minutes. There appeared to be neither sign nor symptom as a result. The B.P. and respiration were unaffected, and the patient made no complaint of dizziness or other subjective sensation. As regards animals an experiment in which 75 mg. was injected each minute into the jugular vein of a cat needed 24 minutes before paralysis of respiration occurred and then 2 minutes' artificial respiration was sufficient to enable the cat to carry on by itself. 0.18 g. for a cat is about equivalent to ten times the maximum dose of novocain used in clinical spinal anaesthesia. Procaine has been suggested as a suitable anaesthetic given intravenously for obstetric cases.

Testimonials for Released M.O.s

The Director General of Medical Services (Air Ministry, London) writes. The assistance of your *Journal* would be appreciated in clearing up a misunderstanding among released medical officers regarding the furnishing of testimonials by this Directorate General. A document of this nature if it is to be of any value must be written by someone who has a personal knowledge of the individual who requests it, and on this condition senior officers are empowered to give such testimonials. The practice in this Directorate General is to advise ex-Service doctors who write to us for testimonials to apply to senior officers of the medical branch under whom they have worked for a statement of their character and professional skill. Letters addressed to senior medical officers, care of this

Directorate General will be forwarded. A released medical officer may obtain a certificate of service based on the whole of his service by applying to the Under Secretary of State, Air Ministry (A.P.9), Kingsway, London, W.C.2.

Vasectomy and Sterilization

Lieut Col F R W K ALLEN IMS (Berar India) writes. With reference to the medico legal case reported in the *Journal* of Jan 18 (p. 118) under the heading 'A Sterilized Husband' I should like to point out that a vasectomy is not 100% guarantee of a man being unable to impregnate a woman. I know of a case where vasectomy was performed and after a lapse of a year spermatozoa were found in the seminal fluid. I was present at the operation and I have seen the recent seminal fluid under the microscope.

Books for Germany

Dr E M VERMEHREN writes. The Agency for Intellectual Relief in Germany, recently founded under the patronage of Cardinal Griffin, the Bishop of Chichester, and the Master of Balliol is trying to help responsible Germans to reconnect themselves intellectually with the life and thought of Western civilization. It plans to establish in the British Zone several English lending libraries where important English publications of recent years will be available to qualified German readers who will themselves both run the libraries and select further titles. Specialized literature will be sent to institutions and individuals in Germany who need them for important work. Lists sent to us by German universities name the following medical books as urgently wanted: Joslin E P et al *The Treatment of Diabetes Mellitus* 7th edition Kimpton, 35s. 1941. Brock, Samuel *The Basis of Clinical Neurology* 2nd edition Williams and Wilkins \$5.50 1945. Wright, Samson *Applied Physiology* 7th edition Oxford University Press 25s. 1940. Wiggers C J *Physiology in Health and Disease* 4th edition Lea and Febiger \$10.00 1944. Boyd W *Pathology of Internal Diseases* 4th edition Lea and Febiger \$10.00 1944. Burrows, H *Biological Action of Sex Hormones* Cambridge University Press 42s. 1945. Darling H C *Rutherford Surgical Nursing and After treatment* 9th edition Churchill 12s. 6d. 1946. Todd, J C, and Sanford, A H *Clinical Diagnosis by Laboratory Methods* 10th edition Saunders 36s. 1943. Could we Sir, through the courtesy of your columns appeal to your readers for help, not only to get these special books but also for our work in general? We need both money—£5,000 in the next six months—and books but only those books for which a demand has been expressed by the German readers 'who have been spoon-fed much too long already and should at last be invited freely to select their intellectual diet.' Those of your readers who have books to spare which they think suitable are invited to send a list to our treasurer. They will then be informed which of the books are wanted, and where they should be sent. Contributions in money should be sent to the Hon. Treasurer, C P Kinnmonth, 4, Chapel Row, Wheeler End, High Wycombe, Bucks. We are trying to fight that intellectual starvation which in the words of our patrons, "remains, after famine, the gravest immediate danger facing us in Germany, and it threatens, if allowed to persist, to destroy all chances for the reintegration of the German people into a peaceful and prosperous Europe." Surely Sir such a cause cannot fail to engage both the sympathy and the generosity of the majority of your readers?

Correction

In the *Supplement* of March 22 (p. 38) under the heading "Salaries of Medical Practitioners Engaged by Local Authorities on a Sessional or Case Basis," the fee paid general practitioners for diphtheria immunization when visiting a child at home at giving injections there is 6s, not 6s 6d as stated.

In the letter from Dr J P McGowan (March 22, p. 389) the word "internationally" in the second sentence of the third paragraph should be 'intra nationally'.

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A STUDY OF THE SURGICAL ANATOMY OF THE VAGINA, WITH SPECIAL REFERENCE TO VAGINAL OPERATIONS

BY

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The Vulva and Anterior Vaginal Wall

The fold of skin containing the body of the clitoris is usually well defined. On each side is a groove, lateral to which lies the inner fold of the labium majus. The prepuce of the clitoris forms a hood over the glans, and on each side passes downwards into the labium minus. The labia minora are also attached to the under surface of the glans at a point in the midline which corresponds to the frenulum. These anatomical relations are not always carefully illustrated in gynaecological diagrams. On each side of the urethral meatus is a small depression which is perhaps best referred to as the *parameatal recess* (Fig 1). The recess is well defined in virgins and is best displayed by pulling the labia minora outwards at the level of the meatus. The recess is never well marked in severe cases of prolapse, and it is usually not well defined in women of post-menopausal age. In front, the remains of the hymen terminate in the midline at a point about $1/6$ in (0.4 cm) below the external meatus, but the termination is variable, and in a multipara the hymen sometimes passes into the posterior lip of the external meatus.

If a nullipara is examined in the lithotomy position with a Sims speculum introduced to retract back the posterior vaginal wall, the anterior vaginal wall can be seen to be held up and supported by the underlying tissues. It is therefore wrong to maintain that the anterior vaginal wall is supported solely by the perineum and the levator ani muscles.

In front, below the hymen in the anterior vaginal wall, about $1/4$ in (0.6 cm) below the urethral meatus, is a transverse groove. This groove is best displayed if the cervix is pulled down with a vulsellum forceps, and it is often well defined in prolapse of the anterior vaginal wall. It is believed that the groove indicates the posterior margin of the urogenital diaphragm. It is suggested that this groove should be named, and a convenient terminology might perhaps be the *submeatal sulcus*.

About $1\frac{1}{2}$ in (3.8 cm) from the meatus in the anterior vaginal wall is a second groove which is nearly always well defined. The groove represents the approximate position of the junction of the urethra with the bladder, and the distance between the two grooves is usually about $1\frac{1}{4}$ in (3.2 cm). The groove has a slight convexity in the direction of the meatus, and it is suggested that it should be called the *transverse sulcus of the anterior vaginal wall*. The distance between the submeatal sulcus and the transverse sulcus is about $1\frac{1}{4}$ in. It will be shown that the transverse sulcus is

formed as the result of the fusion of the underlying fascial tissues and represents the upper limit of a ligament which will be described later. Between the two sulci the rugae of the anterior vaginal wall are arranged more or less transversely, but the vaginal wall is attached loosely to the underlying tissues so that rugose pouches are formed. Unless the tissues have been damaged in childbirth, or unless the patient is of menopausal or post-menopausal age, a specialized fold of skin can be distinguished which passes from the lateral vaginal wall deep to the hymen to the vicinity of the submeatal sulcus. This fold is small and is best referred to as the *oblique vaginal fold*. Its significance is unknown, but below and lateral to it is a recess, lying lateral to the urethra, which is best referred to as the *para-urethral recess*.

If the anterior vaginal wall is followed down towards the cervix the limit of the bladder is indicated by a convex groove directed towards the cervix. In cystocele the bladder prolapses between the transverse vaginal sulcus and this *bladder sulcus* (Fig 1), and it is obvious that very little supporting tissue intervenes between the bladder and the vaginal wall—far less than is found between the submeatal sulcus and the transverse vaginal sulcus in the vicinity of the urethra. Between the transverse vaginal sulcus and the bladder sulcus the rugae are arranged according to a definite pattern. Immediately below the transverse sulcus their direction is transverse, but subsequently they become arched, with the convexity of the arch directed towards the urethral meatus. Further upwards towards the cervix they become transverse, and, finally, slightly convex near the bladder sulcus. The arching of the rugae is caused by the adhesion of the vaginal wall in this neighbourhood to the underlying fascial tissues.

Definition of the Fascial Layers

The fascial layers which lie deep to the anterior vaginal wall can be demonstrated at operation and by cadaver dissection in cases of cystocele in the following way. The cervix is pulled down with vulsellum forceps and firm traction applied both downwards and posteriorly so that the anterior vaginal wall is stretched. An incision is made in the midline, starting at about the level of the transverse vaginal sulcus and extending below the bladder sulcus to reach the front of the cervix. On each side, from the lower end of this midline incision, an oblique or a transverse incision is made (Fig 2). In the operation of anterior colporrhaphy the direction of the lateral incision depends

upon the severity of the cystocele and upon the amount of the anterior vaginal wall which is to be removed. Kocher's forceps are now applied to the lower angles of the vaginal flaps and downward traction exerted. With experience it is possible to reach the correct layer of cleavage with the first incision, but if there is any doubt about the correct layer, gentle traction, applied downwards and laterally to the Kocher's forceps, will gently tear through the tissues until the vesico-vaginal space is opened up. Firmly attached to the vagina is a well-defined layer of fascia called the vaginal fascia, while covering the bladder is a much thinner layer of tissue which forms the vesical fascia. The vesico-vaginal space lies between these two

the vaginal wall to move upon the underlying fascial layers. It is for this reason that the rugose vaginal pouches are found in this area.

Discussion

Operations for prolapse are performed so often that most of the above points are well known. In the average case of prolapse of the anterior vaginal wall the submeatal sulcus and the transverse vaginal sulcus are well defined. Though the two sulci are obvious, little attention has been paid to them previously, and it is one of the purposes of this paper to draw attention to their significance. Exceptions, however, are not uncommon. Sometimes other sulci can be seen between the submeatal sulcus and the transverse vaginal sulcus, and are caused by the arrangement of the pouches of the vaginal wall in this neighbour-

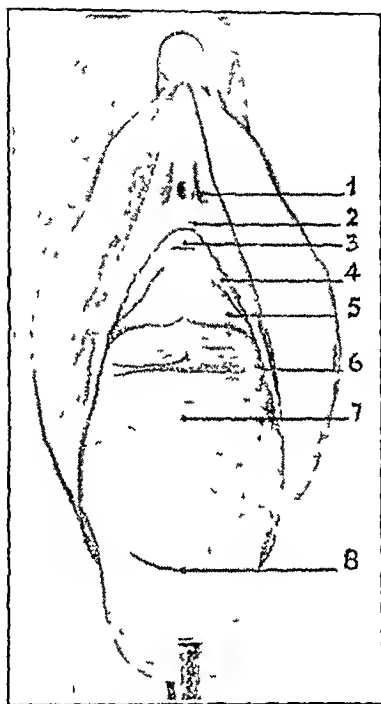


FIG 1

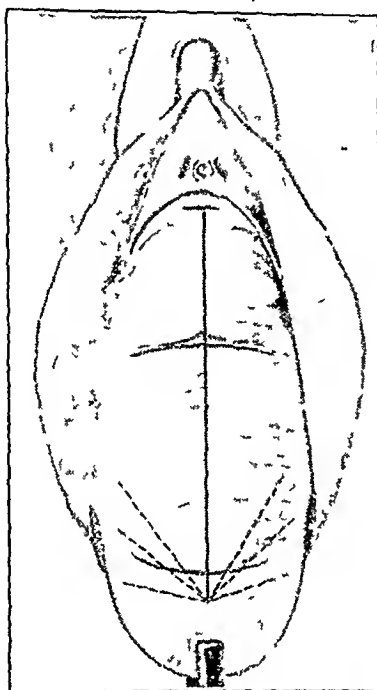


FIG 2

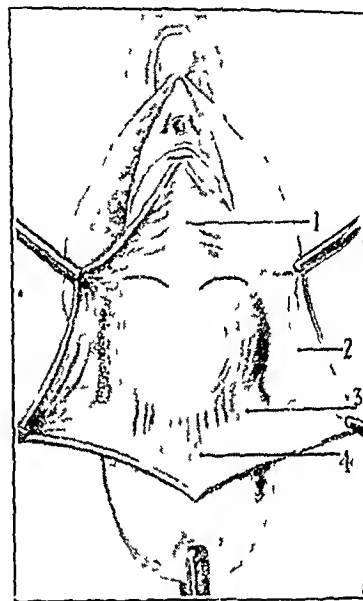


FIG 3

FIG 1—The cervix has been drawn down (1) Paramental recess (2) Hymen (3) Submeatal sulcus (4) Para urethral recess (5) Oblique vaginal fold (6) Transverse sulcus of the anterior vaginal wall (7) Arched rugae of the vaginal wall (8) Bladder sulcus

FIG 2—The incisions for anterior colporrhaphy. The oblique lines indicate the direction of the incisions for different degrees of prolapse of the anterior vaginal wall.

FIG 3—The appearance after the dissection of the vaginal flaps. (1) Post urethral ligament. The well defined cranial border is emphasized. In the illustration the vesico vaginal space has been opened up, and the vaginal fascia (2) remains attached to the vaginal wall. (3) Bladder septum. (4) Vesico cervical ligament.

fascial layers. The dissection is now carried in an upward direction as far as the level of the transverse vaginal sulcus. The vesico-vaginal space is always easy to define except in advanced cases of cystocele when the bladder wall has been prolapsed for a long time. In old-standing cases of this kind the vesical and vaginal fascias fuse, so that thick strands of tissue pass between the two fascial layers, and these must be cut through with a scalpel to allow the dissection to proceed in the correct layer of cleavage. Except in these old-standing cases, if once the vesico-vaginal space is opened up, the vesical and vaginal fascias can be separated from each other with the help of gauze wrapped round the finger. Moreover, the separation is bloodless, for there is no communication between the vascular systems of the two fascial layers. Anteriorly, at the level of the transverse vaginal sulcus, the vaginal fascia fuses with the vesical fascia so that there is no true vesico-vaginal space between the transverse vaginal sulcus and the submeatal sulcus. It is therefore necessary to use a scalpel to separate the vagina from the fused fascial layers. The connecting tissues are, however, loose, and they allow

hood. Sometimes, in severe degrees of prolapse, the transverse vaginal sulcus is held up almost in its normal position. It is of interest that such patients rarely complain of imperfect control of micturition.

The nomenclature of the vaginal and vesical fascias is not universally accepted even at the present day. Even in recent descriptions of vaginal operations the subvaginal fascial layers are referred to as the pubo-vesical fascia, pubo-vesical ligament, paravaginal fascia, and pubo-cervical ligament, and some authors even describe the fascial layers as forming part of the urogenital diaphragm. Usually the vaginal fascia is referred to under these terms, for the vesical fascia is never so well defined, presumably because the bladder alters so much in size.

Much has been written of the fascial tissues of the pelvis particularly by the Viennese—Tandler (1926), Halban and Tandler (1907), and Peham and Amreich (1934)—but very important contributions have been made both in this country and in America. The term "pelvic fascia" should be restricted to the dense fascial tissues covering the levator ani and obturator internus muscles. All other fascial layers

should be considered as forming the endopelvic fascia. This distinction is of the greatest importance, because the endopelvic fascia always contains plain muscle cells and has an intimate relation to the adventitia of the pelvic veins, with the result that the small veins of the pelvis form plexuses in cavernous-like tissue. One of the functions of the endopelvic fascia is to fix and support the pelvic organs. At the same time the endopelvic fascia is arranged in such a way that it allows for distension of the pelvic organs. Lastly, it regulates the venous return at different degrees of distension.

Pcham and Amreich showed that the basal portion, or ground bundle of the endopelvic fascia, lies on the upper surface of the levator ani muscles on each side of the midline and passes backwards to terminate in Mackenrodt's ligament. Passing upwards from the ground bundle

great difficulty if Fothergill's technique is followed. It is for this reason that I always start vaginal operations on the anterior vaginal wall not immediately below the urethra but from a point near the cervix.

The Post-urethral Ligament

The vaginal and vesical fascias fuse in the vicinity of the transverse vaginal sulcus, and pass downwards to become attached to the margin of the urogenital diaphragm at the submeatal sulcus. In addition, the fused fascial layers form a strong supporting layer of white tissue, and its function is clearly to support the urethra. The fused fascial layers should therefore be regarded as forming a ligament; and I suggest that the name *post-urethral ligament* (Fig 3)

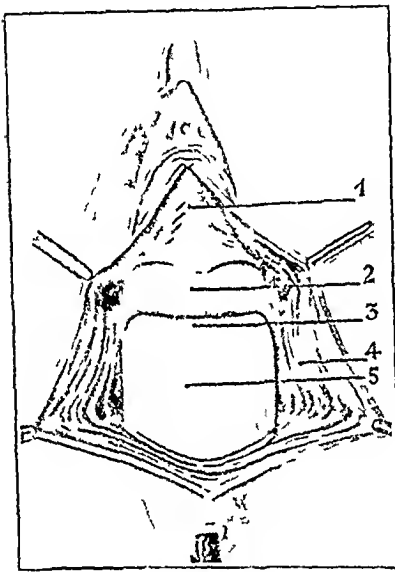


FIG 4

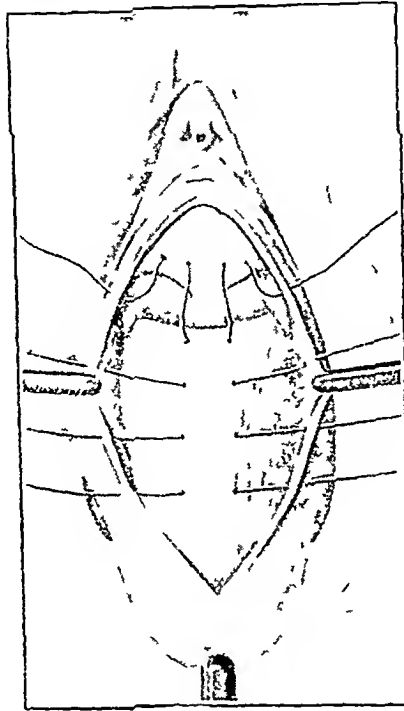


FIG 5

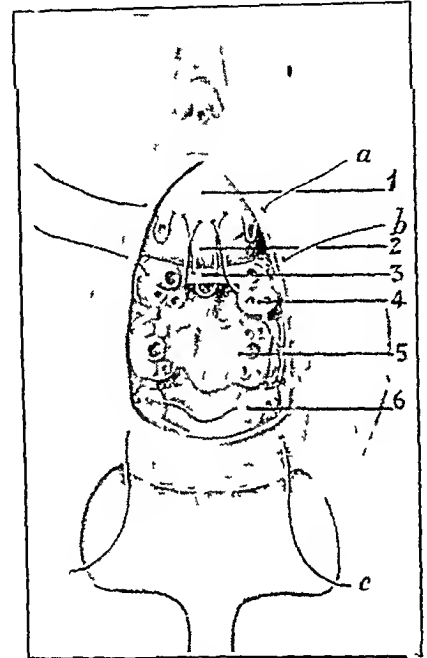


FIG 6

FIG 4—The vesico-cervical ligament has been divided, the bladder retracted upwards, and the vesico-cervical space exposed. (1) Post-urethral ligament (2) Bladder (3) Peritoneum of the utero vesical pouch (4) Vaginal fascia (5) Front of the cervix.

FIG 5—The method of introducing the sutures after excising all redundant vaginal flaps. In front the stitch is intended to suture the vaginal wall to the post-urethral ligament, and at the same time to suture the post-urethral ligament to the front of the uterus. The lower sutures pass through the vaginal wall and the vaginal fascia and then through the front of the cervix.

FIG 6—Technique for the operation of vaginal hysterectomy for prolapse before suturing the pedicles together. (1) Post-urethral ligament (2) Bladder (3) Peritoneum (diagrammatic) (4) The pedicle containing the round ligament, the ovarian ligament, and the Fallopian tube (5) The pedicle containing the uterine vessels (6) The pedicle containing the utero sacral ligament. (a) The suture is passed through the vaginal wall then through the peritoneum covering the bladder, the procedure being repeated on the opposite side. (b) The suture is passed through the vaginal wall, the vaginal fascia, the first pedicle, and then through the post-urethral ligament, the procedure being repeated on the opposite side. (c) The suture is passed through the vaginal wall and the utero sacral pedicle, and repeated on the opposite side.

are septa which fix the bladder, vagina, uterus, and rectum, and it is in these septa that the blood vessels pass to reach the pelvic organs. If dissections are made between the fascial layers an almost bloodless operation can be obtained, which has been emphasized by Spalding (1926) particularly, for the vascular systems of the different fascial layers and septa do not communicate except at well-defined points.

The fascial layers are difficult to distinguish by histological examination, as Goff (1931) has emphasized, but they can be defined at operation. For example, the vaginal fascia is utilized in many operations for cystocele, as in Halban's operation, and many American surgeons employ a rather similar technique. Fothergill (1917) as much as anyone realized the importance of the endopelvic fascia, and in the operation known by his name the vaginal fascia and the vaginal wall are sutured to the front of the cervix. Nevertheless, the vesico-vaginal space is exposed only with

should be applied to this band of tissue. The upper cranial margin of the post-urethral ligament is usually well defined, and it is this margin which is responsible for the formation of the transverse vaginal sulcus. In the midline, the post-urethral ligament is adherent to the bladder for a short distance upwards towards the cervix, and it is for this reason that the rugae of the anterior vaginal wall are arched in this area, for here the anterior vaginal wall and its vaginal fascia are fused to the vesical fascia. On each side the ligament is attached to the pubic ramus as far down as the junction of the ramus of the pubis and of the ischium. It is important to bear in mind that the sheet of tissue which forms the post-urethral ligament has an inclination which corresponds to that of the axis of the vagina. It must therefore be almost perpendicular to the urogenital diaphragm. There is no reason to believe that it forms part of the urogenital diaphragm in any way at all. Clearly, it has a corresponding position, and perhaps

serves a somewhat similar function to Denonvillier's fascia (Tobin and Benjamin, 1945) or the recto-prostatic fascia. The terminology I have suggested is tentative, but it seems to me preferable to the other alternative—namely, pubo-urethral. It is one of the main purposes of this paper to draw attention to the post-urethral ligament. I have studied the literature carefully, and I am convinced that the importance of this ligament has not been emphasized. Some writers seem to confuse the ligament with the membranous sphincter. I suppose that most gynaecologists regard the ligament as being part of what they term the pubo cervical fascia or pubo-vesical fascia. If careful dissection is made, the well-defined cranial limit of the ligament, combined with its dense consistency, impresses me with the importance of regarding the ligament as a separate entity. I differ from Amreich in the interpretation of the ligament, for he regards this as partially surrounding the urethra, whereas I interpret it as a transverse sheet of tissue lying below and behind the urethra. The attachment of the ligament to the pubic ramus is of very great importance, and obviously the ligament must support the urethra. Furthermore, in cases of urethrocele the ligament is stretched and relaxed. The relation of the upper limit of the post-urethral ligament to the junction of the urethra and the neck of the bladder seems to be variable. Efforts have been made to define the upper limit with the help of a cystoscope during the operation of anterior colporrhaphy. It is well known that if a curved sound is passed into the female urethra a fold can be felt, as Jeff Miller (1932) has emphasized, at the point where the urethra joins with the bladder. The fold is produced by the inward pressure of the upper margin of the post-urethral ligament on the neck of the bladder.

The Vesico-cervical Ligament

This ligament is a continuation of the vesical fascia on to the anterior surface of the supravaginal portion of the cervix. It consists of a thin sheet of tissue which contains plain muscle cells and which has a linear attachment to the cervix. It is easy to define, and it is divided in both Fothergill's and Halban's operations. On each side of the vesico-cervical ligament lies the bladder septum, which is much thicker and more vascular, and which passes from the vesical fascia to the fascia covering the cervix. In the operation of anterior colporrhaphy a few fibres of the bladder septum must be divided before the bladder can be separated from the front of the uterus. Afterwards the separation is simple, and it can best be carried out with the help of a piece of gauze wrapped round the index finger.

The Vesico-cervical Space

This space lies above the vesico-cervical ligament and intervenes between the bladder and the cervix. It is bloodless and can always be accurately defined. It is bounded cranially by the vesico-uterine ligament, which is a reflection of the vesical fascia from the top of the bladder on to the front of the uterus in the neighbourhood of the junction of the body with the cervix. The ligament is never well defined, but it is seen best at abdominal hysterectomy, when it must be cut through before the bladder can be separated from the front of the uterus.

Technique of Anterior Colporrhaphy

The method which I employ at the present time is based upon the identification of the different ligaments and fascial layers. The view is taken that the direct support of the bladder, between the transverse vaginal sulcus and the bladder sulcus, consists only of the vesical and vaginal fascias together with the anterior vaginal wall. The indirect supports are not being considered here, for they must be dealt with by more elaborate procedures. If the fascial

layers have been stretched, and particularly if the patient is asthenic with loss of plain muscle tone of the fascial layers, a cystocele will develop. Fundamentally, the operation consists in mobilizing the bladder, retracting it upwards and anteriorly, and then deliberately suturing the cranial margin of the post-urethral ligament to the front of the uterus in the neighbourhood of the utero vesical pouch of the peritoneum. In this way the space through which the bladder can herniate is obliterated.

A vertical incision is made in the anterior vaginal wall, with lateral incisions at the lower end, as already described. The vesico-vaginal space is opened up and the lateral flaps are separated from the vesical fascia with the help of gauze wrapped round the finger. Beyond the level of the transverse vaginal sulcus a scalpel must be used to cut through the fascial tissues to separate the vaginal flaps from the post-urethral ligament, for here there is no clearly defined space between the vaginal walls and the post-urethral ligament. If the dissection proceeds too far laterally at this level, cavernous sinuses are opened up, and this should be avoided.

The next step is to cut through the vesico cervical ligament and a few fibres of the bladder septum, and then to strip and separate the bladder from the cervix in the vesico cervical space until the bladder can be pushed back as far as the margin of the post-urethral ligament (Fig 4). The redundant vaginal tissues of the flaps, including the vaginal fascia, are then excised. If the separation has been good only a small number of blood vessels require ligation—namely those belonging to the cut edges of the vaginal walls and perhaps a few small vessels in the bladder septa. If necessary, the vaginal fascia can be separated from the flaps and used to form a reduplicating layer, but this is regarded as unnecessary in the average case. If the cystocele is extensive the bladder may be invaginated either by means of a purse-string suture or by a series of reefing sutures.

The post-urethral ligament is sutured to the front of the uterus as follows (Fig 5). A suture of No 2 chromicized catgut is passed through the cut edge of the vagina about $1\frac{1}{2}$ in (3.8 cm) below the urethra, starting on the patient's left side. The suture is now passed through the post-urethral ligament and then through the front of the cervix near the utero-vesical pouch. It is then passed through the post-urethral ligament on the other side of the midline and, finally, through the vaginal wall of this side at a point $1\frac{1}{2}$ in below the urinary meatus. The assistant now pushes back the bladder, and when the suture is tied the post-urethral ligament becomes sutured directly to the uterus. As a result, the space through which the bladder can prolapse is obliterated completely and a firm ligamentary support by means of the post-urethral ligament is given to the bladder. Various modifications are possible. Sometimes the post-urethral ligament can be sutured direct to the front of the uterus by a series of interrupted sutures arranged to form a horizontal layer. In severe cases of cystocele more than one of these key sutures can be introduced. I believe that the only technique comparable to the above is that described by Lockyer (1913).

The next part of the operation consists in suturing the cut edges of the vagina, including the vaginal fascia, to the front of the supravaginal portion of the cervix, just as in the original Fothergill technique. The cut anterior vaginal wall between the cranial margin of the post-urethral ligament and the meatus is now dealt with. The pouches are redundant and a fair amount of vaginal tissue can be excised. If there has been stress incontinence a shelf can be fashioned by a series of interrupted Lembert sutures introduced through the post-urethral ligament. The operation

is of fundamental importance in the treatment of stress incontinence associated with cystocele, and the end-results are excellent, for the urethra is stretched and elongated both upwards and backwards as the result of the operation.

Modification of Fothergill's Operation

A midline incision is made in the anterior vaginal wall and the lateral incisions are placed transversely. The vaginal flaps are dissected free as in an anterior colporrhaphy, and the bladder is mobilized in the same way. I suture the post-urethral ligament to the front of the upper part of the supravaginal portion of the cervix, as in the technique for anterior colporrhaphy. The lateral incisions are continued round the back of the cervix and the cervix is then amputated. If the prolapse of the uterus is of a severe degree not only the bladder septum but the basal portions of Mackenrodt's ligament are sutured to the front of the cervix. The object is to take up the slack in a lax ligament, and the procedure is usually successful. Moreover, the suture tends to make the uterus ante-flexed. Subsequently, the raw surface of the cervix is covered by the Bonney-Sturmdorf technique. Gough's (1931) method is a great help if there is extensive prolapse of the upper part of the posterior vaginal wall.

Vaginal Hysterectomy for Prolapse

This operation is perhaps the most suitable form of operative treatment for post-menopausal women with severe degrees of prolapse of the uterus. The operation is relatively simple provided that the cervix can be pulled down outside the vaginal orifice, and provided that the uterus is not much enlarged. The method is used if patients are in the child-bearing period of life and suffer from symptoms, such as menorrhagia, which demand surgical or radiological treatment, and have a moderately severe degree of prolapse of the uterus. The technique becomes difficult if the uterus does not prolapse to the extent that the cervix can be pulled through the vaginal orifice. My impression is that most patients with prolapse maintain that they feel very much better in themselves if the uterus is removed, which is a factor of very considerable importance.

Technique

A midline incision is made in the anterior vaginal wall from which pass transverse incisions near the cervix. The technique of an anterior colporrhaphy is employed to mobilize the bladder after cutting through the vesico-cervical ligament. The vesico-cervical space is identified, the bladder retracted upwards, and the peritoneum of the utero-vesical pouch exposed. This procedure is very simple provided that the vesico-cervical space has been opened up cleanly. The peritoneum is now cut through and the body of the uterus pulled down through the opening in the utero-vesical pouch. The fundus of the uterus can usually be hooked down with a finger. In difficult cases vulsellum forceps or uterine holding forceps are necessary. The uterus is now removed by the method advocated by Franz and by Mayo. Curved clamps with horizontal striations are applied on each side of the uterus to contain the ovarian ligament, the Fallopian tube, and the round ligament. The tissues are cut through on the uterine side of the clamps. A second pair of clamps is now applied to the uterine arteries at the base of the broad ligaments and the uterus further separated with a scalpel. At this stage of the operation the uterus is drawn downwards which exposes any prolapse of the peritoneum of the pouch of Douglas. This is regarded as being an important step in the operation and it is quite simple to separate cleanly any prolapsed peritoneum of Douglas's pouch and to divide it along its attachment to the sigmoid. The next step in the operation is to hold up the cervix with vulsellum forceps and to finish the circular incision through the vaginal wall at the back of the cervix. Clamps are placed on each side to include the utero-sacral ligaments. After this the uterus

is removed completely by cutting through the intervening tissues with a scalpel. In simple cases only six clamps are required. More are necessary if the uterus is enlarged or if there is difficulty in pulling down the uterus. In vaginal hysterectomy for prolapse I never now employ the method of dividing first the lateral supports to pull down the uterus. In my hands it is much more difficult, and I place great emphasis on mobilizing the bladder and then pulling down the fundus of the uterus to ensure that the ureters are well away from the operation area. Nor do I first open Douglas's pouch, because I maintain that it is of the greatest importance to remove as much peritoneum as possible from the region of Douglas's pouch and this can best be done through traction on the uterus to expose the redundant peritoneum.

A shelf is now formed to support the bladder (Fig. 6). A suture is passed through the cut vaginal wall as in the anterior colporrhaphy operation, $1\frac{1}{2}$ in (3.8 cm) below the urinary meatus. It then passes through the post-urethral ligament, then through the peritoneum at its cut edge near its attachment to the bladder. The suture then passes through the other side of the post-urethral ligament and finally through the vaginal wall. The object of the stitch is to join the peritoneum to the post-urethral ligament and to obliterate the space through which the bladder prolapses. If the cystocele has been of a moderate or slight degree this stitch alone helps greatly to hold back the bladder, but if there has been a severe degree of cystocele the bladder must first be invaginated with a purse-string suture. The next stitch passes, as before, through the vaginal wall, then through the post-urethral ligament, and then through the tissues enclosed in the first clamp—namely, the ovarian ligament, Fallopian tube, and round ligament. The suture is then passed through the tissues contained in the corresponding clamp of the opposite side, then through the post-urethral ligament, and finally through the vaginal wall. Neither suture is tied at this stage of the operation. The next step is to ligature together the tissues of the two sides as in Mayo's operation. The untied sutures are now tied. The first suture draws the post-urethral ligament upwards under the trigone of the bladder to support the bladder as in the operation of anterior colporrhaphy. The second suture, after being tied, draws together the shelf formed by the round ligaments, the ovarian ligaments, and, to a minor extent, the Fallopian tubes, and the shelf is anchored to the post-urethral ligament. Lastly, the cut edges of the vaginal wall are sutured together with a series of interrupted stitches.

One of the most difficult technical problems in the operation of vaginal hysterectomy for prolapse is to prevent the subsequent development of a hernia of Douglas's pouch. If the prolapse is of a severe degree, I always begin the operation of colpoperineorrhaphy before closing completely the posterior part of the incision. If the patient is elderly and has agreed that the vagina can be made so small that further sexual intercourse will be impossible, the problem is simple, for the utero-sacral ligaments, the rectal septa, and even the two levator ani muscles can be sutured to the posterior part of the shelf. The vagina can then be narrowed and shortened and an excellent prognosis can be given. If, however, the patient wishes to continue her sexual life the problem is much more difficult. For its solution the vagina must not be shortened or narrowed to the extent of preventing sexual intercourse, yet care must be taken to avoid the recurrence of prolapse. It may be most convenient if the method I use for colpoperineorrhaphy is now described.

Colpoperineorrhaphy

Lane's tissue forceps are attached to the vaginal wall in the midline well above the level of the levator ani muscles. Two further Lane's forceps are applied on each side to the termination of the labium minus into the remains of the fourchette. A midline incision is made through the vaginal wall to meet a second transverse incision made with a scalpel along the line of the remains of the fourchette. In

this way the two flaps are demarcated, and the vaginal tissue they contain is dissected clear of the underlying tissues, which consist mainly of scar tissue in prolapse cases. The technique is different from that of the operation of anterior colporrhaphy, for the dissection is made with a scalpel between the vaginal wall and the vaginal fascia. Great stress is placed upon dissection of the vaginal wall laterally on each side along the course of the remains of the hymen, otherwise the levator ani muscles will not be sufficiently exposed. The vaginal fascia is now cut through as in Amreich's technique (Peham and Amreich, 1934), high up above the level of the levator muscles, so that the recto-vaginal space is exposed. If the rectum is now retracted back with a finger the rectal septa, with their veins and arteries, can be exposed. The septa represent the downward continuation of the utero-sacral ligaments. They terminate in the ground bundle on the upper surface of the levator muscles. Their veins and arteries are easily torn, and they require careful ligation. The next step is to excise the redundant vaginal tissue contained in the flaps.

With cases of complete procidentia and after vaginal hysterectomy for prolapse the incision is continued upwards until it joins the incision at the top of the vagina. Redundant vaginal tissue is excised when necessary. Bleeding comes from the descending branches of the vaginal artery, which must be ligatured in the space between the vaginal fascia and the vaginal wall. In cases of prolapse of Douglas's pouch it will be necessary to excise the peritoneal sac if a vaginal hysterectomy has not been performed. A recurrence of a hernia of Douglas's pouch can be prevented by suturing the two utero-sacral ligaments and the upper parts of the rectal septa direct to the shelf of tissue which has been formed in the operation of vaginal hysterectomy. In severe cases the upper and anterior parts of the two levator muscles must be identified and then sutured to the shelf as in Everard Williams's technique, but this procedure almost always shortens and narrows the vagina. The vagina may therefore be shortened in two ways—either by excising a great deal of redundant vaginal tissue in its upper part or by suturing the levator ani muscles to the shelf formed from the two broad ligaments. Recurrence of a hernia of Douglas's pouch can be prevented with certainty if the vagina is shortened drastically. If, however, the patient is to resume sexual relations the vagina must be left long, and in these cases only the utero-sacral ligaments are sutured together.

The next step is to suture together the two levator ani muscles. Great stress is placed upon suturing them together at least 2 in (5 cm) above the level of the vaginal orifice, and for this to be done the muscles must be exposed as far forwards as this. Two fingers placed in the aperture thus formed will indicate how narrow and how long the vagina has been made. The first sutures through the two levator muscles should include the rectal septa, and this again is regarded as an important step in the operation. The two levator muscles are now sutured together with interrupted stitches, and the vagina fashioned into the shape of a hollow tube in the usual way.

Operations for Stress Incontinence

These cases can be grouped into those in which the condition is associated with cystocele and prolapse of the uterus, and those in which only the urethra prolapses in the lower half of the anterior vaginal wall. In the prolapse operations, whether anterior colporrhaphy, Fothergill's operation, or vaginal hysterectomy for prolapse, the post-urethral ligament is sutured in such a way that it is stretched in a sagittal direction. Not only that, it is pulled upwards as well. Experience shows that many patients

have so much control that they find it difficult to pass urine until they are up and about. If the urethrocele is well marked, a series of reinforcing or reefing sutures are introduced through the post-urethral ligament on each side of the urethra to form, when tied, a further support to the urethra. In my view, it is fundamentally wrong to mobilize the urethra from the pubic ramus by cutting through the post-urethral ligament as recommended by some gynaecological surgeons. The end-results for stress incontinence in these cases are extremely satisfactory.

The difficult cases are when stress incontinence is complained of without prolapse of the bladder. In these cases an effort is always made to separate the bladder from the vaginal wall and to stitch the upper edge of the post-urethral ligament to the front of the cervix. If this can be done the end-results are good. Alternatively, the following technique is employed. A midline incision is made through the lower parts of the anterior vaginal wall and two vaginal flaps are dissected away superficial to the post-urethral ligament. The incision is continued upwards towards the cervix and the bladder separated from the anterior vaginal wall by working upwards towards the situation of the cervix. The post-urethral ligament is now separated from the vaginal wall laterally. The next step is to pass a series of mattress sutures. These start cranially, first through the vaginal wall on one side of the upper limit of the incision then through the post-urethral ligament, and finally are brought down through the vaginal wall at a corresponding point at the other side of the incision. When this suture is tied the post-urethral ligament is drawn upwards and fixed to the anterior vaginal wall much higher up than normally. Two or three sutures of this kind should be inserted. Subsequently the post-urethral ligament is reinforced by a series of Lembert's sutures, which form an additional shelf below the urethra. The end-results of this operation are extremely good. The Stoeckel-Goebel, and the more modern Aldridge (1942), method should perhaps be used only when this relatively simple operation has failed.

Summary

A description has been given of the different folds and sulci in the anterior vaginal wall, and an explanation has been offered of their arrangement.

Attention has been directed to the condensed fascial layer which intervenes between the urethra and the anterior vaginal wall. The topography of this layer of tissue has been described, and it is suggested that the layer should be called the post-urethral ligament.

The methods of defining the different fascial layers and the intervening spaces that surround the vagina have been described.

A description has been given of the various methods of surgical technique in the treatment of prolapse which make use of the post-urethral ligament.

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Among legacies left to St Thomas's Hospital by the late Baroness Riddell are £1,000 to endow a bed for members of the clergy or professional classes, £1,000 to found a medical scholarship for a son of the clergy or professional classes, and £1,000 to found the Lord Riddell Surgical Scholarship.

TREATMENT OF REITER'S SYNDROME BY GOLD SALTS

BY

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AND

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Arthritis and a non-specific urethritis, sometimes associated with conjunctivitis, have been described in relation to a number of different conditions. One of us (Findlay, 1946) has pointed out that in experimental animals—rats and mice—certain strains of pleuropneumonia-like organisms give rise to arthritis and conjunctivitis, while the same lesions have been noted in bovine pleuropneumonia and in contagious agalactia of sheep. In addition, pleuropneumonia-like organisms have been isolated from the urethra of normal persons and more frequently from those of patients with non-specific urethritis. In view of these findings it seemed to be worth while to attempt to isolate pleuropneumonia-like organisms from the conjunctiva and joint fluids of patients suffering from what has, perhaps prematurely, been called Reiter's disease.

Attempts to Isolate Pleuropneumonia-like Organisms

Two patients with arthritis and urethritis, one of them also having conjunctivitis, have been investigated for the presence of pleuropneumonia-like organisms by culture of the joint fluid and blood on suitable media rich in animal protein and by inoculation of blood and joint fluid into mice. The culture of pleuropneumonia-like organisms from the urethral tract is of questionable significance at this stage in view of reports by some workers of successful culture from the normal genital tract. In neither of these cases were positive cultures obtained from the blood or joint fluid. Blood and joint fluid, 0.2 ml, from both cases was injected into the dorsum of the hind feet of 12 mice. One of these mice developed arthritis of the joint after an incubation period of 15 days. We failed to transmit the condition to other mice.

No definite conclusions can be drawn from the production of arthritis in a single mouse. Mice are naturally infected with a number of strains of pleuropneumonia-like organisms some of which may cause arthritis, in addition it must be remembered that certain rodent strains of pleuropneumonia-like organisms are species-specific. At present the majority of strains of pleuropneumonia-like organisms isolated from man have not been shown to be capable of producing arthritis in rodents, it is therefore merely an assumption that the hypothetical organisms from cases exhibiting Reiter's syndrome should be arthritis-producing in rats or mice.

One peculiarity shown by pleuropneumonia-like organisms is their sensitivity to gold salts. Thus it seemed worth while to study the reaction of patients with Reiter's syndrome to the injection of gold salts. Since these cases were treated Baxter (1946) has reported a case in which there was a slow response to 'myocrisin'. Details of the treatment of two cases are briefly as follows.

Case 1

A man aged 22 was admitted to hospital on July 17, 1946. In June he had been treated in Germany for non-specific urethritis with 70 g. of sulphathiazole given over five days. There was no further previous history of eye trouble.

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gonorrhoea, or other venereal disease. The patient was admitted on account of a recurrence of the urethritis. He also had a dry balanitis of one week's duration, with numerous pin-point ulcers on the glans penis. A urethral smear showed many pus cells, but gonococci were not present, the urine was hazy. Three dark-ground tests were performed on exudate obtained from the balanitis with negative results for treponemata. The blood Wassermann and Kahn reactions were both negative. He was given 24 g. of sulphathiazole over four days, and on July 20 he complained of swelling of the terminal joint of the left ring-finger. Within two days the middle joint of the right middle finger and the right hallux were also red, swollen, and tender. A purulent urethral discharge was still present and the urine was slightly hazy. A gonococcal complement-fixation test on July 22 was negative, the blood sedimentation rate was 85 mm in one hour.

On July 24 an intravenous T.A.B. vaccine, 50 000 000 organisms, was given with good response, the maximum temperature reaching 103° F (39.4° C). The following day there was improvement in the joints but by the 29th they had relapsed somewhat. He was then given 2 400 000 units of penicillin (40 000 units three-hourly for seven and a half days), and by Aug 5 the arthritis of the toe had improved, but improvement in the fingers was only slight. The urethral discharge was still detectable in the early morning, when many pus cells were present, the urine was clear. On Aug 8 a blood count showed 10 600 white cells per cmm (66% polymorphs, 30% lymphocytes, 3.5% mononuclears, 0.5% eosinophils). On Aug 10 an effusion appeared in both knees, this disappeared spontaneously from the right side within four days. On Aug 18 the fingers were no longer red but still swollen, as was the right big toe. There was a marked effusion in the left knee and the balanitis had not cleared. The following investigations were done: blood sedimentation rate, 30 mm in one hour, haemoglobin, 12.7 g %, packed cell volume, 40%, white blood count, 12 000 (polymorphs 84%, lymphocytes, 14%, mononuclears, 2%), blood uric acid, 3.3 mg per 100 ml. Skiagrams of the affected joints showed no bony changes. Stool culture revealed no pathogens.

On Aug 18 conjunctival and urethral smears were taken for special examination and the left knee was aspirated. It was then decided to employ gold therapy. Myocrisin was given intramuscularly. The dates of the various injections and the relevant sedimentation rates are as follows.

Date	BSR	Myocrisin
Aug 18	30 mm in 1 hour	—
21	—	0.01 g
26	—	0.02 g
27	31	—
Sept 2	—	0.02 g
7	18	0.025 g
13	11	0.025 g
19	12	0.05 g
25	—	0.05 g
Total in 5 weeks		0.2 g

The temperature was taken four-hourly, the urine was tested daily for albumin, the skin closely watched for dermatitis, and a blood count done twice weekly. No untoward reactions were noticed. The balanitis rapidly cleared, though the urethral discharge resolved but slowly. The joints showed slow but steady improvement.

On Sept. 18 there was a brief setback, fluid reappeared in the left knee and there was a slight swelling of the left ankle. This subsided within two days and the patient was discharged to duty on Sept. 24. On Sept. 19 Flexner vaccine was instilled into the right eye (see below), with negative results.

Case 2

A man aged 23 was admitted to hospital on Aug. 20, 1946. In May 1944 he had had acute gonorrhoea, which was treated with sulphathiazole, 5 g daily for five days. In December 1944, he developed pain and swelling in the right foot associated with balanitis, and gonococcal arthritis was diagnosed. He was treated with a penicillin drip (dosage unknown) without effect, and later received T.A.B. and physiotherapy, by April, 1945,

he had fully recovered. Since that date he had been well except for occasional conjunctivitis and a very slight urethral discharge. There was no previous history of dysentery or venereal disease other than the above.

On Aug 13 he sought advice on account of a slight urethral discharge of one week's duration. A smear showed pus cells but no gonococci; he was given sulphathiazole 5 g daily for five days. On the following day he fell and injured his left knee. When he returned on Aug 20 he showed an improvement in the urethral discharge, but a marked effusion was present in the left knee; moreover, there was a severe bilateral conjunctivitis of two days' and a balanitis of six weeks' duration.

He was admitted to hospital and given 200 000 units of penicillin in five three-hourly doses of 40,000 units. On the 21st his urethral smear continued to show many pus cells, while the urine was hazy in two glasses. The blood Wassermann and Kahn tests and the gonococcal complement-fixation test were negative, blood count haemoglobin, 115%, red cells, 5,490,000, white cells, 10,600, polymorphs 61%, lymphocytes 35%, mononuclears 4%, urine albumin, sugar, ketones, bile negative, stool no pathogens found in culture, blood sedimentation rate, 6 mm in 1 hour. A skiagram of the knee revealed no bone injury.

On the following day urethral and conjunctival smears were taken for special examination and the left knee was aspirated. Gold therapy with myocrisin was then begun. Temperature recordings, daily urine examination for albumin, and skin inspection and blood counts twice a week did not reveal any toxic reactions. The dates and amounts of the myocrisin, together with the relevant sedimentation rates, are as follows:

Date	BSR	Myocrisin
Aug 22	12 mm in 1 hour	0.01 g
" 28	—	0.02 g
Sept 2	—	0.02 g
" 7	3 mm in 1 hour	0.025 g
" 13	4	0.025 g
" 19	5	0.05 g
" 25	—	0.05 g
	Total in 5 weeks	0.2 g

The eyes were treated locally with saline washes and resolution was rapid, both becoming normal within 72 hours. The balanitis showed steady improvement and had quite gone by Sept 2. The urine cleared within three days, but a morning urethral discharge persisted for three and a half weeks. The knee filled up again after the initial tapping, but had begun to subside when a second aspiration was performed on Sept 18 after which time it did not refill.

On the 19th Flexner vaccine was instilled into the right eye without result (see below). The patient was discharged to duty on Sept 25. There was no improvement with penicillin, though with gold therapy it was steady and maintained.

The Eye Test

The possible dysenteric origin of some cases of Reiter's syndrome has recently received considerable attention. Wood (1946) states that he succeeded in reproducing the sterile conjunctivitis in three cases by instilling a drop of Flexner vaccine into the eye. It was decided to apply this test to these cases. Flexner bacteria (mixed I-VI) were killed by heat at 55° C, and a suspension of 3,000 million organisms per ml was kindly prepared by Lieut-Col Archer, R A M C, to whom due acknowledgment is given. It produced no reaction in three rabbits or in two human controls.

A drop of this material was placed in the right eye in the above two cases and in a third case which had previously shown polyarthritides, urethritis, and conjunctivitis and had apparently recovered. No reaction was noted in any of these cases. None of these patients' sera showed any agglutination with strains of dysentery bacilli of the Shiga type. It may be of interest to note that cases of non-specific urethritis, arthritis, and conjunctivitis are not

uncommon in West Africans among whom Shiga dysentery is exceptionally rare.

Discussion

Although the hyperthermia is probably the most satisfactory treatment for patients with Reiter's syndrome, gold salts appear capable of producing a satisfactory cure. It is, however, unwise to assume from the therapeutic action of a particular drug in different diseases that the causative organisms of these diseases are necessarily related. Antimony salts, for instance, have a curative action in schistosomiasis and in infections due to *Leishmania* and trypanosomes. Penicillin is known to be valueless in diseases due to pleuropneumonia-like organisms, but streptomycin has been found to be curative in rodent arthritis due to similar organisms (Powell *et al*, 1946); its action in patients with Reiter's syndrome would be of interest. Further investigation of patients with Reiter's syndrome for the presence of pleuropneumonia-like organisms is desirable.

Conclusions

Apart from the production of arthritis in a single mouse by the injection of joint fluid from one patient, an investigation of two patients with Reiter's syndrome was negative for the presence of pleuropneumonia-like organisms.

Gold salts were curative in two patients with Reiter's syndrome not associated with bacillary dysentery, while penicillin and sulphonamides were of little value.

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SCRUB TYPHUS VACCINE

ITS EFFECT ON SIXTEEN CASES INCUBATING THE DISEASE

BY

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On account of the high incidence of scrub typhus in Mandalay during the autumn of 1945 the D M S, Twelfth Army, decided that all troops in that area should receive scrub typhus prophylactic vaccine. Seven and a half litres of the special vaccine prepared in "Operation Tyburn" at the Wellcome Veterinary Research Station, Frant, Sussex (Buckland *et al*, 1945), was employed in 1-ml doses on three occasions at weekly intervals. All the inoculations were given during November, 1945, and, since this was the month of peak incidence of scrub typhus, local commanding officers were glad to co-operate in arranging inoculation parades.

Initially the intention was to inoculate half of each company so that the remainder would serve as controls in the evaluation of the efficacy of the vaccine, but the increasing incidence and the commanding officers' suspicion that it was something of an experiment resulted in a fresh instruction that all troops should be inoculated. Inoculation produced a slight local tingling lasting five minutes due to the formalin vehicle, but no immediate constitutional reaction resulted, though fever was reported in some cases; these are included among the 16 cases which form the basis of this report. In all 2,500 troops were inoculated with prophylactic vaccine.

It had been suggested that the bite of a mite could produce an eschar whether the trombiculid was infected with *ricettsiae* or not, so this mass-inoculation programme was made use of to carry out a routine skin examination in which search was made at the time of the first inoculation for eschar-like sores in all troops. It seems worth recording that, apart from cases which were subsequently shown to be incubating the disease, the presence of an eschar in an otherwise healthy man was not reported.

This paper is concerned solely with the immediate effect of the inoculation upon the course of the disease in 16 men who were inoculated fortuitously during their period of incubation of scrub typhus, the question of its prophylactic efficacy in respect of the remainder of the 2 500 inoculated had to be left to a successor.

Post-inoculation Cases of Scrub Typhus

All 16 cases had received one or more inoculations of the prophylactic vaccine between Nov 10 and 18, 1945, and were received into hospital between Nov 12 and 20. Eight had come from one unit and four from another unit in an adjacent site at Fort Dufferin, Mandalay. These 12 cases, arising apparently out of their inoculation a few days previously, not unnaturally gave rise to some alarm among the officers and other ranks (who totalled 450). Among the victims were the commanding officer and the second-in command of the unit most seriously affected. Careful examination of the cases showed that 14 of the 16 had typical eschars with lymphadenitis of related glands. This was most fortunate for me, for anxious and irate senior officers had to be faced with a very definite opinion as to whether any blame might attach to the inoculations which all area troops were in process of receiving. A reasoned explanation was accepted and the inoculation scheme proceeded with. All the cases were subsequently proved by Weil-Felix agglutination tests.

Of the 16 cases, 12 had received one inoculation of 1 ml of prophylactic vaccine before the development of symptoms, two had received two weekly injections of 1 ml, and two had, during and overlapping the incubation period, received three injections of 1 ml of the vaccine.

Classification into Four Groups

For descriptive purposes the cases have been divided arbitrarily into four groups, according to the number of doses of vaccine administered and the length of interval between the administration and the development of symptoms, since these two factors appeared to modify the illness. Group I cases received 1 ml of vaccine less than three days before onset of symptoms, Group II cases received 1 ml three or more days before onset of symptoms. Group III cases received two 1 ml doses during or overlapping their incubation period, and Group IV cases three 1 ml doses during or overlapping the incubation period. A sample case history is given for each group, and particulars of the others will be found in the Tables.

Group I Case 1

A British officer aged 34 was admitted on Nov 18, 1945, complaining of not feeling fit since inoculation with scrub typhus vaccine on Nov 12, and expressing indignation that he should have been made ill. Only slight headache had been felt on the day of inoculation. He was unwilling at this point to go to hospital but was finally persuaded to do so.

On examination an eschar was found on the scrotum, with enlarged, tender, rubbery left inguinal glands. The eschar was found to have been present since Nov 14 and was the only lesion of note. The blood pressure was 125/75 mm Hg. The white blood cells numbered 5 000 per c.mm (poly-

morphs, 52%, lymphocytes, 44%, monocytes, 4%, eosinophils, nil).

During the first week of illness he remained bright, ate well, and read technical literature, he was slightly peevish, and had

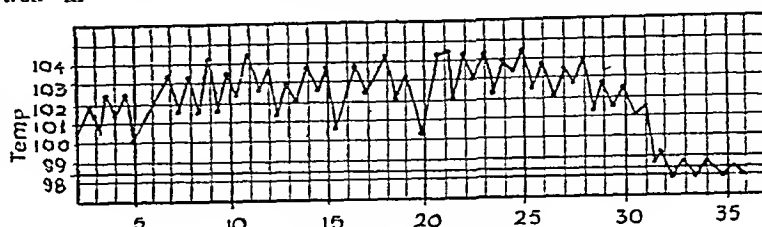


FIG 1—Group I, Case 1

a gently swinging temperature of 101°–102° F (38.3°–38.9° C) daily. No further sign appeared. On the seventh day the OX K titre was 1 80 and the blood pressure 100/60 mm Hg. In the second week the general condition remained good, he continued to sit up to eat and read, a few basal rhonchi and a slight cough appeared. Fever was now maintained at 102°–104° F (38.9°–40° C), and the OX K titre was 1 320. The spleen was one fingerbreadth increased, the liver was just palpable, and cerebation was normal. The third week brought no detectable change in his condition, apart from an appearance of tiredness, though the fever continued to swing between 101° and 104° F (38.3° and 40° C) daily. Slight insomnia was added to the headache and cough, the OX K titre was 1 1,280, and the blood pressure was 120/70 mm Hg. Deep reflexes were absent and superficial reflexes feebly present. The white cells numbered 4,200 per c.mm (polymorphs, 65%, lymphocytes, 23%, eosinophils, 12%). The spleen was one fingerbreadth increased and the liver just palpable.

Between the 22nd and 26th days of illness a few toxic signs appeared—ashen pallor with the smallest degree of cyanosis, extrasystoles, and irritability. He continued to sit up in bed and enjoyed his meals, though he found that he could read only 'light' literature. There was no loss in weight, and even after all this time he stated on questioning that he felt quite well, though he looked a shade anxious. This mild course was maintained until fever settled by lysis on the thirty-second day of illness. On the 24th day a small degree of tympanites was noted, and this persisted for three days. At the conclusion of the fever the spleen and the liver were one fingerbreadth increased. The respiratory, gastro-intestinal, and genito-urinary systems were normal. Deep reflexes were increased and the circulatory system was normal. Two months' convalescence was granted and this passed without incident.

Group II Case 9

An African aged 25 was admitted on Nov 19, 1945, giving a history of not feeling fit since Nov 17. He had been inoculated with 1 ml of scrub typhus vaccine on Nov 10. He complained of severe headache, retro-orbital and retrosternal pain, and had a slight cough with mucopurulent sputum.

On examination the throat was injected, the eyes were suffused, and a few rales and rhonchi were heard in the upper zones of both lungs. The blood pressure was 100/70 mm Hg. There was slight epigastric tenderness. An eschar was noted

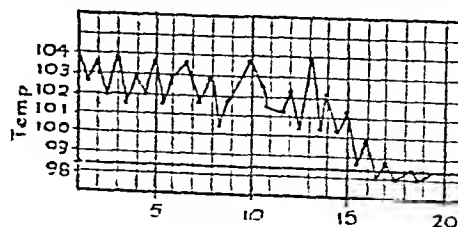


FIG 2—Group II, Case 9

on the anterior wall of the left axilla, and the related lymphatic glands were greatly enlarged, rubbery, and tender. Other lymph nodes, especially the posterior cervical, were also enlarged and tender. The spleen was one fingerbreadth increased, the liver was one fingerbreadth increased and tender. No rash

as seen. Fever rose within 48 hours to 104° F (40° C) daily, never falling to normal at any time. Deep and superficial reflexes were normal. The urine was normal. The patient lay quietly in bed and had none of the usual buoyancy of the West African. The white cell count was 5,600 (polymorphs 58%, lymphocytes, 38%, monocytes, 2%, eosinophils, 2%).

During the first week all the above mentioned signs and symptoms increased in intensity. Bronchitis became severe and headache most intense. The blood pressure remained at 100/70 mm Hg, and the pulse rate did not exceed 110. He lay quietly

abnormalities noted were an eschar on the ventral surface of the penis with related groin lymphadenitis, and slight injection of the fauces. No rash was seen. The blood pressure was 110/70 mm Hg. Deep and superficial reflexes were all present and normal. The spleen was increased two fingerbreadths, the liver was just palpable. The white cell count was 6,200 (polymorphs 65%, lymphocytes, 32%, and monocytes, 3%). The OX K titre on the seventh day was 1/40. The fever swung between 101° and 103° F (38.3° and 39.4° C) daily. Throughout the illness he ate well, slept well, and sat up in bed to read, making very

TABLE I—General Clinical Findings

Case No	Race	Date of Inoculation	Date of Onset	Site of Eschar	Glands Involved	Rash	Respiratory	Abdominal	Deafness	Days of Fever
Group I	1 BO	12th	12th	Scrotum	Inguinal	Nil	Bronchitis	Tympanites (21)	Slight late	32
	2 IO	12th	14th	Penis		Nil	Bronchopneumonia	Nil	Late marked	34
	3 I	14th	14th	Rt lumbar		Nil	Nil	Nil	Nil	17
	4 B	12th	14th	Lt flank		Nil	Mild bronchitis	Tumid	Slight	26
	7 I	14th	16th	Nil	General	Nil		Tympanites (7)		14
Group II	11 A	10th	10th	Scrotum	Inguinal		Bronchitis	Slight tympanites (14)	Nil	42
	12 A	10th	8th	Lt shoulder	Axilla			Tympanites (19)		18
	5 I	12th	16th	Rt ear	Cervical		Slight bronchopneumonia	Nil		14
	6 I	14th	19th	Nil	General		Slight bronchitis	Tympanites (11)		18
	8 I	14th	19th	Rt flank	Inguinal		Bronchitis	Slight tympanites (14)		12
Group III	9 A	10th	17th	Lt axilla	Axilla		Nil	Nil		17
	10 A	10th	16th	Rt axilla			Slight bronchitis	Nil		16
	13 I	14th 21st	21st	Penis	Inguinal		Nil	Slight	Slight	12
Group IV	14 I	18th 25th	23rd	Scrotum				Slight tympanites	Nil	13
	15 I	6th 13th 20th	22nd	Rt axilla	Axilla			Nil		36
	16 I	12th 19th 26th	26th	Rt groin	Inguinal					10

B = British O = Officer I = Indian A = African. No in parentheses = Day of onset of tympanites

in bed obviously frightened. On the seventh day of illness his OX K titre was 1/40, his deep reflexes were abolished, and he was complaining of mid abdominal pain. In the second week the fever continued unabated with continuation of headache and bronchitic signs. To these was now added dyspnoea with a respiratory rate of 46 per minute. The blood pressure dropped to 95/50 mm Hg. The urinary chlorides fell to 3 g per litre. By now the spleen was increased 2½ and the liver 1½ fingerbreadths. Further complaints were of pain in the right elbow-joint and pain with swelling in both knee-joints. Acute laryngitis with complete aphonia developed, and some slight delirium with maniacal behaviour occurred, this had to be treated with intra-

little complaint of discomfort. On the 12th day of illness lysis occurred with cessation of all symptoms. On the 14th day the spleen and liver were increased one fingerbreadth, but on the 21st day the spleen was just palpable and the liver was

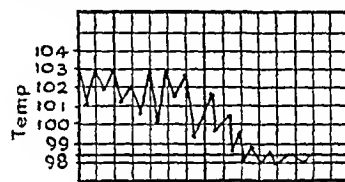


FIG 3—Group III, Case 13

still one fingerbreadth increased. The blood pressure on the 12th day was 100/65 mm, on the 16th day 110/70 mm, and on the 21st day 115/80 mm Hg. Deep reflexes were feeble on the 12th but were brisk by the 21st day. By the 14th day the OX K titre was 1/80. (Further results were lost in a laboratory fire.) On the 14th day the white cell count was 4,500 (polymorphs 50%, lymphocytes, 45%, monocytes, 2%, and eosinophils, 3%). Full recovery was rapid.

Group IV Case 16

An Indian Viceroy's commissioned officer aged 25 was admitted on Nov 30, 1945, complaining of slight fever, frontal headache of four days' duration. Inoculations had been given on Nov 12, 19, and 26. On examination an eschar was

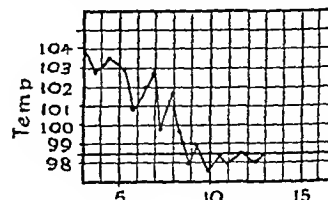


FIG 4—Group IV, Case 16

muscular paraldehyde. The OX K titre was now 1/80. On the 15th day resolution started and fever settled by lysis, with sudden cessation of symptoms and gradual clearing of all physical signs. Deep reflexes returned and became exaggerated, the blood pressure rose to 110/70 mm Hg, the white cell count was 6,500 (polymorphs 46%, lymphocytes, 48%, monocytes 4%, and eosinophils 2%). The spleen and liver were palpable and two fingerbreadths increased, the OX K titre had risen to 1/320. Recovery was very rapid and he was fit for transfer to another hospital on the 18th day of illness.

Group III Case 13

An Indian aged 30 was admitted on Nov 28, 1945, complaining of slight headache and chilliness since Nov 21. He had been inoculated with 1 ml of scrub typhus vaccine on Nov 14 and 21. On examination on the seventh day of disease the only

found in the right groin with accompanying lymphadenitis. No rash was seen. The temperature on admission was swinging between 102° and 104° F (38.9° and 40° C) but immediately thereafter dropped to 99°–102° F (37.2°–38.9° C) for the next three days, followed by resolution by lysis starting by the fourth

and completely normal by the tenth day. This was the shortest fever of all 16 inoculated cases and also the shortest fever of the entire series of 130 cases. The eyes were slightly suffused, the spleen was just palpable, the liver was not palpable on the sixth day, and both were unchanged on the tenth day. All other systems were found to be normal.

On the seventh day the blood pressure was 90/65 mm and on the tenth day 95/70 mm Hg. The deep reflexes were unaltered throughout. The white cell count on the seventh day was 7000 (polymorphs, 52%, lymphocytes, 40%, monocytes, 8%). It was difficult to persuade the patient to remain in bed, since he maintained throughout that he felt perfectly fit, he ate and slept well. The Weil-Felix reaction was as follows:

7th day	OX K, 1	40	OX 19	1	80	OX 2,	nil
10th	"	1	80	"	1	80	nil
14th	"	1	160	"	1	40	nil

The blood pressure rose on the 14th day to 105/75 mm Hg. All fever, signs, and symptoms had cleared by the 12th day of illness, and the patient, at his own urgent request, was not sent to convalescence as was the normal procedure, but was returned to his unit on the 14th day, with recommendation for 10 days' excused duty."

Comment

Group I—The outstanding modifications of the usual course of the disease appeared to be (1) A considerable lengthening of the fever (average 21.5 days, as against an average for the complete series of 17.38 days and for Group II of 14.5 days) (2) A delay in the development of toxicity in some cases and its relative diminution in others. This latter was a remarkable feature in view of the long fevers (32 days in Case 1, 34 days in Case 2, and 26 days in Case 4) and the relatively high temperature reached daily $-103^{\circ}-104^{\circ}\text{F}$ ($39.4^{\circ}-40^{\circ}\text{C}$). It was odd to see all but Case 2 able to sit up in bed to read and to enjoy meals, and to find that, with the same exception, headache, retro-orbital pain and respiratory signs, when present, were minimal. Of the 16 patients, No. 2 alone showed loss of weight, and he and No. 7 both had a circulatory collapse, the former on the 21st and the latter on the 12th day. The fever was prolonged in Case 12 by a coincident amoebic hepatitis.

Group II—These cases seemed to be less affected in their general course than those of other groups. It did seem, however, that the course of the illness was probably shortened. The average length of fever in this group was 14.5 days as against 17.38 days for the entire series of 130 cases and 21.5 days in Group I. All five cases were moderately toxic; four of them showed eschars.

Group III—These two cases shared the common feature that neither patient was really ill, both sat up in bed to read and eat, and neither had any complications.

Group IV—The two cases of this group were so mild that had there not been eschars and lymphadenitis to confirm the diagnosis it would have been in doubt, especially so since the final agglutinations were lost by fire and Case 15 reached only a titre of OX K 1/80 and Case 16 1/160. Neither of these patients really felt ill at all, the fever subsiding in 10 and 9 days respectively, the former being sent to convalescence on the 16th and the latter to his unit on the 14th day.

Summary

The effect is reported of scrub typhus prophylactic vaccine on 16 patients who were at that time in the process of incubating the disease.

Of these only one (Case 2) became seriously ill; four others became ill at some stage of the disease. This compares favourably with the mortality rate of 7% for the 130 cases of 17.38 days incubated cases and the fact that of these 130 cases 10 were severely toxic.

Inoculation of 1 ml of scrub typhus prophylactic vaccine seemed to have the effect of lengthening the fever very considerably while materially reducing and delaying the onset of toxicity.

Inoculation of two doses of 1 ml produced yet milder cases, and inoculation of three 1-ml doses gave the mildest of all cases seen.

The presence of an eschar in the high proportion of 14 out of 16 cases was most helpful in diagnosis.

The general clinical features are set out in tabular form.

I wish to thank Brig Harris and Brig Macnamara, Twelfth Army, for their encouragement and for permission to publish findings, also Lieut-Col C E Moorhead and Lieut-Col P O Shea, R.A.M.C. mv commanding officers.

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PROGNOSIS OF PRIMARY PLEURISY WITH EFFUSION

By

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Pleurisy with effusion, when its cause is otherwise in doubt, is now usually believed to be of tuberculous aetiology. It is sometimes followed by frank tuberculosis in the lungs or other organs, but the incidence of such secondary disease has never been statistically established. Published figures range from 5% (Helms, 1934) to 66% (Borelius, 1933), and a recent review by Robson (1944) shows that this wide divergence is due to three factors: (1) A clear definition is not always made between whether parenchymal tuberculosis was or was not already in evidence at the time of the initial pleurisy; indeed, many studies do not include satisfactory x-ray diagnosis. (2) Though examination of a group of patients after a period of years may show a certain proportion to have developed phthisis, it cannot establish the date of onset of such disease. This method, on which most investigators have relied, must also miss a proportion of the lesions which arise and resolve spontaneously during the intervening period. (3) Patients lost sight of must be statistically evaluated; they vitiate the results in proportion to their number, and this has generally been high.

The present study is based on 233 patients, the sum-total of all cases referred to the Ealing Chest Clinic in the years 1937-44 on account of primary pleurisy with effusion. Of these, 43 were judged to have x-ray evidence of parenchymal pulmonary tuberculosis at the outset and are therefore excluded. The remaining 190 were kept under constant observation at this clinic, with regular x-ray examination, for maximum periods up to the end of 1945, with the following exceptions: one patient was lost sight of after two and a half years, eight ceased to attend after one year and five after two years owing to removal from the district etc., but were known to be alive, well, and at work at the end of the maximum observation period. Of these 190 patients 40 have so far developed secondary tuberculosis, and six have died.

It is clear from Table I that the relative incidence of secondary tuberculosis was approximately the same in each age group and that case-fatality rates were also evenly distributed. Of the 40 patients 18 were male and 22 female. It was possible to date within a few weeks the onset of the earliest radiological evidence of a pulmonary

TABLE I—Distribution by Age and Sex

Age Groups (Years)	Cases of Pleural Effusion			No Developing Tuberculosis	Deaths
	Male	Female	Total		
0-4	1	1	2	—	—
5-9	7	5	12	1	—
10-14	6	7	13	4	1
15-19	44	21	65	15	2
20-24	23	25	48	10	1
25-29	12	10	22	7	1
30-34	5	3	8	—	—
35-39	5	2	7	2	—
40-44	1	3	4	—	—
45+	3	6	9	1	1
Total	107	83	190	40	6

lesion, with two exceptions in which there was a lapse from observation of four years between recovery from the initial pleurisy and the detection by skiagram of parenchymal disease, these two cases are shown in Table II as developing in the fifth year

TABLE II—Annual Morbidity

Year	Total Patients	No Developing Tuberculosis in Each Year of Observation							
		1st	2nd	3rd	4th	5th	6th	7th	8th
1937	8	—	—	1	—	—	—	—	—
1938	16	2	1	—	2	—	—	—	—
1939	15	—	2	—	—	—	—	—	—
1940	22	2	4	1	1	2	—	—	—
1941	28	1	2	—	—	—	—	—	—
1942	34	5	1	—	—	—	—	—	—
1943	28	7	1	—	—	—	—	—	—
1944	39	5	—	—	—	—	—	—	—
Total	190	22	11	2	3	2	—	—	—
No exposed to risk in each successive year	190	134	102	72	45	—	—	—	—
Probability of developing tuberculosis in each year	0.12	0.08	0.02	0.04	0.01	—	—	—	—
This probability applied to basic 1 000 patients	120	70	16	32	8	—	—	—	—
No affected during each year	880	810	794	762	754	—	—	—	—
No remaining unaffected on each anniversary	—	—	—	—	—	—	—	—	—

The number exposed to risk each year is calculated by the life-table method described by Bradford Hill (1939), its several stages here being compressed for economy of space. The total 190 patients were observed for one year. The 39 originally seen in 1944 could of course not be followed beyond the end of 1945, when the survey was closed, so these must be subtracted, together with the 17 of the remainder who had already developed tuberculosis during the first year, leaving 134 at risk during the second year. A similar calculation is required in each succeeding year not forgetting the further subtraction of the one patient lost sight of in the third year of observation.

The "probability" of developing tuberculosis in any given year for those entering it so far unaffected is simply the number of cases divided by the number at risk. The two fifth-year cases, whose date of onset is unknown, must be divided by the total 190, giving a probability figure of 0.01.

The next step is to apply these probability ratios to an arbitrary total of 1,000 patients, subtracting each year the number that would become affected, leaving the remainder at risk for the following year. The progressive depletion thus taking place leaves us at the end of five years with 754 of our original 1,000 patients still unaffected. In other words, 246 have developed pulmonary or extrapulmonary tuberculosis—approximately 25%.

A similar calculation from the observed fatalities in the original series gives a death rate of 3.5% over the five-year period. This, however, is of limited value, as the

insidious and progressive character of many of the pulmonary lesions encountered leads one to expect a considerable mortality in later years.

Conclusions

Observation of 190 patients with primary pleurisy with effusion shows that one-quarter of all such patients developed systemic tuberculosis within five years. Nearly half the cases arose within one year of the initial pleurisy. No case has been found to occur after five years.

Of the tuberculous lesions that developed 15% were extrapulmonary. The remainder first became evident in the lung, though in either case spread to other systems tended to occur, as in any similar lesion acquired in other ways.

The death rate for the five-year period was 3.5%.

The age of the patient did not seem to influence either the incidence or the character of any subsequent tuberculosis.

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A CASE OF BILATERAL SIMULTANEOUS SPONTANEOUS PNEUMOTHORAX

BY

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Bilateral simultaneous spontaneous pneumothorax is relatively uncommon (Glickman and Schlomovitz in 1939 reported only 82 cases in the literature) and is often fatal. The following case is presented because of the rapid uninterrupted recovery and the methods employed to reduce the dangerous positive pleural pressures.

Case Report

A soldier was admitted to hospital on Nov. 28, 1944 with the following history. He awoke that day with a slight pain in the right chest, not associated with cough or dyspnoea but these symptoms became well established when he began his daily duties, and in the afternoon he reported to the outpatient department, where a spontaneous pneumothorax was discovered. Inquiry into his family and previous medical history revealed nothing of significance.

On examination he was seen to be a well built healthy individual with little cyanosis and no dyspnoea when at rest. His trachea was displaced to the left, and his apex beat was located 1 in. (2.5 cm.) external to the mid-clavicular line. There was diminished movement of the right chest, the percussion note was more resonant on the right side, and breath sounds were diminished in the right lung. X-ray examination confirmed the diagnosis of a complete right pneumothorax and he was ordered complete bed rest. On Nov. 30, when using a bed-pan he experienced a sudden pain in the left chest and rapidly became extremely cyanosed and dyspnoeic. Examination revealed the presence of a bilateral pneumothorax and efforts were immediately made to relieve the man's respiratory embarrassment. His intrapleural pressures were right + 7 → + 8 left + 3 → + 6, after the removal of 1,200 c.c. of air from each pleural cavity they became, right, - 3 → + 4, left - 3 → + 4. His general condition improved for a short time but his cyanosis and extreme dyspnoea

returned, and decompression was again carried out in the early evening a further 1,200 ml being removed from each pleural cavity.

Whilst considering how we might best leave him for the night, our radiologist Capt Tomlinson, produced an article by Major H Fuld (1944) describing a simple device for the control of tension pneumothorax. It was decided to try this method of decompression and a modified French blood transfusion needle which passed through the centre of a rubber diaphragm was inserted into each second intercostal space close to the sternum. Each needle was connected to a one way outlet valve of a standard transfusion apparatus which permitted only the egress of air. These in their turn were connected to short lengths of rubber tubing which were strapped to the chest wall. The man's general condition improved considerably until the early morning when the needles slipped a little and became blocked, necessitating clearance with a stylet and readjustment. As a result he developed emphysema of the chest wall neck, and face. On Dec 1 the needles were removed and reinserted in the fifth intercostal spaces in the anterior axillary line, and in the afternoon the intrapleural pressures were right, 0 → 2, left, 0 → - 2.

The needles were finally removed the next day, as there was no cyanosis or dyspnoea, and a course of sulphadiazine (30 g in all) was started—it was thought that he might develop an infected effusion as a result of the repeated needlings. However, he made an uninterrupted recovery from this date, his lungs expanded steadily, there was no pleural effusion, and the emphysema subsided. By Dec 10, ten days after the onset of symptoms his lungs had almost completely re-expanded and he was evacuated to England by hospital ship.

Unfortunately the photographic copies of the x-ray films are very indifferent and would not bear reproduction. The first film, taken soon after the left lung collapsed, showed a small nodule of lung at each hilum surrounded by air. There were no adhesions and no mediastinal shift. Both lungs expanded evenly, but the left side eventually lagged a little behind the right, and when the patient was evacuated the right lung had expanded completely.

Discussion

The literature lays great stress on the frequency of evolutive pulmonary tuberculosis in the causation of bilateral spontaneous pneumothorax, McMahon (1932) giving a mortality rate of 58%, compared with 16% due to emphysema. Glickman and Schlomovitz (1936) in their review of 82 cases (fatal and non fatal) state that 38% were tuberculous, 12.5% were due to emphysema, and 21% were in the idiopathic group, pneumoconiosis, congenital cysts, bronchopneumonia, and tumours accounted for the remainder. Emphysema was found to be the cause of death in the cases recorded by Meyer (1917), Werner and Thearle (1942) and King and Benson (1944).

Olbrechts (1920) divided the bilateral condition into simultaneous and successive in the former both lungs collapse at the same time or one follows the other before the air has been absorbed. In discussing the aetiology he suggests that it is either a coincidence or an anatomical disposition (congenital or acquired) which leads to an added fragility of the surface of the lungs. Le Wald (1926) suggested the passage of air from the right to the left pleural cavity across an office in the mediastinum and commented on the occasional fistulization of the mediastinum in the course of a therapeutic pneumothorax. This theory was also mentioned by Bedford and Joules (1929) who suggested that it might explain the fact that they aspirated only one side of the chest, with complete recovery. The prognosis is very poor in tuberculous cases and is little better in emphysema whereas the idiopathic cases may make a complete recovery.

There is no evidence of tuberculosis, emphysema, pneumoconiosis or lung infection in my case, and it would appear to come into the "idiopathic" group. In order to

prevent a recurrence the patient was sent home to England, for consideration of the artificial production of adhesions. In considering the conduct of the case it should be remembered that the needles must be long enough to pass into the pleural cavity in comfort and so obviate the possibility of surgical emphysema, that it is not necessary to take the rubber tubing under water (thus allowing greater nursing freedom), and that it is safer to check the pressures at regular intervals in order to determine the progress of the condition and the amounts of air to be removed. Finally, sulphadiazine was given prophylactically, but it is impossible to state whether it had any beneficial influence on the uncomplicated recovery.

Summary

A case of bilateral simultaneous pneumothorax is presented, with a description of the method employed in an endeavour to overcome the tension pneumothoraces.

The literature has been reviewed from the point of view of aetiology and of prognosis, and the suggestion is made that the case falls into the "idiopathic" group, in which the outlook is reasonably good.

I wish to thank Major W. R. Trotter, R.A.M.C., and Capt. M. N. Tomlinson, R.A.M.C., for their assistance, and Col. R. W. Savage for his permission to publish this case report.

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Medical Memoranda

End-Result of Colectomy for a Case of Chronic Constipation

The following is a report of a case of chronic constipation due to lack of tone in the musculature of the large bowel. After extensive medical measures had been tried unsuccessfully, colectomy, with implantation of the ileum into the lower third of the pelvic colon, cured the constipation and produced great improvement in the mental and physical health of the patient.

CASE REPORT

In January, 1940, a young man of 21 came to me with intractable constipation. He was thin, sallow in complexion, and very worried. He had consulted many doctors in the past four years without success and if nothing further could be done he said he would take steps to end his life. He had been treated by massage, daily enemas, and colour wash-outs, diet, liquid paraffin and other drugs, physical exercises, and suggestive treatment. Nothing had helped him and heroic doses of purgatives and violent exercise were necessary to get his bowels to act as often as once a week. As the days went by without a bowel action he developed persistent headaches, an increasing feeling of lassitude, and complete anorexia. His chemist's bills were getting him down, and he considered that if he had to spend so much of his day for the rest of his life endeavouring to get an action of his bowels, life would not be worth living. He was very pessimistic about the outcome of his visit to me and his case seemed most unpromising. His past history was negative, no serious illnesses, no history of dysentery or excessive constipation as a child. He was fond of exercise, chiefly walking, tennis and riding. He had been fit and healthy until four years before, when constipation of increasing severity began to trouble him.

Examination showed him to be much under weight, with a dry, red, shiny skin. His tongue was furred. The abdomen was normal except for many borborygmi. Reflexes were normal, and the

ohr and Wassermann reactions negative X ray examination disclosed great delay, chiefly in the ascending and transverse colons, and a barium enema ran easily back to the caecum, causing huge dilatation of the whole large bowel The blood, urine, and faeces showed no abnormality In view of his mental state and realizing the futility of further medical treatment, I decided to operate

Laparotomy was performed on Jan 20, 1940 There were no adhesions or bands, and the only pathological feature was a slightly dilated extremely mobile colon The dilatation was most pronounced in the ascending and transverse colons, and beyond the splenic flexure the gut was empty and collapsed There was a remarkable lack of tone throughout the whole of the large bowel

It seemed possible that some kinking was occurring at the splenic flexure owing to the abnormal mobility, and accordingly an anastomosis was made between the transverse and descending colons The patient made a good recovery His defeatist outlook was jolted when he passed a daily motion with the aid of liquid paraffin only, from the seventh day onwards He left hospital on the twenty first day after operation considerably cheered, but firmly convinced that he would soon return to his former state—and he did!

Four months later he returned as depressed and as constipated as ever I reopened his abdomen on May 24 The caecum and all the large bowel down to the centre of the pelvic colon were removed, and the ileum was anastomosed to the lower end of the pelvic colon He made a good recovery, and liquid stools were passed daily, with out medicine, from the fifth day after operation He was discharged from hospital on June 25, feeling well, and passing one or two liquid stools a day His mental outlook, despite encouragement, was still poor, he felt certain that the old trouble would reassert itself before long He was then transferred to a small out station, and I heard nothing more from him until June 6, 1944, when I received a letter, part of which I quote "I am pleased to say that I am now in perfect health I am sure you would not recognize me now as I have grown quite fat My health seems to improve every day, and I am not taking any medicine at all, a little brown bread is all I need if I get at all constipated The last operation seems to have been a wonderful success"

The pathology of the bowel in this case is not clear The small intestine was slightly dilated and thickened, but in the colon there was no hypertrophy of the muscular coat or thickening of the mucosa as seen in Hirschsprungs disease or megacolon There appeared to be a lack of tone in the musculature which allowed the bowel to distend to a great size without causing either pain or peristaltic movements

Gwelo S Rhodesia

T W STEPHENS FRCS Ed

Three Cases of Agranulocytosis

In view of the report by Drs Librach and Cronin of a case of primary agranulocytic angina (*Journal* Dec 14 1946, p 897) I am prompted to publish notes of three cases of agranulocytosis in British prisoners of war in Singapore

CASE REPORTS

Case 1—A medical officer of the IMS—a personal friend—aged about 35 was in good health, so far as the diet and conditions allowed, at the time of the onset of his illness He had suffered from 'painful feet' the previous year, which had been greatly relieved by injections of "nicamide" In April, 1944 a further series of injections of nicamide had been given for an increase in these pains On May 7, 1944, he had noticed tenderness of his jaws and teeth, and during the night had had several attacks of shivering followed by sweats Next morning he was admitted to hospital The temperature was 103° F (39.4° C) and it continued at about this level until May 13 The only physical finding on admission, apart from the pyrexia, was tenderness and slight enlargement of the neck glands Repeated blood slides were negative for malaria parasites The white blood cell counts were as follows

Date	Total per c mm	N Poly morphs %	Lympho cytes %	Mono nuclear %	Myelo cytes %	Myelo blasts %	Other Cells %
May 8	4 600	2	76	12	—	—	10
10	3 600	0	89	6	5	—	—
11	2 900	7	71	8	6	2	6
13	8 400	32	58	5	5	—	—
16	12 800	41	30	3	17	2	7

The tenderness of the jaws developed into severe pain, which necessitated repeated injections of morphine for the next 48 hours On May 9 he was given 4 ml of liver extract and 10 ml of 'pent-nucleotide' Next day these doses were repeated Three sloughs

had now appeared on the gums A course of sulphapyridine was started, 5 g being given on the first day and 3 g the next day No further liver, pentnucleotide or sulphapyridine was given, as the blood counts showed a gradual improvement Fragments of alveolar margin separated during his convalescence which was otherwise uneventful

Case 2—An assistant surgeon aged about 35 was taken ill with fever and general malaise on April 6 1944 Between April 6 and 13 repeated blood slides proved negative for malaria parasites, stools were negative for amoebae, and a blood count was normal When seen on April 13, the eighth day of illness, he presented a flushed dry skin, suffusion of the eyes, injection of the throat, and a temperature of 104° F (40° C) There were several small superficial crusted sores on his legs, buttocks, and hands, and a moderate degree of axillary and inguinal adenitis The white blood cell counts were as follows

Date	Total per c mm	N Poly morphs %	Lympho cytes %	Mono nuclear %	Myelo cytes %	Myelo blasts %	Other Cells %
April 13	3 000	23	71	4	—	—	2
14	3 200	5	86	8	—	—	1
16	2 400	10	81	8	1	—	—
18	4 200	38	51	6	5	—	—
20	9 000	77	19	2	—	—	2
24	13 000	77	—	—	—	—	—
26	11 000	66	—	—	—	—	—
May 12	5 200	66	—	—	—	—	—

The pyrexia continued at a high level for some days after sulphapyridine treatment was started on April 15, 18 g being given in six days The pyrexia did not settle finally until May 12

Case 3—A staff-sergeant aged about 35 had had an area of eczema on the left leg for 2½ years He noted that the lesion was spreading, and reported for treatment on March 25, 1945 On April 10 he developed a pyrexia of 100 F (37.8 C) and complained of pain at the site of the eczema Routine blood slides were negative for malaria parasites I saw him the next day His temperature had risen without remission to 104° F (40° C) He was very cheerful and mentally alert In the patch of eczema on the left lower leg were three small seabs which were tender to pressure The inguinal glands on that side were slightly tender and enlarged The white blood cell counts were as follows

Date	Total per c mm	N Poly morphs %	Lympho cytes %	Mono nuclear %	Myelo cytes %	Myelo blasts %	Other Cells %
April 10	3 200	1	89	—	10	—	—
12	2 000	14	70	2	14	—	—
13	1 800	40	39	—	—	—	—
16	3 800	59	33	—	8	—	—

On April 11 treatment with sulphapyridine was started, 22 g being given by April 14 Pentnucleotide was not available, and the only specific drug, sodium nucleinate, was exhausted after injections of 5 ml and 3 ml on successive days The fever gradually abated and was normal by April 17, when there were signs of necrosis of the skin, fluctuation under the skin of the eczematous area, and lymphangitis spreading up the leg and thigh He was transferred to our surgical colleagues who then assisted his return to health

DISCUSSION

Many cases of agranulocytosis can be attributed to recognized poisons—organic, inorganic, and bacterial Various other causes are cited as being responsible, including nutritional deficiency The latter was a common factor to all three cases and infection was a common factor to Cases 2 and 3 Despite the thousands of cases of uncomplicated nutritional deficiency which were seen, Case 1 was the only example of agranulocytosis, and I feel inclined to regard it as one of primary agranulocytosis

An annotation in the *Journal* of Dec 14 1946 (p 905) gives a brief resumé of the treatment of agranulocytosis No whole-hearted support is given to any particular method of stimulating leucopoiesis As no certain line of treatment is available for this grave condition, the physician in charge feels bound to use nucleic acid in some form and liver extract, penicillin or one of the sulphonamides is given to counteract the infection which follows in the course of the disease When infection appears to be the causative factor, these latter drugs take place in treatment

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Reviews

OLD AGE

The Care of the Aged (Geriatrics) By Malford W. Thewlis, M.D. Fifth edition. (Pp 500, 65 illustrations 40s.) London: Henry Kimpton 1946.

Dr Thewlis approaches the problem of the treatment and care of old people in a practical way. He realizes that prompt attention to what may appear, in younger persons to be trivial conditions will, in old persons prevent them from developing rapidly into serious, and even untreatable, illness. In his detailed chapters on treatment Dr Thewlis emphasizes that the old respond well provided that treatment is well planned and undertaken early. It is important, too, that physicians should appreciate the difference between the normal physiological processes associated with an ageing person and those changes which are evidence of senility—a process which displays the infirmities of the aged.

While functional changes due to senescence are inevitable, they are no more peculiar than are those changes that occur when an infant develops into a mature adult. The recognition of this fact leads the author to the natural conclusion that it is important for anyone who has medical charge of old persons to make sure that they are encouraged to continue a normal and active life for as long as they are physically or mentally able. The old enjoy working and taking a full part in life, and they have shown that they are capable of a valuable contribution to their country's wealth; they should therefore be encouraged to this end. That much can be done to delay or prevent what are often considered the natural concomitants of old age Dr Thewlis gives ample proof. A study of his wise appreciation of the difficulties both mental and physical, of old age will do much to improve the lot of the aged in all walks of life. Particularly his contention that the problems of geriatrics are those of medicine generally and not those of a special separate branch.

AMULREE

PSYCHO-ANALYSIS OF CHILDREN

The Psycho-Analytical Treatment of Children By Anna Freud. Technical Lectures and Essays. Parts I and II translated from the German by Nancy Procter Greig. (Pp 98 10s 6d.) London: Imago Publishing Co. Ltd. 1946.

These collected essays of Anna Freud are of a highly technical nature but none the less interesting and welcome. The first part consists of four lectures now belatedly published in this country since they did not previously find favour with British analysts in whose eyes the theories and work of Mrs Melanie Klein found more acceptance. Miss Freud considers Mrs Klein's play technique too objective, leaving too much to the interpretations of the analyst. Her own technique consists of establishing an alliance with the child in the introductory phase of treatment if necessary against the parents, whose good will she must retain and assuring the young patient that the 'devil' which is within him and which he consciously recognizes can be exterminated with the help of the analyst. The latter must have to identify herself with all the patient's tastes and tastes and become not only interesting but useful to him even to the extent of protecting him from punishment for his misdeeds. The transference situation having once been established the patient can then be required to surrender all his secrets. This is helped by the game of interpreting dreams of the night but day dreams as well—which often to the father can be made to take the form of a play. Free associations are difficult to obtain from the child but the analyst may come to be foretelling but the child's associations are considered to be equivalent to the free associations of the adult. However the child unlike the adult cannot go back to a transference neurosis since in the child's mind the ego cannot reproduce and live through its past. For these reasons child analysis is not a method for the problems of adult life. The child is concerned with the very early years of life and the analyst must be prepared to remember the early years of life before the acquisition of speech.

are not available. The adult, once the roots of the neurosis are disclosed, can readjust his life if he wishes on his own initiative, but the child cannot do this, and he therefore requires the help of the analyst to educate him and construct his character as well as to do what he can to modify the environment of the child so as to make his adjustment easier.

These preliminary lectures are the basis for the second and third parts of the book dealing with the theory of child analysis and the indications for it. The latter, the author thinks, are concerned with abnormalities of development rather than with frank clinical neurotic illnesses, and she points out that we know all too little about these faults of development and that the gaps in our knowledge can be filled only by painstaking analyses of individual children. Students of child psychiatry who are not members of the psycho-analytical school should not be put off by the technical presentation of lectures delivered to psychoanalysts, for a careful perusal of them will provide much which is both interesting and instructive.

R G GORDON

AN X-RAY PRIMER

The Osseous System. A Handbook of Roentgen Diagnosis By Vincent W. Archer, M.D. (Pp 320 illustrated 55 50 or 33s.) Chicago: The Year Book Publishers. London: H K Lewis and Co.

The preface of this book begins with the statement that it is written for and is dedicated to the occasional radiographer. From the text it is evident that this means not a technician but the doctor who, without being a radiological consultant, is called upon at times to attempt x-ray diagnosis. As the author says, the book is a primer rather than an encyclopaedia, and the text is sketchy. It is extensively illustrated, with 150 plates comprising 300 to 400 illustrations. The volume might be regarded as an unusually well annotated x-ray atlas. The technique of radiography is not discussed. The illustrations are varied and cover the field well considering the scope of the work, but in some cases the double transposition back to the negative has resulted in loss of essential detail.

The book has four sections—introductory, skeletal injuries, bone diseases in children, and bone diseases in adults. Of these the section on injuries will be found the most useful, and a wide variety of fractures and diseases are described. The section on bone diseases is arranged not on a pathological basis but with reference to the salient radiological feature. An excellent index makes it easy to refer to any particular disease in the text. This should be a useful handbook for both clinician and radiologist—to the latter chiefly because of the admirable illustrations of many unusual conditions.

S COCHRANE SHANKS

LECTURES ON SCHIZOPHRENIA

The Biology of Schizophrenia By R G Hoskins Ph.D. M.D. (Pp 192 15s.) London: Chapman and Hall 1946.

This book is an extended version of the Salmon lectures given last year by Dr Hoskins. He is the Director of Research at the Worcester State Hospital, where over the past twenty years and more a large amount of work has been done on disturbances of bodily function in schizophrenia. These lectures summarize the work and forecast the trend of future research. Positive findings have not been lacking; they are practically all of the statistical type—that is schizophrenics as a whole differ from normal persons to a significant degree in a great number of measurements. There are suggestions of deficiency in most endocrine functions—thyroid, adrenal, pituitary, and gonad. Treatment with various glandular preparations has been tried with very disappointing results. There are differences in basal metabolic rate in metabolism of sugar and glutathione, and also in the circulatory system as shown in blood pressure, pulse rate and circulation rate. But there is no qualitative difference between the schizophrenics and normal persons.

In this respect Dr Hoskins and his co-workers have been regularly unfortunate. It may be remembered that Gessing, in Norway, has found in schizophrenics with circulatory recurring phases remarkable disturbances of nitrogen metabolism to a large extent controlled with thyroid, and that Hemphill and Reiss in this country, have found specific pathological changes

in the seminiferous tubules in quite early cases of schizophrenia. The work in America has led to no coherent theoretical interpretation, we are left with a jigsaw puzzle as apparently meaningless as ever. The one general finding, which repeats itself over a large number of functions, is that schizophrenics are less reactive than the normal, they can even stand much higher levels of physiological stress. One test, which involved breathing warmed moist oxygen, caused collapse in a quarter of the normal controls but was survived by the schizophrenics without notable distress.

Dr Hoskins alienates the reader by devoting two out of his three lectures to general considerations without much relevance or interest and by a style which is stilted, pompous, and sometimes absurd. "It is a well known apparent paradox that preceding acrimony enhances the vividness of connubial empathy." The book's principal fault is that figures and tables are generally eschewed, for these the worker, who might otherwise have found it invaluable as a convenient source of reference, must turn to the original papers given in the bibliography. A disappointing inconclusiveness pervades this work.

ELIOT SLATER.

BACTERIAL ADAPTATION

The Chemical Kinetics of the Bacterial Cell By C. N. Hinshelwood, F.R.S. (Pp 284, 79 figures and one plate 20s.) Oxford Clarendon Press 1946

This is a rarity among scientific works, for it is neither a textbook nor a comprehensive monograph. It is a reflective book—the author himself calls it an essay—in which he has brought together certain concepts of physical chemistry and selected data (mostly his own) on bacterial growth and adaptation in order, as he says, to see what the composition looks like. The adaptation of bacteria to drugs and to new sources of nutriment is of such intrinsic interest for the study of cell processes, apart from its medical importance, that the reflections of a distinguished physical chemist who has been applying the methods and concepts of his own subject to it for some ten years are something of an event. The author regards adaptation of bacterial cells as an automatic response to an altered environment: changed reaction velocities, resulting from the inhibition of one or more enzymic processes, lead to the establishment of new enzyme balances, either in the sense that the proportion of an inhibited enzyme to other enzymes is altered or that alternative enzymic routes which in the unadapted cell were relatively unimportant, come to play a major role. These ideas are applied quantitatively and with relatively simple mathematical treatment, to such phenomena as lag, growth rate, reversion, and cross adaptation. The influence of natural selection, though it is not regarded as the primary factor, must be superimposed upon other adaptive mechanisms.

Underlying these ideas is an original conception of how enzymes increase in amount in the growing cell, by analogy with some inorganic catalytic reactions it is suggested that enzymes increase their substance by removing suitable protein fragments from substrate molecules, leaving residues which act as intermediates in further enzymic reactions, thus enzyme + substrate = expanded enzyme + intermediate. The initiation of this process is thought to be due to the attraction which an established protein pattern must exert on protein fragments of like constitution, just as a crystal facilitates crystallization from a solution by providing a lattice on which fresh molecules can orient themselves. This conception of an autolytic process is illuminating from several points of view: it obviously links up with the ideas of Fildes and Woods on what have come to be called metabolic antagonists, also established protein patterns are seen to be the inheritance which daughter cells receive from their parent. The book abounds in suggestive ideas, and tribute must be paid to the skill and economy with which the author has presented his reflections, one reader at least has derived both aesthetic pleasure and intellectual excitement from its perusal.

H. R. ING

A Primer for Diabetic Patients (8th edition W. B. Saunders 9s.), by Russell M. Wilder, M.D., F.A.C.P. contains the substance of the instruction given to patients in the diabetic school of the Mayo Clinic. A list of questions to test the patient's knowledge follows each chapter.

BOOKS RECEIVED

[Review is not precluded by notice here of books recently received]

A Synopsis of Anaesthesia By J. Alfred Lee M.R.C.S. L.R.C.P., M.M.S.A., D.A. (Pp 254 12s 6d) London Simpkin Marshall 1947

Designed as a summary of current teaching and practice for the student, house man, and practitioner. Includes chapters on the use of curare, complications of anaesthesia, and shock.

Biochemistry of Cancer By J. P. Greenstein Ph.D. (Pp 389 \$7 80) New York Academic Press 1947

Includes sections on the induction of tumours, attempts at control of tumour induction and of tumour growth and the properties of tumours.

Radiology for Medical Students By F. J. Hodges, M.D., I. Lampe, M.D., and J. F. Holt, M.D. (Pp 424 37s 6d) London H. K. Lewis 1947

An American outline of the use of x-rays for diagnosis and therapy, intended for medical students, many diagrams reproduced.

Diagnostic Neuro-Surgical By J. Guillaume and J. Sigwald. (Pp 457 500 francs) Paris Presses Universitaires 1947

After discussing the anatomy and physiology of the brain the authors describe the various cerebral neoplasms. Chapters on the investigation of the brain and spinal cord follow.

The Anatomy of the Nervous System 8th ed. By S. W. Ranson, M.D., Ph.D., revised by S. L. Clark, M.D. Ph.D. (Pp 332 32s 6d) London W. B. Saunders 1947

This profusely illustrated American textbook has been rewritten in parts and new material added, gross descriptive anatomy is now included in one section.

Dimensions of Personality By H. J. Eysenck, Ph.D. et al. (Pp 308 25s) London Kegan Paul, Trench, Trubner 1947

A team of psychologists and psychiatrists has examined 10,000 normal and neurotic subjects in an endeavour to define the dimensions of the personality by means of quantitative procedures.

An Integrated Practice of Medicine By H. T. Hyman M.D. 4 vols and index (Pp 4,131 £12 10s) London W. B. Saunders 1946

This American work is designed for the general practitioner. Includes new colour photographs and 318 tables of differential diagnosis.

The Rhesus Factor By G. Fulton Roberts, M.A., M.B. (Pp 47 3s 6d) London William Heinemann Medical Books 1947

An account in simple terms of the rhesus factor, with illustrative case histories and a chapter on the treatment of its effects.

Introduction à la Criminologie 2nd ed. Vol. I. By Dr E. G. Greeff. (Pp 414 No price) Brussels Duculot 1947

After a chapter on the criminal's environment the author discusses his anatomy, physiology, and personality. There is a concluding chapter on homicide.

A Psychology of Growth By B. I. Beverly, M.D. (Pp 214 12s 6d) London McGraw-Hill Book Company 1947

An account of mental development from infancy to adolescence intended primarily for the instruction of nurses.

Ego, Hunger and Aggression By F. S. Perls, M.D. (Pp 112 12s 6d) London George Allen and Unwin 1947

The author, a practising psychoanalyst, criticizes orthodox psychoanalysis and introduces semantics and holism. Intended for general practitioners as well as psychiatrists.

Gynaecological and Obstetrical Pathology 2nd ed. By E. Novak, A.B. M.D., F.A.C.S. (Pp 570 37s 6d) Philadelphia and London W. B. Saunders 1947

The author has revised the text in this edition and added over 100 new illustrations, some in colour.

Diseases of the Skin 5th ed. By J. H. Sequeira, M.D., F.R.C.P., F.R.C.S., J. T. Ingram, M.D., F.R.C.P., and R. T. B. M.D., F.R.C.P. (Pp 782 63s) London J. and A. Churchill 1947

This edition includes new material on chemotherapy, industrial dermatoses and tropical diseases. Many illustrations, some in colour.

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VAGINAL PLASTIC OPERATIONS

Prolapse of the uterus and vaginal walls is so common that it is fortunate that the results of its surgical treatment are, on the whole, satisfactory. Plastic operations on the vaginal wall date back to 1831, when they were first suggested by Marshall Hall, of London, but the Manchester school—A. Donald, W. E. Fothergill, and their followers—has played a leading part in the development of present-day surgical procedures for the cure of genital prolapse. Many modifications of the "Manchester operation" are practised, but all follow the same fundamental principle of strengthening the natural supports "from below." It can be applied to every case of prolapse irrespective of degree and type, and a cure rate of over 95% is recorded both in this country (Fletcher Shaw¹) and in the U.S.A. (Maier and Thudium,² and Gordon³). However, it is not so successful in the hands of all surgeons, and individual skill, judgment, and experience count much when the end results are assessed. The Manchester operation has never found elsewhere such general favour as it has in the North Country, and its enthusiastic advocates have sometimes suggested that this is not always the fault of the operation itself. In America, in particular, various other procedures such as the Watkins interposition operation and vaginal hysterectomy are preferred, especially for gross degrees of cystocele and of uterine prolapse.

Vaginal hysterectomy is an operation of considerable antiquity—apparently performed as long ago as the second century A.D.—and procidentia was its indication in some of the earliest recorded cases.⁴ That it has a place in the treatment of uterine prolapse would now be admitted by nearly all gynaecologists, though the importance of the place might be disputed. Wilfred Shaw, in this issue of the *Journal*, expresses a preference for it in cases of severe prolapse in post-menopausal women, and also when the uterus is diseased as well as displaced. Provided there is no uterine disease many would restrict the use of vaginal hysterectomy to those cases in which the pelvic pouches of peritoneum lie low, and those in which the uterus remains small and its descent is associated with inversion of the vaginal vault. Complete prolapse of the uterus is not common, and in many cases the degree of descent is less than appears at first sight, the protruding mass being mostly in oedematous, hypertrophied, and elongated cervix. For

such the need for vaginal hysterectomy is open to question. Gordon³ has recently recorded 26 consecutive cases of third-degree uterine prolapse successfully treated by the Manchester operation.

The traditional objection to removal of the uterus is that it removes the "keystone from the arch," and that this is followed by prolapse of the vaginal vault, which then becomes exceedingly difficult to correct. If this is to be avoided the supports of the upper vagina must be strengthened during the course of the operation. In vaginal hysterectomy by the clamp method⁴ this is not done but the good results claimed may be due to the fibrosis which follows when the tissues at the vault heal by secondary intention. In the Mayo technique the cardinal ligaments are brought together to form a strong roof. Some stitch the utero-sacral ligaments to the pubo-cervical fascia in front. Wilfred Shaw suggests attaching the anterior leaf of peritoneum and the upper broad ligament pedicles to the "post-urethral ligament" to provide a better support for the bladder. Recurrent prolapse after vaginal hysterectomy, however, is more often enterocele than cystocele and obliteration of any hernia of the pouch of Douglas is perhaps the more important step in the operation.

One of the symptoms of cystocele and urethrocele and one which is the most difficult to cure is "stress incontinence" of urine—a descriptive term coined by Sir Eardley Holland. All sorts of plastic operations on the tissues deep to the anterior vaginal wall are carried out with the object of tightening urethral sphincters and of supporting the bladder base and urethra and of restoring them to normal position, but in only about 60–80% of cases are they completely successful (Studdiford⁵ and Aldridge⁶). The most difficult cases are often those in which the amount of cystocele is negligible. The result of anterior colporrhaphy may be anatomically perfect, yet bladder control remains impaired, indeed sometimes it appears to be worse. The treatment of this distressing symptom remains a problem, mainly because the anatomy and physiology of the female urethra and bladder neck and the mechanism of micturition are not understood.

Wilfred Shaw now gives a new description of the arrangement of fascia and ligaments deep to the anterior vaginal wall and includes new names for anatomical features which, as he points out, must be familiar to many gynaecologists. The value of this may depend ultimately on the significance of the fibromuscular fascia beneath the urethra which he calls the post-urethral ligament, and on whether by suturing this to the uterus it is possible to cure more cases of stress incontinence. Shaw's technique appears to offer a means of elongating the urethra and for putting the internal meatus as far back in the pelvis as possible. X-ray visualization of the normal urethra and bladder suggests that this is anatomically sounder than attempts to buttress the urethra up to the back of the symphysis pubis.

The complexities of the problem are illustrated by the fact that whereas Shaw describes the post-urethral ligament as stretching between the two inferior pubic rami, and emphasizes that this pubic attachment should not be

¹ *Amer. J. Obstet. Gynec.*, 1933 25 667² *Ibid.*, 1932 24 248³ *Ibid.*, 1946 52 228⁴ Kennedy J. W., and Campbell A. D., *Vaginal Hysterectomy*, 1942, A. Davis, Philadelphia⁵ *Amer. J. Obstet. Gynec.*, 1945 50 119⁶ *Ibid.*, 1946 51 299

disturbed, Kennedy,⁷ who describes an involuntary urethral sphincter and a voluntary "muscle of micturition" in this area, insists on the necessity for separating any adhesions between the peri-urethral tissues and the pelvic bones if stress incontinence is to be cured. He is supported by Counsellor,⁸ who cured 26 consecutive cases of urethral incontinence by the Kennedy operation. Again, in the "fascial sling" operation of Aldridge⁹ the tissues at the side of the urethra are deliberately separated from the pubic ramus in order to bring down the fascial strips, yet so far there is general agreement that this operation and others similar in type usually restore urethral control when all other measures have failed. The insertion of fascial and muscle transplants deep to the anterior vaginal wall has developed gradually during the course of about forty years. The object is to support the urethra and bladder neck with healthy tissues from another site rather than with the local tissues, which may be overstretched, denervated, and damaged irretrievably. Pieces of gracilis, pyramidalis, levator ani, and bulbocavernosus muscles, and of fascia lata, have all been used. The operation increasingly practised to-day is one whose origin can be traced back to Goebell,¹⁰ who in 1910 turned down the pyramidalis muscles and attached them to the neck of the bladder. Of the subsequent modifications an important one was introduced by Stoeckel,¹¹ who combined the operation with a repair of the vaginal wall. The technique mostly used now is that of Aldridge,⁹ and in this strips of the oblique muscles of the abdominal wall are passed behind the symphysis pubis to form a sling round the urethra, the latter being further supported by anterior colporrhaphy. A few prefer not to open the vaginal wall but to pass the strips from above after dissection of the space of Retzius. Operations of this kind have, as yet, had only a limited trial, but they promise well. It is unwise, however, to make too early a claim for a cure of urethral incontinence by any operation. Relapse of symptoms within a few months of an apparent cure is common, and an interval of not less than two years between treatment and the assessment of the result is desirable.

For stress incontinence, as for uterine and vaginal prolapse, many operative procedures are available, and each surgeon tends naturally to adopt the one with which he is most familiar and, if need be, to modify it to suit individual cases. There is always a danger, however, of loyalty to one operation leading to prejudice. It is becoming increasingly clear that cases of prolapse vary considerably, not only in type but in aetiology. The same is almost certainly true for urethral sphincter incompetence. An "all purpose" operation is not the best for all cases, and "the most successful surgeon in the cure of genital prolapse will be he who, with a wide knowledge of all the methods at his command, chooses the one which will be best suited in individual cases" (Gray Ward¹²). Wilfred Shaw's important contribution to the subject will be widely studied and will induce many gynaecologists to review their own procedures in the light of what he says.

HEALTH EDUCATION

The ordinary citizen is slow to associate education with health. He accepts schooling as a matter of course to fit him for membership of a literate community, and technical and professional education as a means of earning a livelihood, he is prepared for arduous lessons in order to acquire some incidental accomplishment, such as playing a piano or driving a car. But he has an idea that such health knowledge as he needs "comes natural," though health is a prime condition of success in all these other ventures. He is usually content with his state of being not ill, should he fall below the level of not-illness—well, what is the medical profession for? The term "positive health" is of recent use, and to many people means little or nothing. There is also squeamishness on this subject. Many matters connected with health are thought to be too indelicate for mention in polite company, not the sort of thing for education. Only a few years ago most of the national news papers, which very closely reflect the conventional proprieties, declined advertisements which advised people to wash their hands after defaecation. It was not until 1947 that venereal disease was mentioned, except allusively, in a broadcast.

The war gave point and urgency to health education, and also accustomed people to methods of mass publicity which in other days would have offended or merely amused as many as they informed. The Central Council for Health Education, a very forthright body, came on the scene like a brisk housekeeper entering a shut-up room, opening the windows and vigorously dispelling the dust and cobwebs. Every instrument in the publicity orchestra—the phrase is that of the Public Relations Officer of the Ministry of Health—was used to get health facts and counsel across to the public: the film, with the trailer after the news reel, the leaflet, the poster, articles and advertisements in the Press, lectures, pictorial exhibitions, and, most wide-ranging of all in its appeal, the broadcast. The campaign for immunization against diphtheria was an example of well-directed teaching towards the prevention of one of the principal killing diseases of childhood, and it illustrated, too, how excellently central and local efforts could be combined. Another method widely adopted during the war was the Press conference. The periodical conferences held by the Chief Medical Officer of the Ministry of Health when forty or fifty Press representatives would gather round the table to hear his commentary and to ask questions, were of great value in making the public acquainted with the facts of the public health or the epidemiological situation, getting precautionary measures accepted, and nipping false rumours in the bud. There was the usual "hand-out" of documents, so that the journalist could be sure of his facts, but the method did enable him to put his individual style into a subject which presently became as "live" as politics. The Press conference has been adopted by many health and social organizations, such as UNRRA, and generally with success. Propaganda, however, is not quite the same thing as education. To educate a man it is necessary to do more than jolt him out of his daydreams. The brief exhortation or appeal needs to be supplemented by a patient campaign of

⁷ *Amer J Obstet Gynec* 1937 34 576 1946 52 206

⁸ *Ibid* 1943 45 479

⁹ *Ibid* 1942 44 398

¹⁰ *Z Gynak Urol* 1910 2 187

¹¹ *Zbl Gynäk* 1917 41 11

¹² *J Obstet Gynaec Brit Emp* 1936 43 667

enlightenment, carried on not by journalists or comic artists or publicity experts but by such people as health officers, sanitary inspectors, health visitors, school nurses and teachers, and members of the medical profession, all of whom in their quiet ways can help to transform into a settled habit the passing reaction of the public to the propaganda they have heard and seen

Instruction in matters of health, which wartime experience showed to be an essential service, has yet many fields in which to begin its work or to consolidate its position. Three directions may be mentioned in which it has not yet been overworked. Two of them were referred to by Sir Andrew Davidson, Chief Medical Officer of the Department of Health for Scotland, in an address at the opening of the Summer School of the Scottish Council for Health Education. In the first place, more attention might be given to health instruction during that critical period in the life of a youth when he leaves school and enters employment. This change of surroundings and occupation is often accompanied by decline in health and minor sickness, partly no doubt the result of maladjustment. Something might be done to impress on parents the need for special home care at such a period, on employers the importance of a proper working environment, and on the young people themselves certain health rules and precautions. Another direction in which more might be done is the education of older people, even of old people, for the ageing process has its risks and stresses, and counsel is needed as much at one end of life as at the other. There is one other field in which the facilities commanded by health education might be used, and that is to prepare people for the doctor even at a time when there is no sign that they will need him. The doctor undergoes a long training to enable him presently to meet his patient, but nothing is done to prepare the potential patient to meet his doctor. A little instruction from this point of view might help to create the "good patient", it might break down in advance the reserve which during illness often delays the doctor's efforts and the patient's recovery. It might also do something to dispel preconceived ideas and prejudices in the patient's mind.

METHYLENE BLUE AND THE CHEMOTHERAPY OF SCRUB TYPHUS

Methylene blue has long been known to have a slight chemotherapeutic action against such widely differing organisms as trypanosomes, malarial plasmodia, the gonococcus, and diphtheria bacillus. Methylene blue, in fact, was the starting-point from which plasmoquine or, as it was known during the war, pamaquine, was evolved. In 1936 Otto and Schofer¹ found that methylene blue had some action against murine typhus infections in mice, a finding later confirmed by Kikuth and Schilling² in experimental murine typhus in guinea-pigs. The action of methylene blue has been further studied by McLimans and Grant³ in infections due to the rickettsia of scrub typhus, *Rickettsia tsutsugamushi* (= *R. orientalis*). When methylene blue was added to the diet to the extent of 0.2%, ninety-six hours after inoculation, it reduced the mortality to 30-40%, as contrasted with a 90-100% mortality in the untreated

controls. If, in addition, the mice were exposed to an atmosphere containing 50% of oxygen the mortality of the treated mice was reduced to from 20-30%.

In order to compare the curative effects of *p*-aminobenzoic acid and methylene blue with oxygen, mice were inoculated intraperitoneally with *R. tsutsugamushi* and after varying intervals therapy was instituted, the methylene blue and *p*-aminobenzoic acid being both added to the diet to the extent of 0.4%. While the methylene blue with oxygen inhalation invariably saved a higher percentage of mice than *p*-aminobenzoic acid, it is noteworthy that when therapy was delayed for more than 120 hours after infection *p*-aminobenzoic acid was quite ineffective but methylene blue and oxygen still had an appreciable effect. Even when the concentration of *p*-aminobenzoic acid in the diet was increased to 1% it was always less efficient than methylene blue and oxygen.

In the treatment of scrub typhus in man methylene blue alone has so far proved ineffectual (Steele *et al.*⁴), but in view of the well-established function of methylene blue as a catalyst of numerous enzyme reactions and as a carrier of oxygen, studies of the action of this drug in other rickettsial and virus infections may well be of considerable interest. It will be remembered that more than twenty years ago Gordon⁵ demonstrated that vaccinia and variola viruses are very readily inactivated by an oxidizing agent such as potassium permanganate, a clue to the chemotherapy of virus diseases which up till now has not been pursued.

REITER'S SYNDROME

The syndrome consisting of polyarthritis, urethritis, and conjunctivitis, originally described by Reiter in 1916, is perhaps not yet entitled to be known as Reiter's disease since its aetiology remains obscure, and it is consequently not known to be a single entity. Cases have recently been reported in the *Journal* by Jackson,⁶ Wrigley,⁷ and Baxter⁸ while several correspondents^{9, 11} have discussed its possible relationship to bacillary dysentery. The association between these two conditions seems to be far from constant and the evidence as a whole does not support the belief that Reiter's syndrome has any consistent connexion with intestinal disease. The resemblance to gonorrhoea is striking only in the distribution of the lesions, all tests for gonococcal infection give negative results, and neither sulphonamides nor penicillin are curative. The disease runs a long febrile course, its different manifestations often appearing successively and the arthritis migrating from one joint to another. It is apparently confined to young adult males and is not considered to be venereal in origin. No explanation of this age and sex distribution can be offered.

In the absence of any demonstrable causative bacterium it has been supposed that the disease is due to a virus, and Harkness¹² claims to have demonstrated inclusion bodies in material from the urethra and conjunctiva. Also incriminated are the so-called 'pleuropneumonia-like' organisms, which have so long been denied the dignity of proper nomenclature. Although responsible for two specific animal diseases—bovine pleuropneumonia and contagious agalactia of sheep—these organisms have not been fully identified as the cause of any human disease, though they

⁴ Steele J M, McLimans W F, Grant C W, and Tullis J L. Studies on *Tsutsugamushi* Disease (Scrub Typhus) (V) The Effect of Methylthionine Chloride (Methylene Blue) on *Tsutsugamushi* Disease in Man. 1946. Rep No 5. J. Naval Med. Res. Inst. Bethesda, Md.

⁵ Studies of the Viruses of Vaccinia and Variola. 1925. Med. Res. Council Sp. Rep. Ser. No 98. H.M.S.O., London.

⁶ British Medical Journal 1946 2 197

⁷ Ibid. 1946 2 199

⁸ Ibid. 1946 2 858

⁹ Ibid. 1946 2 275

¹⁰ Ibid. 1946 2 309

¹¹ Ibid. 1946 2 403

¹² Brit. J. Ven. Dis. 1945 21 93

¹ Arb. Staatsinst. exp. Therap., 1936 33 73

² Zbl. Bakt. 1944 6 239

³ Science 1947 105 181

exist in the human body. Their extreme pleomorphism and the special techniques required for their study are obstacles to ready recognition, and perhaps much remains to be discovered about their activities in relation to human pathology. It may be recalled in passing that Swift and Brown¹³ claimed to have cultivated these organisms from joint fluid in cases of rheumatic fever. The part they play in disease of the genital tract is uncertain, their frequent presence in cases of urethritis, gonococcal and other, is lessened in significance by their demonstration in the same situation in normal subjects. A contribution to the study of Reiter's syndrome from this point of view by R. R. Willcox, G. M. Findlay, and A. Henderson-Begg will be found at page 483 of this issue. These authors point not only to the somewhat equivocal evidence based on the examination of human material but to the existence of conjunctivitis and arthritis due to pleuropneumonia-like organisms in animals, including rats and mice, as encouraging the further search for such organisms in cases of Reiter's syndrome. They investigated two cases, inoculating mice with blood and joint fluid, with no further result than the production of a non-transmissible arthritis in a single mouse. Their other line of argument is therapeutic: pleuropneumonia-like organisms are sensitive to gold salts, and these two patients were accordingly treated with myocrisin. This appears to have had a very satisfactory effect, the lesions resolving and the sedimentation rate falling steadily. As the authors rightly indicate, this is no proof of a particular aetiology, since many drugs are active against more than one type of micro-organism. On the other hand, it is the result to be expected in accordance with their hypothesis, and in the interests both of further investigation and of successful therapy the effect of gold should certainly be observed in future cases.

ANAESTHESIA BY HYPNOSIS

Last year, just a century after James Esdaile's¹⁴ successful use of mesmerism for surgical operations at the Hooghly Hospital, Calcutta, the exigencies of a prisoner-of-war hospital near Singapore led Sampimon and Woodruff¹⁵ to try hypnosis as a substitute for more orthodox methods of anaesthesia. Supplies of anaesthetic agents were meagre and uncertain, and many casualties were likely to occur. It was decided to attempt the use of hypnosis in selected dental and surgical cases. Hypnosis was induced with the patient lying supine on a table. The method employed was that of convergence fatigue, the patient being instructed to fix his gaze upon the point of a pencil held at the minimum distance of distinct vision. This method originated with the physician James Braid during the early eighteenth-forties, and it was he who named it hypnotism. His main purpose was to get patients into a suggestive state for the treatment of a variety of ailments—for example, rheumatic conditions and neuralgia—but on a few occasions Braid painlessly extracted teeth from entranced patients.

Among Sampimon and Woodruff's patients there were 23 for dental extractions. Other successful cases included the removal of nails and the incision and drainage of suppurating wounds. It was found easier to induce hypnosis in reasonably intelligent patients than in mental defectives, but beyond this they could discern no general principles which would indicate in advance whether a given patient was likely to prove a good subject. An aspect of hypnosis stressed by these authors was the importance of verbal assurance by the hypnotist during the course of the hyp-

notic sleep that neither operative nor post-operative pain would be felt, nor would the operation be remembered. They claim that in two cases in which the attempt to induce hypnosis failed the mere suggestion of anaesthesia enabled the operation to be performed. In another case of failure the subject was subsequently found to be deaf and so had not heard many of the suggestions made to him. When post-operative pain occurred the authors traced it to the omission of appropriate suggestions or to waking the patient too soon (that is, less than ten minutes) after the final suggestions had been made.

In the middle of the seventeenth century the Jesuit Athanasius Kircher¹⁶ described how a hen, bound by her feet and laid on a pavement until she ceased to struggle, could then be kept motionless by drawing a line in chalk away from her eye and straight in front of her. From that day to this the possibility of inducing a state of trance, however well attested, has been generally regarded with distrust. It was so in the case of John Elliotson, who in 1838 was forced to resign the Chair of Medicine at London University because he practised mesmerism. It was so in the case of Esdaile, though his work was vouched for by an officially appointed committee of investigation. The sincerity of Sampimon and Woodruff is unquestioned. Their experiences are at variance with the everyday practice of anaesthesia and the usual reaction of the human organism to pain. The time may be due for a thorough review of the subject of hypnosis and suggestibility in relation to surgery. Sampimon and Woodruff press for such an investigation, for much good might come of it. They suggest that the work might best be undertaken by a surgeon, or better still, we believe, an anaesthetist, collaborating with a psychiatrist.

WATTS EDEN TRAVELLING FELLOWSHIPS

Dr Thomas Watts Eden, who died on Sept 22, 1946, set aside under the terms of his will two sums each of £10,000 free of duty, to found travelling fellowships. These two fellowships will be created after the death of his widow. One is to encourage the study of obstetrics and gynaecology, the other the study of infancy and early childhood in health and disease. For thirty years or more Dr Watts Eden was one of the foremost obstetricians and gynaecologists in London hospital and consulting practice. He distrusted that narrow specialism which he called "the key hole view" of medicine and often stressed the need for study of the healthy infant and child, and particularly in relation to the results of antenatal and postnatal care. The conditions under which these two new fellowships are to be founded reflect his views. In due course the funds set aside by his trustees will be transferred to the Royal College of Physicians and to the Royal College of Obstetricians and Gynaecologists. The Presidents and senior officers of the Colleges, with others, are to be the judges making the awards. Candidates will be men or women graduates whether members of the College concerned or not, of at least two years' standing of any approved university in the British Empire and Commonwealth. Each fellowship will be for a period not exceeding three years. The awards will be made according to the academic progress of a candidate before graduating and in the light also of his or her attainments during the postgraduate period. Ten years after the first award the conditions may be varied.

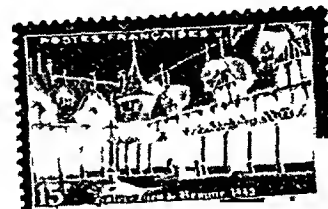
On Monday of last week Lord Moran was once again elected President of the Royal College of Physicians.

¹³ *Science* 1939, 89, 271.

¹⁴ *Mesmerism in India, and its practical application in Surgery and Medicine* 1846, Longman, London.

¹⁵ *Med J Austral*, 1946, 1, 393.

¹⁶ *Physiologia Kircheriana*, 1680. Walsberg. Amsterdam 90.



MEDICAL HISTORY IN POSTAGE STAMPS

The medical profession is much given to the cultivation of hobbies. It is, therefore, rather surprising that the medical associations of philately should have received such little attention or have been pursued in secret. The exhibition illustrative of 'Medical History in Postage Stamps,' held on April 2 at the Historical Section of the Royal Society of Medicine, under the presidency of Sir Arthur MacNalty, appears to have been the first of its kind in this country. This exhibition was arranged by Mr N M Matheson and Mr W J Bishop and was accompanied by a demonstration on the epidiascope and a running commentary.

Until comparatively recent times stamps of medical interest were few, but within the last twenty years designs illustrative of almost every aspect of medicine have multiplied, and their number and range are sufficient to give scope to the most ardent collector. Medical stamps may be divided into two broad classes: (a) those bearing portraits of medical men, and (b) those depicting medical scenes such as hospitals, nursing medical congresses etc. There are many special health, Red Cross, child welfare and tuberculosis stamps, on some the only distinguishing feature is the Red Cross or the tuberculosis symbol.

The stamps which will probably most interest the medical man are those bearing portraits of medical and scientific worthies. The first medical man to be depicted on a postage stamp appears to have been F Espejo (1746-99)—Ecuador, 1899 issue. In 1923 France began the well-known series commemorating Pasteur but the first medical man of eminence to be so honoured was Boerhaave (Netherlands 1928). After his date the number of portrait stamps increased rapidly, and

they may be divided into those of practising medical men, those who qualified but abandoned medicine, those who studied but never qualified, and workers in ancillary fields. Among regular practitioners we find Vesalius, Paré, Haller, Semmelweis, Camper, Purkinje, Ramon y Cajal, and Reed. No stamp is known commemorating the Father of Medicine, but Imhotep, Apollo, Aesculapius, and Hygeia have been honoured. Some fortunate individuals appear on the stamps of more than one country. Van Swieten has been so honoured by the Netherlands and Austria, Koch by Germany and Danzig while Pierre and Marie Curie appear on several stamps. Harvey, Sydenham, Hunter, or Jenner will not be found on any stamp. Indeed it was not until Sir Wilfred Grenfell was depicted on a Newfoundland stamp of 1941 that any British medical man had been commemorated in this way. Some countries have issued stamps portraying whole schools of medicine—e.g., the nine worthies of the Vienna school issued by Austria in 1937. Vesalius, Dodoens, and Van Helmont appear in a recent series from Belgium. Among 'truants' from medicine we have such diverse figures as Sun Yat-sen, Clemenceau, Chekhov (third from left in bottom row), and Schiller and among those who studied but never qualified we find William Henry Harrison, ninth President of the United States—a pupil of Benjamin Rush. Ancillary sciences are represented by such names as Roentgen, Berzelius, Ampere, Volta, Galvani, and Ling. Florence Nightingale appears on French and Belgian stamps and Jean Henri Dunant, the founder of the Red Cross, on Belgian and Swiss stamps, and the German stamp shown on the left of the bottom row records ten years' child welfare work.

As Matheson and Bishop showed, the "documentation" of a collection of medical stamps would provide a searching exercise for the student of medical history. The value of such a collection for purposes of teaching and illustration is obvious, and perhaps this comparatively new branch of collecting will attract many doctors who have not previously come under the spell of either medical history or philately.

We are indebted to Mr W J Bishop for permission to reproduce the stamps illustrated in this article

POLISH FACULTY OF MEDICINE IN EDINBURGH

The first medical school in the United States was started at Philadelphia in 1765 by William Shippen and John Morgan, graduates of the Medical Faculty of Edinburgh. At the beginning of the 19th century Andrew Sniadecki made use of his observations when a medical student at Edinburgh under Duncan, Monro *tertius* and Gregory to found at Vilna the first modern medical department in a Polish university. But although a Danish student two hundred years ago remarked that at Edinburgh one could see wandering together students from places as far apart as America, France, Portugal, and Russia, the existence in the Scottish capital of a separate foreign school of medicine is something unique not only in this city but anywhere.

The Polish Faculty of Medicine in Edinburgh, now to be disbanded, was formed in 1941 as a result of an agreement signed by Sir Thomas Holland, then Vice Chancellor and Principal of Edinburgh University, and Dr Stanislaw Kot, Minister of the Interior in the exiled Polish Government in London. The Polish Army which escaped from France in 1940 was largely concentrated in Scotland, and arrangements were made for Polish medical officers to obtain instruction in British military medical methods by attending the military hospital at Edinburgh, and in certain cases working in the medical departments of the university. To overcome the language difficulty Lieut-Col Crew, commander of the military hospital and in peacetime professor of genetics at Edinburgh, conceived the idea of forming a postgraduate course for Poles, conducted by Polish teachers. This idea broadened into the establishment of a complete Polish school of medicine to train Poles in this country as doctors. Accordingly a Polish Faculty of Medicine was formally inaugurated at an impressive ceremony in the M Ewan Hall on March 22, 1941.

For five years Poles came to Edinburgh from the battlefields of Europe—from Norway to Monte Cassino, from Falaise to Kapelle—from the underground army inside occupied Poland, and from Russia to study medicine in an institution which was their own though their country was overrun. They used the old anatomy department building in Bristo Place and practicals were also held in the Royal (Dick) Veterinary College, clinical studies were carried out in the Royal Infirmary, the Simpson Maternity, and city fever hospitals, and the specially established Paderewski Hospital. The Dean of the Faculty was Dr Antoni Jurasz, later succeeded by Dr Tadeusz Rogalski, and in addition to the Polish lecturers the following professors of Edinburgh University took part in the teaching of the students: Sydney Smith, T J Mackie, Stanley Davidson, A M Drennan, and R W Johnstone. The staff consisted altogether of 54 persons—including 9 professors, 9 senior lecturers, 21 senior assistants and 8 junior assistants.

The number of students at the school in the last year of its existence was 241, about one third of them being women. The Polish students each year elected representatives to the Edinburgh University Students Representative Council, and one was made assistant secretary of this body. The Poles took part in various student activities and had their own students association and a hostel, although most stayed in "digs." Scottish students and members of the Edinburgh University teaching staff proposed at one time that the Polish school should continue in peace and an equivalent body be organized in Poland although the Goodenough Committee had reported that the clinical facilities at Edinburgh were insufficient to support the two British medical schools there. There is no

doubt, however that the Polish Faculty of Medicine in Edinburgh University represents a successful experiment in international medical co operation which might well be followed in other spheres

MENTAL HEALTH AND THE OFFENDER

Dr J R Rees's Clarke Hall Lecture

The seventh Clarke Hall Lecture on "Mental Health and the Offender" was delivered by Dr J R Rees at Lincoln's Inn on March 26, with Mr Justice Birkett presiding. Dr Rees said that in the past the psychiatrist had been regarded as concerned in the main with those grosser mental disorders the psychoses, which, however, were but a small part of the whole field of psychiatric interest. As an example, although it was admittedly from a somewhat selected group, out of 225,000 men and women in the Army during the recent war who were referred to psychiatric out-patient clinics, only 3.5% were cases of psychosis, 27% of the total were cases of mental dullness or defect, and 57% were cases of neurosis or of psychopathic personality with lifelong emotional and social instability. Crime was the outward manifestation of some disorder in personality and character, however this might have been caused, and all antisocial conduct, whether it was noticed merely in the nursery or came eventually to the courts, was evidence of some psychological failure in the conduct of life. There was no effect without cause, and it was vitally important that an attempt at diagnosis should be made before treatment was undertaken. Whether the condition was regarded as a disease or as a character disorder, neither implied something for which the individual must be assumed not to be responsible. There was a certain individual responsibility for common physical illnesses, such as the cold and a multitude of other minor conditions, and the responsibility for emotional disorders and upsets was exactly parallel.

Psychiatrists in Court

In Army courts martial the excellent principle had been established, Dr Rees continued, that psychiatrists were to be allowed to be called for the defence. Their report were always to be given to the president of the court before the consideration of sentence. He wished that psychiatrists, and indeed all medical men, could be regarded in the light of experts giving their advice to the court, and not, as too often happened, being brought in by one side or the other merely to support the efforts of counsel.

Far too frequently when a medical report was demanded it had to be provided by someone who was not very skilled in the psychiatric approach. It was essential that at every remand home and in every prison there should be psychiatrists and psychologists with the necessary special training and experience to investigate, report on, and interpret the material referred to them. Up to the present the average doctor had had but little training in this field, though many senior men had acquired great wisdom through experience. Whether tackling the medical or the sociological problems concerned with mental health, a team composed of those people who had special interest in, and knowledge of, the behaviour of human beings would always be desirable. The sociologist, the psychiatrist, the penologist, and the psychologist had equal status in the team. He thought they were beginning to realize in medicine that the persistence of the old, unjustified sense of superiority of the doctor over his technically trained colleagues in allied fields did nothing but hinder progress.

What was needed, in his view, was the ability to recognize the kind of human beings who had committed crime, the attitude to the offender should be to hate the thing he had done but not to hate him, just as doctors should think of the man or woman who was ill, even if this meant thinking a little less of the illness from which he or she suffered. There was an aversion among some in the legal profession that their colleagues in medicine were sentimentalists while they themselves were realists. Very often the reverse was the truth. The doctor being used to disease, suffering, and the less pleasant aspects of life and death should be able to see through the circumstances surrounding some particular crime to the essential problem, and once the facts were established, which normally

had nothing to do with him, he should be realistic in his assessment of the quality and make-up of the individual and what might best be done with him with a view to making him a healthy citizen

REVISED PENSIONS

There are still about 28 000 men of the 1914 world war receiving pensions for the loss of one or more limbs. For the recent war the number is something over 10 000. These pensions have previously been calculated on a schedule of assessment for certain specified injuries laid down in the Royal Warrant. During the discussions at the Committee Stage of the National Insurance (Industrial Injuries) Act, in November, 1945, it was suggested that a committee might be set up jointly by the Minister of National Insurance and the Minister of Pensions to review the existing schedule of assessments and to consider whether any changes should be made as a preliminary to its common use in both Service and industrial cases. The committee which was subsequently set up had six medical members¹ and was presided over by His Honour Judge E. Hancock.

The degree of disablement in any case is in most instances settled by a medical board. There are a group of cases, however, which lend themselves to more general assessment—namely, those cases involving the loss of a limb or part of a limb. Provided there is an exact description of the injury the compensation or pension can be fixed by reference to a schedule. The committee has considered these injuries and certain minor injuries ranging from the loss of a toe or finger downwards. In most instances the assessment which was previously in force remains unaltered, but the committee has recommended a few changes. In future the rates for the loss of a hand or arm will be the same irrespective of whether it is the right or left hand. Thus, in future, the loss of four fingers of one hand will be assessed at 50%, as against 40% for the right hand and 30% for the left hand, which is the present assessment. The assessment for amputation of the hip joint will be raised to 90% and there are other minor changes. Any increases of pensions resulting from adoption of the new schedule will have effect from the first pension pay day in April. It is estimated that about 7,000 pensioners will benefit from the new arrangements and the increased cost to the Exchequer will be slightly over £100,000 a year. The Minister of Pensions has accepted the committee's recommendations, and so far as industrial cases are concerned the committee's findings have been accepted in principle by the Minister of National Insurance and will be used as a basis for the regulations to be made under the National Insurance (Industrial Injuries) Act.

GUY'S HOSPITAL DENTAL SCHOOL

The first annual clinical meeting since 1939 was held at Guy's Hospital Dental School on March 30 when a full programme of demonstrations of modern dental work was carried through by members of the staff. Special interest attached to demonstrations of apicectomy under nitrous oxide anaesthesia, the operative treatment of prognathism, the facilitation of extractions using local analgesia and in the children's department, orthodontic cases under treatment. It was stated that the school's growing so rapidly and the number of patients undergoing treatment is so large—more than 13 000 new patients were treated during 1946—that plans are in preparation for rebuilding the department as soon as conditions allow. There are 100 students in training. Hitherto admission has been restricted to male students but from September next women students will be accepted. In 1946 a professor of dental medicine was appointed by the University of London, he is to be assisted by a team of assistants and is to carry out research into various aspects of dental disease. A proportion of the cost of this research is being borne by the Nuffield Foundation. Another feature of Guy's is a department of preventive dentistry, which aims to bring home to the public a knowledge of the means of prevention of diseases of teeth and gums. The school is the first in the country to undertake the training of women to assist general dental practitioners in their chairside work.

¹ A. L. Eyre, Brook R. H. Fleming, H. E. Griffiths, Sir Gordon Gordon, J. R. A. Metcalf and Miss Gladys Ward.

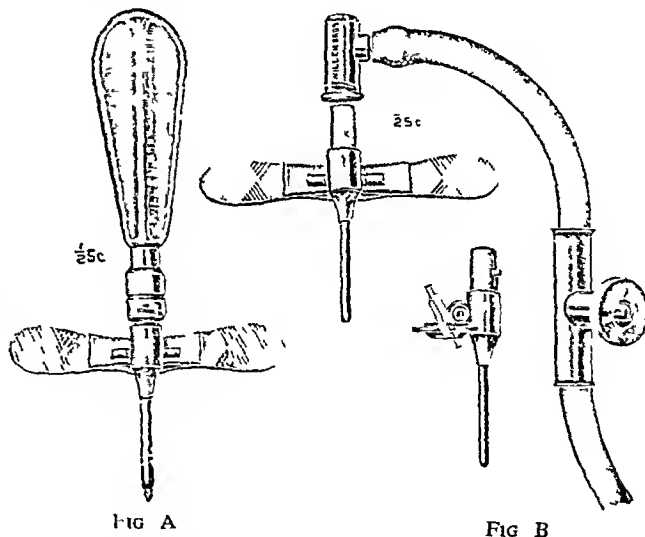
MENTAL AFTER-CARE

Dr Henry Yellowlees, the chairman of council, presiding at the annual meeting of the Mental After Care Association said that all the activities of the Association had been kept up to standard. They were of a practical nature, dealing with adults recovering from nervous or mental illness and with the prevention of such illness by early care. The Association had never been concerned to organize or arrange lectures on mental illness but it had co-operated with other bodies and had given financial help whenever possible, as well as advice in individual cases when referred by clinics. It was desired to develop one of the Association's homes as a special rehabilitation centre, also to expand the work and become a national association with branches instead of being a London association. Dr W. Gordon Masefield paid a tribute to the work of the Association. As a medical superintendent he had found that one of the most difficult problems to solve concerned the patient who was ready to leave the mental hospital and who needed chiefly to have his self-confidence restored, and here in the convalescent stage of mental illness a short period in a home such as the Association provided was of inestimable value.

Preparations and Appliances

STERNAL TROCAR AND CANNULA

Mr HAMILTON BAILEY, London, W 1, writes. With this latest model of a sternal trocar and cannula it is impossible to enter the mediastinum. The instrument can be inserted into the bone marrow under local anaesthesia without any special experience. It is my belief that this method of administering parenteral fluids has a large field of usefulness, for I am constantly encountering cases where either all the available



veins have been utilized, or, for other reasons, cannulization of a vein is hazardous. Cannulization of the sternal bone marrow can be accomplished swiftly under any conditions, including an indifferent light.

After a number of experiments and minor alterations, we (I include Mr P. Regen, of Messrs Willen Bros 44 New Cavendish Street, W 1) have now perfected the instrument and have made it foolproof.

The Secretary of State for Scotland has approved increases of salary ranging from £30 to £75 per annum for matrons and deputy matrons of mental hospitals recommended by the Wheatley Committee. In the case of chief male nurses and deputy chief male nurses the increase is one of 20s per week. The increases take effect from July 1 1946, the date on which increases for the other grades of mental nurses came into effect. Registered general nurses who train in mental hospitals will now get £115 in their first year and £130 in their second year of training, instead of £90 and £100 together with free board and lodging. Men and women with war service who are or who become qualified mental nurses may now get credit for all or part of that service.

Reports of Societies

LOCAL PENICILLIN IN THE MOUTH

At a meeting of the Section of Odontology of the Royal Society of Medicine on March 24 with Prof H STOBIE in the chair, a discussion took place on penicillin used locally in the mouth.

Dr ALEXANDER MACGREGOR said that the action of penicillin *in vivo* in the mouth at all events, appeared to be greatest within the first quarter of an hour. The speed of diffusion of penicillin was an advantage in the odontological field, because the drug was able to reach areas like gum pockets quickly, but at the same time it had the disadvantage that the penicillin was rapidly lost. He had employed penicillin pastilles in the hope of getting a slower action. Other methods of administration were penicillin powder, which was of value for insulating cavities, cream, as to the advantages of which he was uncertain, and the most recent method of using cones with a fatty base. It was essential to have a base which would not interfere with the healing of a socket, and whether the cones would prove successful over a long series he could not as yet say.

One of the main indications for local penicillin in the mouth was Vincent's disease. In the acute form of this condition penicillin was better than any other treatment, in the chronic form it was unavailing. There was usually some focus of infection such as an impacted wisdom tooth, which must be eliminated or recurrence was likely to take place. The acute stage was controlled within four or five days, and it was striking to see the improvement in the patient's condition coincide with the disappearance first of the spirochaetes and afterwards of the fusiform organisms. The results of local penicillin in ulcers of the mouth had been very mixed. Some of the so-called dyspeptic ulcers in the mouth appeared to be associated with streptococci and pneumococci and others with mixed oral types of organisms. Some of the cases cleared up quite well and did not recur but others did not improve. In extractions operations on cysts and gingivectomies penicillin was of value in obtaining a clean field in which to work. In carrying out gingivectomy he did not pack, instead of packing, he employed massage as soon as possible. He found that with penicillin pastilles the amount of pain subsequently appeared to be very much reduced. In chronic gingivitis penicillin was of little value but in certain cases it did bring about a temporary relief of the condition, which gave time for other treatment to be started.

Concerning the pastilles themselves Dr MacGregor said that he had used a pastille with a gelatin base. The disadvantage was its high water content, penicillin lost its stability rapidly in contact with water. The pastilles were not very stable, and unless used quickly the penicillin content dropped and the administration was rendered useless. But there was no doubt that such pastilles when fresh were very much better than the commercial ones with a hard base. He considered that the modern hard-base pastilles were not completely safe. With the gelatin base the stomatitis which made its appearance with other forms of lozenges was not encountered. If odontologists had gelatin pastilles made up in their own dispensaries with fresh penicillin, he thought they would be surprised at the results.

Desiring to learn what kind of spread was to be expected with penicillin pastilles in the mouth, he had carried out an experiment in which the penicillin was replaced by methylene blue, and taking 50 subjects he worked out a system of marks for the extent and degree of staining. The proportions for the different areas were

	Anterior Pillar of Fauces	Uvula	Tonsils or Tonsillar Fossa	Pharynx
After 5 minutes	59	47	45	11
15	88	82	73	24

The majority of the cases showed no staining of the pharynx at all.

Finally he pointed out that local penicillin was an adjunct to oral surgery, not a substitute for it, that bacteriological

control was essential, otherwise various organisms might come to the fore and give rise to penicillinase which would abort the effect of the penicillin, and that if penicillin was given at all, it should be given in sufficient dosage straight away. Even though organisms were eliminated it did not mean that they would not come back again. It had been noticed that the elimination of streptococci from the throats of carriers was quite effective so long as the penicillin was being given, but that the organisms returned when the treatment was stopped.

In reply to questions by Prof H F HUMPHREYS and others Mr D A LONG who was associated with this research on the bacteriological side, said that directly coliform organisms made their appearance the local value of penicillin ceased. The appearance of the coliform organisms did not seem to bear any relation to the form of treatment. It might have been thought that if coliform organisms were forthcoming on the second or third day or later with local penicillin they would be seen correspondingly earlier with systemic penicillin, but that was not so. He had carried out some investigations on patients having penicillin systemically, from 100 000 up to one million units a day, and it was not until half a million units was reached, or, more strikingly, one million units was approached, that the organisms tended to disappear from the mouth. In cases in which a really severe infection had spread to the lining of the mouth the dosage should be between half a million and one million to produce the maximum effect. For the treatment of such cases systemic penicillin was vastly superior, largely because of its action over twenty-four hours, the action of local penicillin being limited to the patient's waking hours.

TREATMENT OF TOXIC GOITRE

A meeting of the Section of Endocrinology of the Royal Society of Medicine was held on March 26, Mr L R BROSTER presiding, for discussion on the treatment of toxic goitre.

The Argument for Surgery

Mr J E PIERCY said that primary toxic goitre offered a difficulty in diagnosis. Thiouracil was invaluable in breaking down the degree of thyrotoxicosis to safety level, and in the average case it eliminated the necessity for stage operation. But thiouracil increased the technical difficulties of operation by reason of the increased vascularity and added 20 or 25 minutes to operation time. It was the secondary nodular type of gland which was difficult to recognize. Here there were few signs and symptoms, the patient possibly complaining of fatigue and palpitation on exercise. This type of case appeared to go on unsatisfactorily below toxicity and culminated in cardiac damage. The importance of these slow going minimum degree toxic cases should be appreciated. Out of 1,000 nodular goitres 220 had developed auricular fibrillation by the time they were admitted for operation. The procedure called for close co-operation between physician and surgeon and a study of the individual case, there could be no uniformity. Cases needing most consideration were those with mental derangement associated with thyrotoxicosis.

Even in the case of the severely toxic patient and the patient with complications he thought that a return to normal or near-normal could be expected. Thyrotoxicosis commonly occurred in the highly strung sensitive type of patient and although the thyroid balance might be regained by operation the constitutional make-up was unaltered. It was generally recognized that the nursing profession was a particularly exacting and arduous one but of 65 nurses operated on in his series all had returned to full duty—an indication of the effectiveness of the operation. In surgery not only was the thyrotoxicosis dealt with rapidly but the goitre also. Auricular fibrillation or the risk of it in the future was practically removed. A bad scar was unusual and such scar as there was should not give rise to pressure. In comparing the results of operation with those of thiouracil treatment the long strain on the patient during treatment by the preparation must be borne in mind as well as the ever present fear of complications. His argument for surgery was based on the conviction that it offered a more rapid cure than thiouracil and with no greater mortality.

Thiouracil Treatment

Dr W R TROTTER discussed the treatment of toxic goitre by prolonged administration of thiouracil. If this drug was given to a patient with toxic goitre it would be possible to reduce or abolish the manifestations of thyrotoxicosis, but as there was no evidence that thiouracil had any permanent effect on the thyroid it was to be expected that if the drug was discontinued the symptoms would recur immediately, unless it should happen that in the meantime a natural remission had taken place. Reduction in the size of the goitre or amelioration of the exophthalmos was not to be expected. The practical utility of the drug would depend, first of all, on its ability to control the symptoms of thyrotoxicosis; secondly, on the frequency with which natural remission of the disease occurred; and, thirdly, on the extent of non-toxicity. If thiouracil was to supplement surgery as the standard treatment of toxic goitre it must be shown that it could control thyrotoxicosis as effectively as operation, and that it was no more dangerous. Most patients would prefer to swallow pills for a limited period rather than undergo an operation, but they would prefer an operation to the necessity for remaining under close medical supervision for the rest of their lives.

The control of thyrotoxicosis by thiouracil was achieved in practice, and all were familiar with the short results. Cases which were resistant and responded slowly were those which had had long periods of iodine therapy previously. The degree of control obtained was much the same as by thyroidectomy. As for the length of time during which the drug had to be administered before the patient reached natural remission, out of 29 cases, 7, owing to the return of thyrotoxicosis, had had to be put back on thiouracil after the treatment had been suspended. These must be considered as true recurrences of the disease, since the symptoms did not reappear immediately after the drug was stopped. The fact must be faced that at least 25% of cases were likely to relapse and require a further course of treatment after the first had been completed. Experience showed that a natural remission might be expected to set in within a year or two of the patient's first coming for treatment and it was not yet known how curable these remissions might be. In some patients at least there was reasonable prospect of permanent remission. What was needed was some means of distinguishing the case in which remission would be obtained from the case which would show a persistent tendency to recur.

Toxicity of Thiouracil

Concerning the toxicity of the drug, the complications most common were the skin symptoms, drug fever, and leucopenia. For the most part these conditions were not much more than a nuisance and did not necessitate stopping the treatment. The proportion of cases in which treatment by thiouracil had to be abandoned on account of complications was not more than 18%. Agranulocytosis was a different matter. Its high death rate and unexpected onset made it an alarming condition. There were at present no means of preventing its onset, but a great deal could be done by alertness and promptitude in treatment to prevent it from being fatal.

In comparing this new agent with the well-established method of subtotal thyroidectomy two factors must be taken into account: the type of surgery and the type of case. Subtotal thyroidectomy could be an extremely difficult operation. Its safety depended not only on the skill but on the experience of the surgeon. By the time a surgeon had done several hundred such operations his mortality rate might be less than 1%, but many general surgeons did not have the opportunity of acquiring this degree of experience and their mortality was correspondingly higher. It followed that while thyroidectomy in the hands of an expert was as safe as treatment by thiouracil, thyroidectomy by surgeons without special experience was less safe. It seemed a fair conclusion that where a specialist surgeon was not available a physician might be well advised to treat all these cases with thiouracil in the expectation that by doing so he would save lives. When expert surgery was available then more discrimination between the two procedures might be exercised.

Dr A M MUSSEY mentioned a series of 75 cases treated with thiouracil in three years and gave an account of his routine

method. He had not found the exophthalmos much affected. Out of 7 cases with thyrotoxicosis associated with auricular fibrillation, rhythm had returned in 4 and in 3 there had been no change. He had treated pregnant women who had given birth to normal babies. Contraindications were a preference expressed by the patient for surgery for cosmetic or other reasons, exertion of pressure by the gland, serious complications arising in the course of treatment, failure to control the disease without pushing the drug to dangerous limits, and lack of co-operation by the patient. Surgery had achieved its present status not without trials and errors, and not without casualties. By patience and perseverance an effective medical alternative had been evolved. The last word on the subject had not been spoken, and inquiry into new ways of dealing with the problem would continue.

The discussion was continued by Dr LINNELL who was surprised at the suggestion that only a minority of patients showed the nodular toxic type, in his experience the large majority were of that type. Every nodular goitre, whether toxic or not, should be removed. Mr VAUGHAN HUDSON said that the use of thiouracil must be investigated under very well controlled conditions. Too often the results of the very specialist surgeon or specialist physician had been taken but it was important to bear in mind the results so far as they could be ascertained, of random surgeons and physicians. Major ROBERTSON spoke of favourable results with thiouracil. He had been fortunate in the absence of complications in spite of the fact that the initial dose he gave was higher than usual. Dr CROOK spoke of the value of propyl thiouracil—a drug, he claimed as safe to use as thyroid in myxoedema.

DISEASE IN OLD AGE

A meeting of the Medical Society of the L.C.C. Service was held on March 5 at St. John's Hospital, Battersea. The discussion was opened by Dr TREVOR H. HOWELL.

Dr Howell said that in 1900 there were 2½ million persons of pensionable age in the country. Now there were over 6 millions and the number was still growing. Little was known about disease in old age. We had advanced no further than Hippocrates who wrote "In old people occur dyspnoea, catarrhs accompanied by coughs, dysuria, pains in the joints, nephritis, vertigo, apoplexy, cachexia, pruritus of the whole body, insomnia, desfluxions of the bowels, the eyes and the nose dimness of sight, cataract, and dullness of hearing." The records of the Royal Hospital, Chelsea showed the following figures for causes of admission to the infirmary between 1918 and 1943:

Bronchitis	14%	Influenza	8%
Old age, senility	12%	Arteriosclerosis	7%
Cardiac disease	10%	Digestive disorders	7%
Minor surgery, eye, ENT	8%	CNS diseases	6%
Rheumatic disease 6%			

The diseases causing death in the aged were quite different in their order of frequency. They had changed somewhat since the use of sulphonamides became general. Pneumonia, formerly second on the list, now lay seventh. Heart failure was probably more common than before since fewer patients died with acute infections, but more passed on to 'secondary' heart failure after the disease had subsided. The Registrar-General's figures for the causes of death in approximately 250,000 persons over 65 in 1942 were roughly as follows:

Heart disease	30%	Bronchitis	8%
Cerebral vascular disease	14%	Old age	7%
Cancer	12%	Arteriosclerosis	5%
Pneumonia 3%			

His own experience at Chelsea during the war led Dr Howell to realize that deaths from pneumonia would be fewer if sulphonamides were given as early as possible without waiting for clinical signs of consolidation. In a bronchitic old man pyrexia over 99° F (37.2° C) was the danger signal, not signs in the chest. Another advance was the use of injections of adrenaline for bronchial spasm. Such measures not only improved the prognosis of pneumonia but also diminished the occurrence of subsequent cardiac failure.

Dr Howell then drew up a list of conditions common in old age where the prognosis depended on the skill and interest of the medical attendant. Such conditions as bronchitis and pneumonia had already been mentioned, hemiplegia from cerebral thrombosis, chronic arthritis of all types, and normal old age could be greatly influenced by the doctor. Genito-urinary disease and cancer occupied a half-way house, for cure might often be obtained if the condition were discovered early enough. Senile dementia, the results of arterial thickening, and the digestive disorders of old age, on the other hand, were resistant to treatment. The essential motto was, "Spot the cases early and treat them quickly." Dr Howell suggested that the aged and chronic sick needed the best doctors and the most skilful attention. In certain municipal hospitals in Essex and Middlesex this principle had been adopted. Statistics showed that out of every 100 old folk entering those hospitals, 40 died, 40 recovered and returned home, while 20 remained as "chronic sick."

Mr J R M WHIGHAM pointed out that in old people appendicitis often presented with atypical signs and that frequently it was only when the abdomen became distended and general peritonitis supervened that the diagnosis became clear. He suggested that diarrhoea in chronic cases, which was often due to carcinoma of the rectum, should be renamed constipation with overflow.

Mr IAIN MATHESON gave some figures for the mortality following operation in patients over 70. His gross mortality in 169 major operations was 36.5%. He pointed out that a major operation in an old person, even if successful, frequently shortened the expectation of life. With regard to old people in general, he suggested that confinement to bed was often the last straw, and said that a lot of incontinence in old people confined to bed was due to a mixture of laziness and slight mental deterioration.

Dr J H SIMMONS asked what was meant by senility, and suggested that a large number of cases so diagnosed proved to be due to avitaminosis, especially in old people living alone. Dr B GOTTLIEB said that he was getting good results in the treatment of pneumonia in chronic bronchitics with aerosol penicillin.

OPHTHALMOLOGICAL SOCIETY ANNUAL CONGRESS AT GLASGOW

The 67th Annual Congress of the Ophthalmological Society of the United Kingdom was held at Glasgow University on March 27, 28, and 29. Prof A J BALLANTYNE, the president, delivered an address of welcome to over a hundred members and to the visitors from abroad, in particular Dr P Merigot de Treigny (Paris), Dr E Godfredsen (Denmark), Dr J Van Caneyt (Belgium), Prof W H Melanowski, Madame Schiss Wertheimer, and Madame Dallon.

De Senectute

The process of ageing as illustrated by familiar disorders met with in ophthalmic practice was the theme of Prof Ballantyne's presidential address. He began by saying that 'it all depends what you mean' by old age. If what was meant was gradual recession of bodily powers then old age was inevitable but if it was intended to imply that certain particular disabilities were necessarily attendant upon advancing years the story was somewhat different and the outlook more hopeful. Many of the disabilities which in a former generation made people old at fifty had been cleared away, some of them as the result of a change in social habits. If old age meant a stooping gait, some increase of girth, greying hair, a little breathlessness on exertion, a less acute hearing, a less instant memory, then the ageing man, after the first shock of realizing that what he had said about his friends applied to himself, accepted the situation without any very sharp regret. After all, the whole of life was a process of growing old. Histologists and embryologists declared that ageing was a life-long process. Some would have it that the fundamental factor in the ageing process was dehydration, and this actually began before birth. These changes, Prof Ballantyne pointed out,

did not keep pace uniformly throughout the body, each of the organism pursued its own career according to its individual time-table, and the chemical and physical factors concerned were so numerous and complex that it was to be expected that some minor circumstance might often upset the balance and precipitate premature degeneration. In the eye the principal changes regarded as senile were cataract and presbyopia. But opacities of the lens occurred at all ages and senescence of the lens was not necessarily accompanied by opacity. Even when opacities began to appear, visual acuity might remain undisturbed. In the lens as in other tissues there were certain results of ageing which began in early life and over which the individual had no control and to these must be added the further results due to accident. Prof Ballantyne suggested that the doctor-patient relationship was of special value in the instance of the ophthalmologist and his ageing patient. To many people cataract had a sinister significance and patients were grateful for the assurance that useful vision might be retained, and that even opacities of the lens might be regarded in the same category as greying hair and other harmless signs of growing old. He considered it not too much to predict that cataract might be prevented or so retarded that the lens would outlive the individual. Prof Ballantyne concluded with some remarks on the social aspects of old age, on the modern science of geriatrics, and on the "age guidance" specialist. Ophthalmologists, he said, could help their patients to accept with courage a different pace of life. The secret of happiness in old age was congenial occupation, the preservation of a sense of progress, and a sense of one's own significance to family and friends. "The best contribution the older people can make is to cultivate the society and companionship of the young, and, avoiding patronage and superiority, to impart their experience, to offer kindly criticism and, most important of all, to recognize their own limitations and to know when they are in the way."

Rhinology in Relation to Ophthalmology

This discussion was opened by Dr J MARSHALL, who dealt with the ophthalmological aspects of the subject. Mr G H HOWELLS, describing the part played by the ear, nose and throat surgeon, and Dr R MCWHIRTER who showed some admirable radiographs. The opening speakers had agreed to discuss nasal sinusitis as a possible cause of retrobulbar neuritis and intra-ocular inflammation. The trend of the discussion was in favour of referring cases of orbital inflammation to the rhinologist. With his co-operation, sulphonal and penicillin therapy should be undertaken. It was preferred to drain into the nose an abscess arising in an infected sinus. If drainage through the orbit was indicated, then it was best to do this in a plane between the orbital periosteum and bone and not to open the orbital fascia. The value of radiotherapy in the treatment of malignant neoplasms originating in the accessory nasal sinuses and invading the orbit was stressed and this treatment was preferred to surgical removal, particularly in the case of malignant neoplasms of the antrum.

For the exploration and removal of neoplasms deep in the orbit the relative merits of the transfrontal approach and the lateral orbital access by means of Kronlein's operation were briefly discussed. The former approach was indicated when the neoplasm had extended beyond the confines of the orbital cavity, the latter when it was certain that the neoplasm was benign. Opinion was more in favour of dacryocystorhinostomy for naso-lacrimal duct obstruction than of West's intranasal operation. Orbital and ocular injuries as a result of nasal sinus operations were mentioned—for example, penetration of the eye, orbital cellulitis, total ophthalmoplegia, and damage of the optic nerve.

Many other papers of interest were keenly discussed and clinical meeting was arranged at the Glasgow Eye Infirmary.

The annual dinner of the Society was held in the hall of the Royal Faculty of Physicians and Surgeons. Sir Davidson proposed the toast of the Society and the reply was given by Dr S Spence Meighan. He proposed the toast of the guests and Dr P Merigot de Treigny replied. Sir Duke Elder's speech about the President was an admirable survey of Prof Ballantyne's qualities as a man and as an ophthalmologist of international repute.

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* Fatigue as a Symptom in Depressed Patients. *Journal—Lancet* (1945) 65 238

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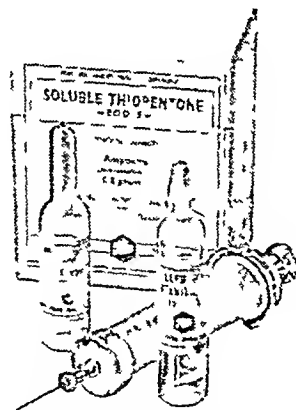


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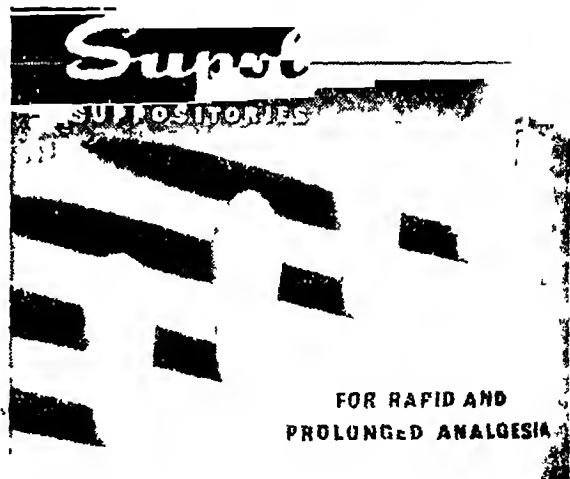
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PARENTS IN CONFERENCE

A conference of parents (in which, however, the fathers were numerically insignificant) was held at Caxton Hall, Westminster, on March 18 under the auspices of the Federation of Committees for the Moral Welfare of Children. Mrs E M Lowe, JP, presided, and two preliminary addresses were given by Dr J A Hadfield, Lecturer in Mental Hygiene, University of London, and Dr Doris Odum.

"Treated as Mannikin"

Dr HADFIELD spoke of the mental and emotional development of the child, reminding the conference that the child was a different person at different stages of life. The child, he said, was too often treated as a mannikin, but in fact the child of 2 was quite different from the child of 6, and he again from the child of 12. The child of from 4 to 7 was an independent, unsociable creature, filled with a first sense of achievement, from 9 to 10, and again in adolescence, he was a member of a 'gang'. At about 15 he entered upon a romantic phase which was quite a different thing from the more sexual experience of 18. Dr Hadfield accordingly warned parents not to regard as abnormal many manifestations in the development of their children which were perfectly normal to their age and only temporary. It was natural for a child of 2 to be self-willed and for a youth of 15 to fall romantically in love. If such phases were checked they would persist into the ensuing phase and trouble would be caused. He pleaded for freedom for the personality of the child and the inculcation of the only discipline which was worth while, namely self-discipline. At least nine out of ten 'don'ts' were quite unnecessary. The human infant had fewer fixed reflexes than any of the animals and for that reason it was able to learn by experience.

Adoption of Children

Dr DORIS ODUM addressed herself to some of the practical problems which presented themselves to social workers. One of them was the question of adoption. Here no rule could be laid down, each case must be taken on its merits. There was a fundamental tie between child and mother, unique in human relationship and the child was likely to be happiest in contact with the mother, even if it saw her fairly seldom. But where the mother—she was thinking more particularly of the illegitimate mother with few resources—was of low mentality or in poor health or did not want the child, adoption was the necessary recourse. Safeguards were needed in choosing foster-mothers and it was better to be a little pessimistic than to be carried away by enthusiasm for adoption. Elderly people who had not themselves had children did not as a rule make good foster parents. Care must be taken not to create an 'only child' situation. It was important to acquaint the child from the start with the fact of its adoption, great psychological damage was done to the adolescent who learned for the first time that he or she had been adopted.

She next turned to the problem of enuresis. This had three origins (1, the smallest group) emotional, due to some lack of adaptation to the environment which led to reversion to an infantile level, (2) lack of training, (3) the largest group) failure of development of reflex control owing to some physiological defect. It could not be known in how many children this control was delayed, because the majority of children never needed to pass water in the night at all and so the lack of control was not suspected. In none of these three situations were the children blameworthy.

Speaking of sex difficulties Dr Odum said that it was almost incredible how early-Victorian was the average parent even in 1947. Parents still did not give their children anything at any age which could be called intelligible sex education. Very few mothers understood what menstruation signified or gave it any kind of biological value and they still looked with horror at masturbation in the very young child, being ignorant of the fact that the great majority of children grew out of it as they grew out of other physical habits with the advent of external interests. She pleaded for a far greater knowledge understanding, tolerance and sympathy on the part of parents.

Correspondence

Penicillin Black Tongue and Penicillin Stomatitis

SIR,—The discussion of penicillin black tongue and penicillin stomatitis in your recent issues prompts me to record my own experiences, which clarify some aspects of the problem. I have observed both conditions in patients treated by the inhalation of nebulized aqueous solutions of high-potency 'yellow' penicillin. On one occasion a black tongue was produced by peroral inhalation of four doses given 12-hourly, the total penicillin administered being less than 200 000 units. The patient was at the time taking 50 mg of nicotinic acid daily as a routine supplement to the standard post-war diet to which the nation is committed. Although such cases are of rare occurrence they impel one to the opinion that the buccal conditions are neither due to avitaminosis induced by the inhibiting action of swallowed penicillin on the nicotinic-producing bacteria of the gut nor due to the nature of the base used in the manufacture of pastilles, but are caused primarily by the local action of penicillin itself. If black tongue represents a specific disturbance of the balance of the saprophytes of the mouth, it should be possible to influence it in many ways. The saprophytic flora at any point in the body can be regarded as the biological reflection of the chemical and physical factors obtaining there. When pastilles are taken over a protracted period, the chemical nature of their base becomes an important environmental factor. It follows therefore that although penicillin initiates the processes which terminate in black tongue it should be possible to control the sequence for better or for worse by modifying the composition of the base—I am, etc.

London W1

N MITCH.

Water and Salt Depletion

SIR,—I have read with great interest Dr H L Marriott's authoritative and stimulating lectures on water and salt depletion (*Journal* Feb 15 and March 8 and 15, pp 245, 285, and 328). During roughly the same period as when Dr Marriott was conducting his researches, I was also serving in India and encountering the effects of salt depletion in men who were being referred on account of psychological symptoms. While I am unable to quote statistical details it was obvious that salt depletion was either an aggravating or a primary factor in many of these cases. The main effects of low osmotic pressure which Dr Marriott quotes (p 286)—namely, lassitude, apathy, weakness, headache, and giddiness—are all symptoms liable to crop up in neurotic conditions, and there is little doubt that the term 'tropical neurasthenia' has been widely misused to cover the effects of salt depletion.

In his paper Dr Marriott describes a vicious circle of events in salt depletion (Fig 9, p 287) in which gastric symptoms such as anorexia and vomiting further reduce the body's supply of salt and I would like to point out another type of vicious circle which has certain psychiatric implications. Patients who had suffered from dysentery continued to have loose stools despite adequate drug therapy. The more outstanding cases often had a neurotic predisposition, but even when this factor was not distinguished the general effect of lowered morale coupled with the more obvious symptoms of salt depletion, produced a fertile ground for the seeds of anxiety. Morbid preoccupation over their debility and special concern with the presenting symptom (diarrhoea) led to a functional prolongation of the diarrhoea and consequent increase of salt depletion. The results of simple reassurance, a little mild sedation, and salt often had gratifying results. These measures may perhaps be equally applicable in certain other bowel disturbances irrespective of their exact origin.

Finally, there is one small point about which I would venture to disagree in part with Dr Marriott. He mentions the lack of thirst for salt as opposed to thirst for water. The animals who make periodic visits to salt 'licks' must have some biological urge in that direction. Further, I know from personal experience and from questioning others that in a state of salt depletion unsalted water tastes horribly insipid. This, of course, is not a positive appetite, but once realized does lead indirectly to a awareness of lack of salt—I am, etc.

Haywards Heath

A J GALBRAITH

Retrodisplaced Gravid Uterus

SIR—Through your columns I should be grateful for the opportunity of making some observations on the letters referring to my paper (Feb 1, p 169) written by my two friends, Dr M Hamilton (March 15, p 350) and Dr J A Chalmers (March 22, p 392).

Polak's figures quoted by me and those obtained at UCH show that sterility and retrodisplacement of the uterus are associated. This point was made in my opening paragraph and has been kindly enlarged upon by Dr Hamilton in his letter. What is not certain, however, is that the displacement in itself is the cause of the sterility. It is possible that there are other factors associated with the retrodisplacement which are responsible for the sterility and which are at present imperfectly understood. It is because of this that I have suggested that correction of the displacement in such cases should be left as the last method of treatment after all other treatments have failed.

I stated 'that the incidence of abortion in patients with retrodisplaced gravid uteri is at least no higher than that for all pregnancies.' The importance of the displacement as a cause of abortion has been overemphasized and is only likely to be a factor when it causes incarceration. These deductions were made on the figures obtained at UCH and on those of Danforth and Galloway quoted by me. Dr Hamilton, in his more logical manner, prefers to state that my figures "do not disprove the hypothesis that retrodisplacement (without incarceration) does not significantly predispose towards abortion." If the incidence of abortion (without incarceration) is not influenced by the position of the uterus then correction of the displacement is necessary only to avoid incarceration. I believe this applies to the primigravida and to the multipara, who may have had a previous abortion from a displaced uterus. Dr Chalmers disagrees with me on this last point and attempts to show that two of the three cases quoted by me prove his point.

From the history of patient No 39, Dr Chalmers makes the deduction that the ventrosuspension operation was unsuccessful and that the first two unsuccessful pregnancies occurred in a retrodisplaced uterus. Is this not putting the cart before the horse? The ventrosuspension operation was carried out at a reputable London teaching hospital (not UCH), and I am sure they would be as indignant at Dr Chalmers's "reasonable" deduction as he would be in similar circumstances. In any event, supposing the operation was unsuccessful, does not the case show that conservative treatment is possible and that continuity of the abdominal wall can be maintained? I would prefer to regard this patient as an habitual aborter, with the uterus accommodating the pregnancy for a longer period on each successive occasion.

In case 42 abortion occurred 11 weeks after anteversion had been attained (not 9 weeks as stated by Dr Chalmers). If circulatory factors dependent on the position of the uterus were the cause of the abortion as suggested, would the latent period be so long and would not abortion be much commoner than it is with incarceration when such factors are more likely to be active? Dr Chalmers has misread me when he says that I point out that circulatory abnormalities may interfere with the imbedding of the ovum in a retrodisplaced uterus. I only quoted Barnett's observation on the subject. Indeed, Barnett says that abortion due to such factors usually occurs at 2½ months, not 23 weeks. Personally I prefer to regard and treat such patients as cases of habitual abortion, and I admit that I do not know the cause of the abortion in the majority of such cases—I am etc.

London W 1

H H FOURACRE BARNES

Marrow Biopsy

SIR,—Prof D F Cappell, Dr H E Hutchison and Dr G Harvey Smith (March 29 p 403) call attention to the value of examination of specimens obtained from marrow by paraffin sections in addition to the usual smears. But their advocacy of a rather complicated and inevitably messy method of fixing the "mush" from the sternal puncture needle is surely out of date.

The Turkel trephine is little larger than the Salah needle and it permits of the obtaining of a 'sausage' of marrow as well as of the usual juice for making films. Essentially, it consists of an outer needle (with stylet), and a narrower inner one with a serrated end. The outer needle (with stylet in place) is pushed in until its tip sticks in the anterior lamella of the sternum. The stylet is then withdrawn and replaced by the inner (trephine ended) needle (also with stylet in place). When the end of the inner needle is in contact with the bone the stylet is withdrawn, and the inner needle is turned to and fro while slight pressure is exerted until a sudden cessation of resistance indicates that the medullary cavity has been entered, then a few more half-turns will fill the end of the inner needle with marrow. Next, leaving the inner (trephine) needle in position, the outer needle is pushed onwards in the marrow cavity. The inner needle is withdrawn and its contents expelled into fixative. A syringe is attached to the outer needle and marrow juice obtained by suction.

In this way marrow tissue is obtained while films are not diluted by aspiration of as much marrow as Cappell, Hutchison and Smith find necessary. In fact there is "at last the answer to the haematologist's prayer for a means of combining the advantages of sternal trephining with those of sternal puncture" (annotation p 419)—I am, etc.,

London W 1

A PINEY

Intrathecal Penicillin in Cerebrospinal Fever

SIR,—In his article on "Medical Aspects of Penicillin Treatment" (March 8, p 290) Dr B A Young expresses a doubt as to the necessity for intrathecal penicillin in meningococcal meningitis and also a desire to know the practice of few hospitals.

Speaking for the Park Hospital, I can say that the result obtained for many years with sulphonamides alone, especially sulphathiazole and sulphadiazine, have been so good that we consider intrathecal penicillin as an unnecessary complication in the routine treatment of these cases. Those who have had experience in the treatment of cerebrospinal fever in the past with meningococcal antitoxin have not forgotten the condition of patients receiving daily intrathecal injections of antitoxin serum, neither have they forgotten that often better results were obtained with intravenous administration alone. When they see the ease with which sulphonamide-treated patients now recover, they cannot help but view all return to unessential intrathecal medication as a retrograde step.

Moreover it is not sufficiently realized that the majority of the deaths from cerebrospinal fever at the present time occur in fulminant septicaemic cases, with or without adrenal haemorrhage and often with little or no evidence of suppurative meningitis. Intrathecal penicillin cannot help these patients. Intensive sulphathiazole treatment, combined with systemic penicillin for 24 hours, can save them. It is indeed a curious fact that since penicillin has become generally available the case mortality for cerebrospinal fever should have gone down. One can read in the introduction to the *Medical Annual* for 1946 "The limitations of penicillin are being recognized but it is surprising to find that sulphonamides may be superior to penicillin in the treatment of meningococcal meningitis."

It has become the practice apparently in many hospitals to administer penicillin intrathecally at the first lumbar puncture to all patients suffering from a purulent meningitis, whether primary or secondary and before a bacteriological examination. As at least 80% of all cases of primary suppurative meningitis are due to the meningococcus, this means that a large number of cases of cerebrospinal fever are receiving unnecessary intrathecal penicillin. This would not matter much if the injection was without danger. But even the purest penicillin, given with all precautions intrathecally, is often followed in infants and children by various reactions—twitchings, convulsions, apnoea, vomiting and collapse. In very ill cases with concomitant septicaemia it is easy to understand that the reaction may turn the scales against the patient.

During the years 1944, 1945 and 1946 136 cases of cerebrospinal fever have been treated at the Park Hospital and the case mortality for all ages all degrees of severity late and moribund cases included, has been 8.8%.

The value of intrathecal penicillin in suppurative meningitis secondary to otitis media, infected sinuses, cranial injuries, etc.

and also in primary suppurative meningitis due to the pneumococcus and many due to *H. influenzae* (Pfeiffer) is not questioned but in meningococcal cases its superiority to oral and systemic sulphonamides has not been established and its use is attended with unjustifiable risks—I am, etc,

London SE 13

L J M LAURENT

Epidemic Kerato-conjunctivitis

SIR,—The annotation on epidemic kerato conjunctivitis (Jan 15, p 145) prompts me to report the common occurrence of K P in an outbreak among British personnel in Calcutta in the rainy season of 1945

The usual history was of a sore eye 10 days after trauma occasioned by Rugby, soccer, or motor cycling without goggles. Swelling of the upper lid and of the pre auricular gland was present. Staining of the cornea with fluorescein developed a few days later, followed by K P in 20 out of 30 cases, sometimes with folds of Descemet's membrane and sometimes after the ciliary flush had subsided. The corneal picture bore a marked resemblance to the eye lesions of onchocerciasis, which of course, was not involved. The K P was as often associated with the type of fine corneal lesion as with the disciform type, and was quite a feature in this epidemic—I am, etc,

Johannesburg

J GRAHAM SCOTT

Endocrine Receptors in Relation to Cancer

SIR,—There can be little doubt that a living cell is ready and willing to receive an endocrine stimulus just as in plants and animals the female is ready and willing to receive the male element. But I fail to see why Mr T C Clare (March 22, p 390) labels a cancer cell as degenerate and therefore lacking in an endocrine receptor. A cancer cell is not degenerate by a very long way—it is, unfortunately, young, active, and vigorous.

For many years there has been an idea that cancer arises from some fault in the endocrines, the cell receptors or both, but prolonged observation and clinical experiment have failed to substantiate this theory, promising though it appeared to be.

We know that cellular division is the result of nuclear activity—the greater the nuclear activity the more rapid the cell division. And here we must hark back to the very beginnings of the organism. An organism was originally a small bit of our planet cast off when the latter began to cool. We are of the earth, earth. In the course of long years of evolution it adapted itself to surrounding influences, and ultimately man appeared. But just as in our planet, the earth, there are some atoms such as uranium, which are not too stable, so man may have some cells of a like character—liable to burst into exaggerated nuclear activity at slight provocation. Lucky are the people who have not inherited these unstable cells!

I submit, then that cancer is brought about by irritation whipping up the electrical phenomena known as nuclear activity in cells which happen to be unstable. If this be so, what then? The Ministry of Agriculture has forbidden the propagation of plants which are liable to disease—for instance some varieties of potato. Breeders of animals and birds choose healthy parents. As this naturally is impossible in the human race the predisposition to cancer will continue to be handed down—I am, etc

Wigan

J THOMSON SHIRLAW

Amoebic Hepatitis

SIR—During the last few months there have been admitted to my wards four cases of hitherto unsuspected amoebic hepatitis with abscess two of them fatal. One gave a history of treatment with emetine in 1920 in India and two others admitted to fleeting attacks of diarrhoea in the Far East, while the fourth assured me that he was the only soldier in the Middle East who had never had an attack of diarrhoea. A fifth case sent in for diagnosis for axillary glands was found to have a tender liver and the sigmoidoscope revealed advanced amoebic ulceration of the bowel. This man had been in the Navy and had had attacks of diarrhoea on and off but never enough to report sick.

As such a large part of the British Army served in 'amoebic countries' in the late war and as the original infection by the *Entamoeba histolytica* can be such a mild disease, it seems to me that such cases may become common during

the next few years, and practitioners should keep a careful watch for them. Admittedly the signs and symptoms of early amoebiasis of the liver are indefinite and are not confirmable by laboratory tests. In a doubtful case, however, the improvement with emetine is dramatic if one is on the right track. Few diseases are more treatable in their early stages, but if not diagnosed in time disaster may easily follow—I am, etc,

Bristol

RICHARD C CLARKE

Arsenical Encephalopathy

SIR—The case report by Drs G Hipps and R Goldberg (March 8, p 296) on a patient dying with arsenical encephalopathy calls for some comment. Their treatment was that advocated by Ransome *et al* (1945)—i.e., the patient is sat up in a vertical position, receives calcium gluconate, calcium thiosulphate, vitamin C, intravenous glucose-saline, and is repeatedly lumbar-punctured. Stress is laid on the postural part of therapy in order to decompress the brain.

Whereas it is obviously difficult to be dogmatic in a condition which is rare and where spontaneous recoveries occur (mortality is estimated at 75%), the promise of British Anti-Lewisite (dubbed BAL by the Americans) appears to be considerable in reducing the mortality in arsenical encephalopathy. In a recent survey by the American Council on Pharmacy (1946) 44 out of 55 patients suffering from arsenical encephalopathy recovered after receiving BAL, of the 11 cases who died 5 were started on this treatment some 9-72 hours after coma had set in. Thus with early administration of BAL one may hope to reduce the mortality to less than 15%. The American Council recommends 3 mg/kg four-hourly intramuscularly for two days, then four injections on the third day and two injections on the following days until the patient has completely recovered. They emphasize that BAL must be given early and in adequate concentration to be of use.

My own experience is confined to two patients, both of whom recovered with BAL as the principal therapeutic agent although both were comatose when this treatment was begun. Incidentally the first patient was nursed flat on his back, the second sitting up. In view of the published results of the American Council it is considered that BAL should be the primary agent in treating patients with arsenical encephalopathy—I am, etc

G W CSOKA

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Electric Convulsion Therapy

SIR—During the past nine months a new technique for the administration of oxygen and CO₂ throughout the convulsion has been used in the out-patient ECT clinic at St George's Hospital in an attempt to reduce the excessive cyanosis produced by the convulsion, with the resulting stress upon the cardiovascular system.

It has been our practice over many years to administer oxygen through a Hewett N O and O₂ mask at the conclusion of the convulsion, and in this way to cut short the period of cyanosis as much as possible. However, it was felt in the case of old patients (a number being over 70 years of age), and in plethoric and hyperpneptic subjects and in those suffering a degree of cardiac insufficiency, that the less strain that could be placed upon the cardiovascular system the better. With this object in view, it was decided to administer oxygen throughout the convulsion. This at first sight may appear illogical in view of the supposed laryngeal spasm occurring at that time, in actual fact, however, this spasm seems to take on the characteristics of the general clonic contractions and in reality is only intermittent—this can be observed by watching the bag of the apparatus when oxygen is administered throughout the convulsion, it will be noticed that very shallow and rapid respirations are taking place in time with the convulsions.

That gaseous exchange is also taking place is demonstrated by the fact that at the end of the clonic phase, and before normal deep respirations are resumed, the patient will be seen to be a good colour with little or no evidence of cyanosis—this being a marked contrast to those cases which do not receive oxygen during the clonic stage.

The technique observed is as follows. The current is administered in the normal manner, after the original muscular contraction and cry it is rapidly verified that the mouth gag is in correct position, has not shifted, and is firmly gripped. A Hewett gas and oxygen mask is then immediately placed over the mouth and nose and kept firmly in position, the mask should be of sufficient size to cover the No 9 size rubber gynaecological ring used as a mouth gag. The oxygen is turned on and the administration is continued throughout the clonic phase and until the patient has taken two or three normal respirations.

With this technique cyanosis is avoided, thereby reducing cardiovascular stress and allowing a wider margin of safety, at the same time the impression gained by this observer is that there is a reduction in distress experienced by the patients on recovery from the convulsion.

I should like to thank Sister B N Samuel for her efficient running of the ECT clinic—I am, etc,

London SW1

S M WHITTERIDGE

Control and Treatment of Diphtheria

SIR,—Dr James Fanning's interesting account of an outbreak of diphtheria in a girls' school and your excellent leading article on the control and treatment of this infection (March 22 pp 371 and 384) both draw attention to the necessity for boosting doses of prophylactic at regular intervals during childhood and the school years. Insufficient attention appears to have been paid to this latter aspect of diphtheria control by the propaganda departments of public health authorities, and when this weakness in a child's protective armour is pointed out one is frequently confronted with the parental argument that their 7-year-old is immune because he was injected at the age of 1 year.

There is little difficulty in obtaining permission to revaccinate the school child, but the public still requires considerable education before it will accept the idea of reimmunization to diphtheria, and it is hoped that your leader and Dr Fanning's article will direct the efforts of public health authorities towards this end—I am, etc,

East Horsley Surrey

BASIL S GRANT

Treatment in Early Cases of Influenza and the Common Cold

SIR—For the past three years I have been treating successfully cases of influenza and the common cold by intravenous injections containing quinine bihydrochloride. Cases of the common cold subsided within 12–48 hours after a single injection of 2 gr (0.31 g) quinine bihydrochloride dissolved in 2 ml of normal saline, while cases of influenza subsided within 2–3 days with the same injection and repeated within 12 hours. A number of cases were specially recorded during 1946 and a large majority of them responded successfully. Of course I am referring to cases seen within the first 24 hours. The object of this report is to interest investigators of this universal malady.

Virchow (1927) thought there might be a small decrease or increase in gaseous metabolism. Hardikar (1925) also noted a change in metabolism. Brown (1912), Solis-Cohen, Kolmer, and Heist (1917) noted that quinine is quite bactericidal to pneumococci *in vitro*. Probably quinine acts by checking the abnormal metabolism which is going on during the infection, or it may be that it interferes with the action of the virus concerned—I am, etc,

Belfast

E O BLAKE

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Technique of Venepuncture

SIR—Further to Dr J A M Cameron's remarks on venepuncture (March 29 p 425), I have found the essential points to be (a) efficient local anaesthesia, (b) complete extension of the arm at the elbow and supination of the forearm, (c) congestion of the veins of the forearm by a constriction higher up the arm at about 70 mm Hg pressure (d) decision as to site of puncture to be made by palpation rather than inspection, (e) at the moment of insertion of the needle, traction to be made on the skin distal to the site of entry and at the same

time the patient or donor to be asked to clench the fist, (f) attention to sharpness of the puncture needle.

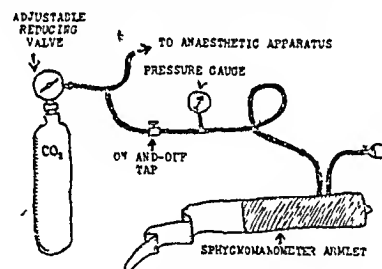
I have found an oblique light shining on wet skin to be most helpful in demonstrating a slight convexity of the skin due to a palpable but not otherwise visible underlying vein, and when ever possible I try to avail myself of this aid, but do not regard it as essential. In many cases a suitable vein is plainly visible without this aid, and in most of the others the course of the vein will be identifiable by the palpating finger. In less than 0.5% of adults the only superficial veins are very small and close to the surface. No larger vein is palpable, and evidently most of the return circulation from the hand and forearm is by vessels deep to the bicipital fascia. This condition is not always bilateral, and both arms should be examined, but where it is I do not regard these persons as suitable for venepuncture in the antecubital fossa. I agree with Dr Cameron that attention to stance is of prime importance for successful results—I am, etc

Cambridge

C B V WALKER

Sphygmomanometer Armlet as Tourniquet

SIR—The daily Press recently reported a case in which a tourniquet was not removed from a patient's leg following a operation, and in which the mishap had a fatal termination. I have for some time employed in orthopaedic operations, requiring a tourniquet a simple apparatus connected with an ordinary anaesthetic machine, by which an inflatable sphygmomanometer armlet is connected by tubing to a reducing valve on the CO₂ cylinder. The latter is adjustable to give pressures between 150 and 250 mm Hg, and since the exact pressure maintained does not much affect the use of the gas for anaesthetic purposes, the supply is made by a branch tube both to the armlet and to the flowmeter of the machine.



The apparatus is indicated in the accompanying rough sketch and has proved of real practical use. One becomes at once independent of the minute leaks which seem an inseparable feature of such pneumatic systems, and the surgeon is spared the irritation of the pressure running down in the middle of the operation. Above all, it is impossible for the patient to come to some mischance to be returned to the ward with the tourniquet still in action.

Some modification of the commonly used reducing valve and armlets is of course necessary for the use proposed, and unfortunately there does not appear to be any commercial source of such apparatus. I am, however, making inquiries with a view to their manufacture, and hope to write later when a more finished type of apparatus is available—I am, etc,

Wallasey Cheshire

R L WYNN

Control of Leprosy

SIR—In the interesting leading article (Nov 2 1946 p 65) on the control of leprosy occurs the statement "It soon became evident that compulsory isolation had become worse than useless." At first sight this remark from its context, might have been regarded as applied to India alone, but when coupled in the same article with a disparaging reference to "the Biblical and Middle Ages plan of compulsory segregation" and a later contrasting mention of "modern methods" it is evident that it was intended as an authoritative statement of the present position and that by the up-to-date person the policy of compulsory segregation should be regarded as a futile anachronism.

Having been advocating and carrying out a policy of compulsory segregation for the control of leprosy in Fiji and the neighbouring islands of the Pacific since 1930, I am naturally interested in the

applicability or otherwise of your editorial comments to our work in this part of the world. It may also be of interest to your readers to know how the condemned policy actually works in the Pacific Compulsory isolation of lepers in Fiji started in 1911 with the establishment of a small 'asylum' on the recently purchased island of Makogai. Up to the end of 1946 738 patients or over 25% of the 2845 admissions had been discharged as 'arrested' (having shown no sign of leprotic activity for at least 2 years) in addition to 436 improved patients, many of whom would have undoubtedly gone on to arrest under continued treatment but who were repatriated to India at their own request.

In a comparative study utilized in my handbook on Makogai, published in 1944, and reviewed in your columns I pointed out that during the 24 years from 1919-43 our numbers had increased by 92 or 0.07 per thousand of the population, but that study of the types and stages admitted in each of the two years mentioned showed a marked improvement. Thus in 1919 there was not a single case admitted in the early non infective neural-1 stage, in 1943 27% of the cases were neural 1. In 1919 24% of the admissions were hopelessly crippled and deformed neural 3 cases, as against only 3% in 1943. In 1919 32% of admissions were in the highly infective and advanced lepromatous-3 stage there were none in 1943. Regarding these results I commented: Prejudice, compounded mainly of ignorance and fear, natural in the early stage of a policy of segregation, has largely broken down. Discharged cases averaging about forty a year over the past ten years provide the best form of propaganda, both as to the good living conditions at Makogai and as proof that segregation is not necessarily life-long.

More than 60% of our patients are lepromatous and infective—the type for which your leader-writer advocates isolation 'with little or no compulsion'. The suggestion is of course that if we improve conditions, increase amenities, and make the leper colony a real 'home from home,' patients will be so attracted that there will be little need for compulsion. This is very largely a delusion. At Makogai patients are better housed, fed and clad than they have ever been in their lives and are given the best available 'modern' treatment. They are provided with churches, schools, (all) theatre complete with stage etc., and their own co-operative store. They are paid for their garden and fishing produce as well as for the many jobs of maintenance of roads and buildings they are enabled to do. There is no question as to their appreciation of all these amenities and they are on the whole a contented community, the element of compulsion being kept well in the background and needing to be invoked on rare occasions only. It is quite certain though that their knowledge of any relaxation of the law under which they are segregated would definitely unsettle their minds, and although the large majority of at least the more advanced cases would undoubtedly wish to return, most of them would want to 'test their freedom' by visiting their relatives from time to time and for variable periods and so nullify the whole desired effect of isolation.

With regard to the remaining 40% or less "non infectives," the difficulty of transport to and from the forty-odd islands from which our patients are drawn would necessitate the use of a few only of the main islands for the establishment of the proposed outpatient clinics with the result that a large proportion of these patients would still have to be uprooted from their island homes and families. Fiji thus presents a very different problem from that of the solitary island of Nauru with its 70 square miles of total area whose serious epidemic is quoted, apparently as an example of what should be done in the South Pacific. Knowing that compulsion was no longer available to enforce their attendance, many of our natives would certainly refuse to exile themselves in this way—at least for any prolonged course of treatment such as is necessary for leprosy. Being liable at any time to pass into an infectious stage they would thus constitute a continual danger to the public.

In his report on a 'Health Survey of the British Solomon Islands Protectorate' Dr S. M. Lambert, representative of the Rockefeller Foundation, comments on the Leper Hospital on the island of Malaita. They have 71 lepers in the colony at present; they have seen 194 lepers; they have had no arrested cases. The result is growing but they have no legal hold on the native. He may come in for a month and then he may not be seen again. They cannot compel them. Dr Macpherson in charge of the leper colony, told me that at Quibuta the average term of residence of a leper is four weeks. He mentioned (S.M.O.) agrees with the experience of Macpherson that the principal trouble is that the natives expect to see the same result for leprosy as they do for syphilis. If they do not improve after three needles they leave. This is of course the great weakness of attempting to treat leprosy with chemotherapy powers. I have heard the same complaint from leprosy workers in India and elsewhere everywhere to persuade the reluctant patient to stay the course. The prolonged method of treatment required often why? Any very obvious improvement may be easily discouraging to the victims and is

is asking too much of all but the most intelligent and persevering to continue to submit to an indefinite series of injections if the choice is left to them.

In conclusion I would like to emphasize that this letter is merely a protest against the assumption that because a policy has been found impossible or inadvisable in certain areas it is thereby necessarily to be condemned everywhere. I would submit that in Fiji we have attained and are attaining, under the existing policy results that would be impossible under a voluntary system. It is gratifying to note that a review in the current *International Journal of Leprosy* just received, refers to our 'humane and efficient system' at Makogai. In the same way, therefore, as we have learnt to treat the patient rather than his disease, so must we determine our medical policies in the light of local circumstance and not by rule of thumb—I am, etc.

Central Leper Hospital
Makogai, Fiji.

C. J. AUSTIN

Peptic Ulceration

SIR—I have been reading the recent correspondence on peptic ulceration with interest. Attention seems to be mainly focused on diet, intermediate feeds, alkalis, and surgery. Vitamin C is thrown in. Bilateral vagotomy is mentioned. Too little attention is paid to the psychological element, for psychoneurotic causation seems to me to be present in the majority of cases of chronic ulcer.

In the course of five years' practice I believe I have treated perhaps a hundred cases without ever having to admit defeat by seeing one of them undergo operation.

The treatment is the usual diet, two-hourly intermediate milk feeds, and alkalis. In all cases with a psychogenic aetiology, partial or total phenobarbitone sodium, 1/4 gr (16 mg) or 1/2 gr (32 mg) is given in each dose of mist mag trisilicate. Occasionally tr belladonna, 5 minims (0.3 ml), is added to the alkali. The advantage of including the phenobarbitone in the medicine is that it can be introduced and withdrawn without the patients' knowledge. This to my mind is of paramount importance in treating the psychoneurotic. It is possible to cure the ulcer and then the residual symptoms of pain while dealing with the psychological element by phenobarbitone and so to break the vicious circle. When residual symptoms have subsided with the patient's confidence in himself increased in direct proportion to his weight it is then possible to withdraw the phenobarbitone while continuing the alkali. His medicine is by this time the pillar of the patient's strength but once the phenobarbitone is withdrawn (without his knowledge) the patient becomes less dependent on his medicine and eventually this can be withdrawn. Why he becomes less dependent on his medicine he doesn't know, but to him it implies final health. Dieting is maintained for some months or perhaps indefinitely.

I have found that this method of treatment produces more rapid healing from the day the x-ray diagnosis of ulcer is made to the day x-ray proof of healing occurs than by any other method—I am etc.

Hampton Hill, Middlesex

I. E. D. MCLEAN

Solitary Prolapsing Thrombosing Piles

SIR.—It has been my practice for the last couple of years to ligature and excise solitary thrombosing prolapsing piles which are giving rise to severe symptoms and do not respond rapidly to palliative treatment. The excision is done under local anaesthesia and mostly in my surgery. The dissection follows the St. Mark's Milligan and Morgan method generally. In some the longitudinal muscle band is reluctantly divided in order to free the pile sufficiently to obtain a ligature of the uninvolved pedicle. Stout linen suture is used. The excision is only done in the clean thrombotic stage and in the early ulcerative stage with no gross signs of inflammation.

Many patients are saved from the strangulation and consequent gangrene of this complication with its prolonged severe pain. Sulphadiazine 3 g is given one hour pre-operatively with sodium bicarbonate and 1-g doses four-hourly with sodium bicarbonate are continued for six doses—I am etc.

Johnsburg,

STEPHEN EISENHAMMER.

Child Guidance

SIR—Prof Cyril Burt invites discussion in his article in the February issue of the *British Journal of Educational Psychology* May I offer a little?

(a) He writes "So far as the children are concerned what is needed in most instances is not psychotherapy or treatment but character training, re education, and remedial coaching. This puts his finger on what is probably the greatest weakness of modern child guidance—namely, the practice of psychotherapy on children where none is required. In Surrey the policy adopted is that of Prof Burt, direct psychotherapy with the child plays only a minor part in my clinics. But what is 'character training' in a child whose school and home training have failed to prevent him reaching a child guidance clinic? It is something which is certainly going to involve intensive treatment (analytical, persuasive, and so on) of the mother sometimes of the father and sometimes of the brothers and sisters. Why does Prof Burt skip this point to reach his conclusion that "the problem of child guidance is not so much clinical or medical but psychological"? Is it because in many clinics the so called treatment of the mother is done by psychiatric social workers?

(b) He adds that "the psychologist" should have a training in the home conditions of the people. The psychologist is much too specialized for this. Only an experienced general practitioner knows sufficient of the intimate life of people to make eventually a really good child psychiatrist. Prof J A Ryle of Oxford, this month has emphasized the importance of this side of "social pathology" in an address to the New York Academy of Medicine. (The child psychiatrist must of course be trained as well in psychiatry.)

(c) Prof Burt insists also that there should be two types of child guidance clinics—one medical and one educational. In this he has formidable support in Dr Blacker, and more recently the powerful subcommittee of the regional medical advisory committee of the Nuffield Provincial Hospitals Trust have made similar recommendations. On the other hand against this three-headed dragon there stands so far alone like St George, Dr Bowlby, who at an interclinic meeting of the National Association for Mental Health pronounced against this view.

On paper the dragon has it, but in practice they will find their scheme rather difficult. It will work in small areas like county boroughs, but it will break down in larger areas such as the counties. In Surrey we are once again rather ahead of the planners—we have the dual scheme at work but it is under one administration only—the public health department. A child psychiatrist visits school clinics and hospital (St Helier County Hospital). There are no psychiatric beds but the child psychiatrist visits the children's wards when requested by the paediatricians. He sees patients in the hospital from the schools as well. The enemy to the Nuffield subcommittee's scheme is geography. To have double administration clinics would present innumerable difficulties. (I wonder how many of the Nuffield subcommittee are actively engaged on child psychiatry requiring county organization.)

(d) The most practicable scheme in the large areas is for the education department to refer cases requiring psychiatric advice on paper to the child psychiatrist through the school medical department, and much of what happens after that will depend on where the child lives. The geographical position of the child's home is going to play a greater part in determining which child guidance clinic he will attend in the first instance than will the actual diagnosis. That is why Prof Burt's recommendation to divide cases into "normal" cases and "pathological" cases is an impracticable one even if his meaning were clear on this point.

(e) If the academicians are not careful they will drive more child guidance into the out-patient departments of mental hospitals—an action which is analogous to treating early surgical conditions of children in the out-patient department of a cancer hospital.

I agree with Prof Burt's idea that child psychiatry should be a branch of paediatrics, but I also agree with Prof D R McCalman's statement (made some years ago) that elasticity in local development should be allowed—I am etc,

JOHN A McCLUSKIE

Kingston-on-Thames

Shortage of Nurses

SIR—May I beg a little space to answer the letters of Miss Evelyn C Pearce and Miss C Morfee (March 29 p 424)? To take Miss Pearce's letter first. I am well aware of the establishment of training colleges for nurses and have repeatedly examined candidates from these schools who are well marked by the fact that they do not appear in uniform. I regret to state that though these girls seemed of a better type, they were in general considerably worse taught than candidates coming from hospitals, who had been under sister tutors. I can remember one group who had never tested urines, and another group who were completely ignorant of all the digestive ferments. I have yet to learn that the State is subsidizing these schools and pupils, which I have submitted is the only way to get satisfactory recruitment. If the State is not doing so, then I am afraid Miss Pearce has missed the real point of my letter—that is, that the State must keep these girls from their school leaving age to the time they are old enough to enter hospital.

Miss Morfee's complaint that nurses are used as messengers seems merely *une raison de plus* for discontent, and rather a trivial one at that. Nurses, after all, are meant to be useful and they have been relieved of a great many of their more menial duties. Is it too much to beg for a correction in my original letter? "They would pass examinations each year and be eliminated and passed on for another year" should read "They would sit for examinations each year and be eliminated or passed on for another year—I am, etc,

Great Yarmouth

LEONARD LEY

SIR—Nursing could be made more attractive to girls if they were not under discipline in their hours of rest. The hospital houses its nurses largely for its own convenience, but there is no reason why they alone of almost all employees should have to be under the authority of their employers when they are off duty.

In Sweden the nurses run their own homes through a committee and thereby have a feeling of greater freedom. Nurses still grumble about their food, but if they were allocated their rations and invited to devise their own menus I feel that these complaints would soon cease, particularly if the most inveterate grumblers were put on the menu committee. In the magnificent new hospital in south Stockholm they have gone one step further, and any nurse who wishes is allowed to live in the city, a small nurses' home being retained so that they may have a nucleus of nurses to fall back on in emergency. This seems to me the ideal to be aimed at for our future hospitals—I am, etc,

Colchester

M E LAMPARD

SIR—In reply to Dr Leonard Ley's letter (March 15, p 355) I see nothing "revolutionary" in any of his proposed changes half of which are already in existence. The urgent need for intelligent people to take up the work is well known, but having entered the nursing profession they find their intelligence insulted by people like Dr Ley, who infers that they are incapable of managing a private life (I can find no other interpretation of "racketing about half the night"). A nurse's job is certainly an arduous one, but no more so than countless others where the lives of many depend upon alert minds—e.g., bus and train drivers, etc. Does anyone question the hours they keep?

As for the nurses' exposure to ill health, I believe that doctors take the same risks. It would be well for the powers that be to ponder awhile on 'freedom after work'. Who knows, it might prove to be the answer to "why no nurses"—I am, etc

London SW 17

EDITH RICHARDS

First Things First

SIR—The conclusion of Mr Malcolm Donaldson's letter (March 22, p 388) that "it takes four years to train a nurse" is open to question. Increasing support goes to the two tier plan of a 2 years concentrated training for State registration followed by graded post-certificate work for those who aim at the higher services of administration or specialized work including the ward sister's.

You Sir by giving columnar priority to Dr Donaldson's letter for First Things First would seem to agree that the nursing crisis ranks high even among its many competitors on day but is it really the housing aspect that places it in such pre-eminence or wider considerations?—I am, etc.,

ESTHER CARLING

Moor Park, Northwood

An 84-hour Week

SIR—Perhaps I owe Dr G Rosemont an apology for failing to see certain of the subtler implications in his original letter (Feb 8 p 233). The point, then, is this that the National Health Service, which is intended to provide the nation with an efficient smooth running bigger, and better health service than it has or ever had, proposes to do this by demanding—and if need be enforcing—a 24 hour daily service from its doctors? There is no trade, profession or occupation in the most servile state that would dare to make such a demand of its workers and get off with it. If as Dr Rosemont asserts, this is the intention of the Minister, then I entirely agree with him that the Minister will be justified in enforcing it 'if we sign the contract'.

Granted, no doctor will be called upon to work continuously for 24 hours, even so, he should not be required to hold himself in readiness for service during 168 hours, which make up the calendar week. Dr Rosemont suggests that it should be the duty of the Minister to provide an emergency night service. I return to my original point—which was rather neatly sub edited, saving your presence!—that adequate leisure should be ensured the G.P. by the official provision of emergency services available on Sundays, half-days, and holidays. No doctor serving under the NHS scheme should be required to supply a substitute at his own expense during sickness or holidays, and every doctor should be entitled to at least one free day in the week. If the NHS scheme cannot provide these minimal amenities the improvement in the health service to the community will prove theoretical rather than actual—I am, etc.,

Edinburgh

R DINGWALL KENNEDY

SIR—Doctors are men of honour, and we should not agree to take on obligations that we are not able to perform. To-day, labour is impossible to obtain—for example although I have kept my car for 20 years in a public garage, yet for the past two months I have had to dig my garage doors free of snow because modern apprentices do not do labouring work. I can never get the car washed so scarce is labour.

Our wives are not our slaves. Does Dr G Rosemont (March 22 p 391) suggest that we should compel them to be on duty answering doors and phones for such hours as no paid servants would work?

I recall during the past nine months 15% of the panel practitioners have resigned to take up other work. Moreover, do not our present working conditions bring us a higher death rate (the Spens Report p 5)? Is this high death rate to be perpetuated?

The terms of service for G.P.s must be national and the hours must not exceed a just week's work. The responsibility for the 24 hours service must be the Minister's not the individual doctor's otherwise the scramble to get out of G.P. work will become a deluge—I am etc.

G D SUMMERS

Rates of Pay

SIR—I think it is true that the increased rates of pay in the Army have been largely wiped out by a juggling with allowances and a different interpretation of what is and what is not taxable. Though heralded in the Press as an improvement in pay, the new arrangements have borne hardly on those affected. Possibly they cannot strike they cannot organize or refuse and they are denied access to the correspondence columns of newspapers except anonymously.

Since they are employed by the State they cannot sue the Government. It is possible when the Crown Proceedings Act is passed that this is another example of can about democracy and freedom from fear and want but it has served to prevent doctors in the new

Health Service from being treated similarly, and what remedy would they have? In my opinion they would have none—I am, etc.,

Colechester

G C PETHER

The Pemmican B.M.J.

SIR—On behalf of my Association I would congratulate you and your staff on the sterling effort you have made to keep up the circulation of the *British Medical Journal* in spite of the extreme difficulties which you have had to face.

Colleagues in South Africa have a deep sense of appreciation of the courage of the people of Great Britain which their efforts during the war aroused. Their courage in the present crisis has done much to extend our admiration, and this effort of the British Medical Association, though small when compared with the background, has done much to illustrate the qualities which we so much admire—I am, etc.,

A H TONKIN

Medical Secretary

The Medical Association of South Africa

Capetown

SIR—We commend the courage and resourcefulness which produced the Candle-Light number of your famous *Journal* and we shall treasure the copy which has come to us. We have read over here with mingled feelings of pity and distress of the difficulties to which England has been subjected by the recent vagaries in your weather conditions, although possibly they must be regarded as more than vagaries when they produce such absolute paralysis as has been visited upon your country. Let us all hope that the situation may never be repeated.

With all good wishes, believe me,—I am, etc.,

GEO W KOSMAK

Managing Editor

New York State Journal of Medicine

New York

SIR—Here, in the lush, centrally heated warmth of my consulting-room, by the bright fluorescent lights on my ceiling fixture and the warm glow of my desk-lamp, I read the March 1 edition of the *B.M.J.* (the manually produced one). My heartiest felicitations and admiration to my British colleagues for their grand spirit in carrying on despite all adversity! Being Scottish-trained I can understand the rugged times you must be having now.

The *Journal* helps to keep the old ties to Britain burning for me and, I'm sure many others. Carry on, and let's hope your troubles are soon over—I am, etc.,

New York

SEYMOUR TENZER

SIR—Received this date (March 11) the *B.M.J.* of Feb 22. May I thank you for this valuable souvenir. In years to come I can look upon this as evidence of your country's trials in 1947. The prosperous and influential Empire and Commonwealth of that future date will have given the lie to those who predict its dissolution to-day. We, who were with you in 1940 know that you will win through this trial also—I am, etc.,

Wakefield, Canada

J H S GEGGIE

SIR—At a meeting of the West Sussex Division of the B.M.A. last Wednesday the following resolution was passed:

That this Division desires to express to the Editor of the *British Medical Journal* its appreciation of himself and his staff for their efforts in producing the pemmican *B.M.J.*—I am etc.

Worthing

R H WILSHAW

Hon Secretary

* * We print above a further small selection from the many letters on the Pemmican issues of the *Journal*—Ed. *B.M.J.*

It is estimated that there are 150,000–200,000 people with cerebral birth palsies in the United States. About 70% can be educated. Psychiatrists emphasize that it is the parents who must play the most important part in bringing up these children. The Michael Reese Hospital at Chicago maintains a day nursery to which parents can take palsied children and where they receive instruction in continuing the children's training at home. Orthopaedic and physiotherapy departments are available for physical defects.

Obituary

W T MUNRO, MD, FRCPEd

The death of Dr William T Munro, which took place at Perth Royal Infirmary on March 11, after a long illness, removes from our midst one of the leading British authorities on tuberculosis. He was born at Frickheim, Angus, in 1884, and was educated at Arbroath High School and the University of St Andrews, where he qualified in 1908, proceeding MD in 1912. He obtained the DPH in 1914, and was made a Fellow of the Royal College of Physicians, Edinburgh, in 1929. Shortly after his retirement the University of St Andrews, in June, 1945, conferred on him the honorary degree of LL D.

Dr Munro was resident for a time in Dundee Royal Infirmary, and later went to the Sidlaws Sanatorium, Auchterhouse. The 1914-18 war interrupted his work, and it was in 1920, after a period of service in the Army, that he was appointed medical superintendent of Glenlomond Sanatorium. There he remained for twenty five years, until ill health forced him to retire in 1944 at the early age of 60. The sanatorium had been open for only a little over a year before Dr Munro took charge there, and that the name of Glenlomond became widely known was entirely due to his work. He was not content merely to be a medical superintendent, busily engaged with problems of administration, diagnosis, and treatment. He had an active and inquiring mind, constantly concerned with the elucidation of the many problems of tuberculosis. Much research work was done during his tenure of office at Glenlomond, and in all he contributed some thirty papers to medical and scientific journals. His outstanding achievement was his work on the bovine tubercle bacillus as a not infrequent cause of pulmonary tuberculosis in man. This led to his association with Dr Stanley Griffiths and a long and fruitful collaboration in connexion with the incidence of pulmonary tuberculosis of bovine origin. In later years Dr Munro was greatly interested in the mode of spread of tuberculosis in infected children. His deductions on this point did not meet with universal acceptance, but he would probably not have expected it to be otherwise. An enthusiast, always questing for the truth, he did not accept his own findings as final. At times a severe, if never unfair, critic, he was always prepared to meet criticism of his own opinions. He took an active interest in the National Association for the Prevention of Tuberculosis, and was one of the most prominent members of the Tuberculosis Society for Scotland, which he represented on the Joint Tuberculosis Council. After he left Glenlomond he continued as consulting physician to the Bridge of Earn Hospital, and took an active part in discussions and meetings of the Tuberculosis Society until a few months before his death. On his last attendance there, and when obviously a very sick man, he made a spirited plea for the recognition of all the manifestations of tuberculosis as one disease and deprecated the present tendency to regard respiratory tuberculosis as a separate entity. A keen intellect, great enthusiasm, and tenacity of purpose were probably his outstanding characteristics. Socially, to those who knew him well, he was generous and kindly, with a fund of entertaining anecdotes. He was ever ready to help and to impart knowledge to his younger colleagues, and many men must be grateful for his instruction and guidance. His contribution to our knowledge of tuberculosis is unquestioned, and for that he will be gratefully remembered.

H MUIR EVANS, MD, FRCS

Dr H Muir Evans, who died at the age of 80 on March 28 at his home at Beccles in Suffolk, combined the life of a successful busy general practitioner with that of a research worker in biology, in this way following the example of many distinguished predecessors. He was a Fellow of University College, London.

The third son of Mr George Evans, of Richmond, Surrey, Harold Muir Evans was educated at Bute House, University College Hospital, and Berlin University. He took his conjoint qualification in 1889, the London MB in 1890, and the MD in 1893. In 1939 he was elected F.R.C.S. England

as a member of the College of more than 20 years' standing. After serving as a house surgeon at University College Hospital he was for two years medical officer for the Cape Government railways on the Bloemfontein Vaal River Extension, and on return to England served for a time as registrar to the Central London Throat and Ear Hospital. In 1894 he began work as a general practitioner in Lowestoft in Suffolk, and continued in practice there until a few years ago. Probably reasons of health determined his choice of a seaside resort on the East Coast in which to spend his professional life. There can be little doubt that his exceptional mental and professional gifts would have secured him a distinguished place in consultant medicine if he had chosen this type of work as his career. From boyhood Evans was a keen fisherman and sailor, and he found these hobbies led him into the paths of natural history of most interest to him. One of his early pieces of research was into the poison glands of fish. Communications by him on the defensive spines of fishes and on the anatomy and physiology of swim-bladder and Weberian ossicles in Cyprinids were read before the Royal Society. In 1940 he published a book entitled *Brain and Body of Fish*. The reviewer of this in the *Journal* (May 18, 1940) wrote "There can be no doubt that the author's method of studying the correlation of function and structure is profitable from the anatomical point of view, for it does provide valuable clues to the significance of neural mechanisms which might otherwise be quite obscure."

It is a book which not only will be useful to the comparative neurologist but must also be read by all those who make a study of fishes." The reviewer referred to Evans' book as an outstanding manifestation "of the real spirit of scientific inquiry still occasionally to be seen." In 1943 Evans published a delightful book entitled *Sting fish and Seafarer*. Another example of his work in biology was a paper on the pituitary gland of the eel, published in the *Journal* of April 6, 1940, in which he traced the seasonal changes in the morphology of this gland. Three years' research showed him that in the last two months before migration there was a great increase in the size of both anterior and posterior lobes of the eel's pituitary. Evans was an accomplished amateur painter and illustrated his papers and books with his own pen. In the war of 1914-18 he served with the rank of major as surgeon specialist in clearing stations. He was always keenly interested in the work of the B.M.A. and served at different times as Representative, as Chairman of the North Suffolk Division, and as President of the Suffolk Branch. He was Consultant-Surgeon to the Lowestoft and East Suffolk Hospital and had a wide practice and sound reputation as a general practitioner surgeon.

Muir Evans was distinguished in person as well as in mind and at times found it difficult to suffer fools gladly. He used to say that he gave nine-tenths of his life to his profession and the remaining one-tenth to his hobbies, and his primary hobby was that of a research worker in field biology. His death removes from medicine a general practitioner who represented a type of medical man now become unfortunately rare in these days of scanty leisure and extreme specialization. He is survived by his widow, two sons, and a daughter, to whom our sympathy is extended.

WALTER RAMSDEN, D.M.

Dr Walter Ramsden, Senior Fellow of Pembroke College, Oxford, and Emeritus Johnston Professor of Biochemistry in the University of Liverpool, died at Oxford on March 26 at the age of 79. Walter Ramsden, the son of Dr W H F Ramsden, of Saddleworth, went from Keble College, Oxford, where he distinguished himself in the honour school of physiology, to Guy's Hospital. He qualified in 1897 after three years as a Radcliffe Travelling Fellow, studying at Zurich and Vienna, and he proceeded D.M. in 1902. His election to a prize fellowship at Pembroke allowed him to devote himself to physiology and he became a university demonstrator and also taught physiology at Christ Church. In 1909 he served as senior proctor and became Johnston professor at Liverpool in 1914, and continued there until he reached the retiring age in 1931. He did some important work on the theory of emulsions, and was the author of several articles on this subject. He was a member of the Physiological Society and of the Biochemical Society.

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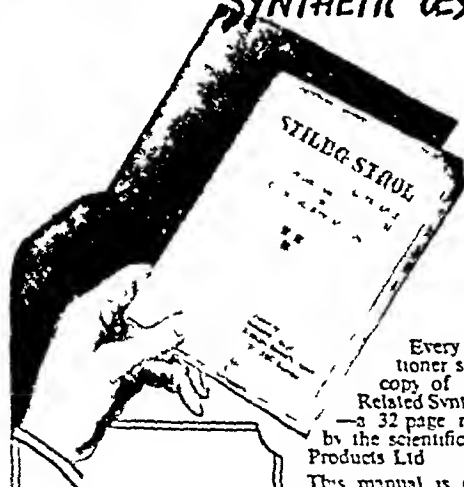
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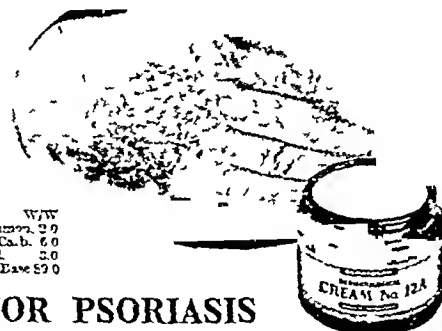
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and had been secretary of the section of physiology at the annual meeting of the British Medical Association in 1904. After his retirement he returned to Pembroke College and still took a lively interest in college affairs. His biochemical work continued and he became particularly interested in the chemistry of silk proteins. He was one of the last men to hold an Oxford life fellowship.

GEOFFREY DUCKWORTH, M.R.C.P.

Dr Geoffrey Duckworth died suddenly at his home at Wimbledon Common on March 18 at the early age of 46. Educated at Rossall and University College, London, he entered St George's Hospital in 1926, and qualified in 1929. After serving a term of clinical assistantships he decided to take up dermatology as a specialty and obtained the M.R.C.P. in 1932. He was later appointed as skin physician to the Boleynbroke Hospital, Wandsworth Common, to St John's Hospital for Diseases of the Skin, and to the Royal Hospital and Home for Incurables, Putney. He was the author of a number of papers, among them a report on two cases of ariboflavinosis which appeared in the *British Medical Journal* in 1942.

A colleague writes: Geoffrey Duckworth will be remembered as a shy, diffident, scholarly doctor with an immense capacity for work and perseverance. He suffered from severe ill-health from his student days, and this culminated in his early death. With his fortunate financial background and happy family life he might well have taken a rather dilettante view of his profession, considering his delicate state of health. Duckworth, however, was not of this type. He gave of his best to his hospital patients and to the pursuit of learning in his chosen specialty. His untimely death will come as a great shock to his many friends.

Dr Leslie J. Harris writes: The Nutrition Society owes an immense debt to Sir JOSEPH BARCROFT for all the generous and unselfish work he did on its behalf. He had been active in the Society's interests ever since its foundation in 1941, and had been its chairman since 1945. No effort was too much for him in furthering its welfare, and the success of the Society has been the measure of his unstinted and unflinching devotion.

Dr WILLIAM JOHNSTON DEWAR died at his home in Arbroath on March 5 at the age of 76. Graduating M.B.C.M., with honours at Aberdeen in 1891, he took up general practice in Arbroath first in partnership with his father, the late Dr James A. Dewar, later on his own. He proceeded M.D. in 1905. After retiring in 1923 Dr Dewar devoted much of his time to public work. He was a member of the Arbroath Town Council for nine years.

Dr Vera D. Davidson writes: After he retired from practice Dr Dewar did not lose touch with his profession, being a constant welcome, and helpful visitor at Arbroath Infirmary where he observed with great interest every advance in treatment and equipment. His other interests were wide; his sympathies deep; he made himself always accessible to those in need of his advice or help. There must be many in his native town who can say that, turning in time of trouble to 'Dr Willie,' they have been assisted through their difficulties by his unstinted efforts on their behalf. He was a sincere member of the Episcopal Church in Scotland, and a practical friend to the children of Aberlour Orphanage. A gentle and whimsical humorist he was always the best of company and welcome wherever he went. His freshness of outlook he retained always and he never lost his sense of wonder. Sound physician, wise counsellor, and good friend Dr Dewar will long be missed.

Dr KENNETH ROBERT HAY, who died on March 12 in London, qualified in 1898. He came to St Bartholomew's Hospital from Caius College, Cambridge, and in due course became house physician to Sir Dyce Duckworth.

Col W. P. S. Branson writes: A tall spare habit of body and a face which in enemy hands had he ever had one—might have called too long until he smiled combined to give Kenneth Hay a serious air which belied the native gaiety of his spirit. Those who can revive the memory of their first visit to his lovely home Sacombe near Ware, will surely revive also their delighted surprise at finding in the grave young man they knew in London one who was in truth the chartered buffoon and laughter maker of his large and happy family at home. For such he was in those far off days. His health never of the most robust, led to his taking a voyage round the world at

about this time, followed by house appointments at the Metropolitan Hospital and at the East London Hospital for Children. A few may remember him at Shadwell, where he was casualty officer, and Dr Herbert Morley Fletcher, Sir Ernest Graham-Little, or Dr A. M. Gossage, who were assistant physicians at that time may recall the stentorian voice which could still the chatter even in that casualty department. He practised first in St James's Place and later in Mayfair, and was able to indulge an omnivorous taste in medicine, science, and the arts by use of the many facilities that lay to his hand in London. The Royal Society of Medicine, in whose historical section he held office at one time, the Royal Institution and meetings in many by-ways of knowledge, such as industrial psychology into which he loved to prowl wherever he could find them. During the first world war he served in the First London General Hospital at Camberwell, and gained the O.B.E. For some years between the wars he supervised the health of the staff of the Army and Navy Stores. But a great part of his time went in the care of his many friends, while he fought off with disdainful courage a life long susceptibility to the fogs of his beloved London. The second world war found him still busy with tribunals of various sorts and with medical services to wartime industry, and even after it he remained in harness to the end as he would have wished.

Dr WILLIAM SALISBURY-SHARPE died in his sleep on March 15 at the age of 83. He qualified from St Mary's Hospital in 1888, proceeded M.D. in 1903 and took the F.R.C.S. in 1909. He had been medical officer to the G.W.R. men's club and later became chief consulting surgeon to the G.W.R. He was also physician to the Mildmay Mission Hospital in Bethnal Green and assistant surgeon to the Central London Ear and Throat Hospital, as it was then called. A member of the old Volunteer Corps, he later joined the Territorials and gained the rank of lieutenant-colonel and the T.D. He took his field ambulance to France in 1914 and then to Salonika. After the war while carrying on a West End practice he obtained the M.R.C.P. London, and the D.T.M.&H. a remarkable achievement for a man approaching 60. On retirement he settled in Lincolnshire, which was his native county. He was county commissioner for the Red Cross in Lincolnshire and had been D.C.M.S. for the London region. He was a fine horseman and a good shot and in appearance and bearing might easily have been mistaken for a regular soldier. His funeral took place at Mavis Enderby, where he was born and where his wife was buried. He leaves two daughters and a son a colonel in the R.A.M.C. at present serving in the Middle East.

Dr ROBERT GEORGE BANNERMAN died in London on March 26 at the age of 56 after a short illness. A student of Edinburgh University and London Hospital he graduated in 1914, proceeding M.D. in 1919. During the 1914-18 war Dr Bannerman was in charge of the Dyke Bar War Hospital and later of the Roy Broyston War Hospital. He was later appointed to the staff of the British Hospital at Montana Switzerland. Returning to England he worked at the Treloar Cripples' Home in Sussex before being appointed pathologist to the Inverness Memorial Hospital. He had been a member of the British Medical Association for twenty years and was also a member of the Association of Clinical Pathologists. During the recent war he served for a short time in the R.A.M.C., but had to relinquish his commission on account of ill-health.

A colleague writes: R.G.B. was a shy man who eschewed publicity and ambition—yet he could look back on an active past which had made substantial contribution to the science of pathology, notably in haematology. He had a gentle touch and warm sympathy with those who were afflicted; he was a cultured man with sincere appreciation of literature and music and a humorous teller of choice academic stories dating back to his Edinburgh days. His memory will be cherished by many a colleague and friend.

Dr WILLIAM ARCHIBALD who died recently at Strone, Argyll shire graduated at Glasgow in 1901. He took the Cambridge D.P.H. in 1905 and proceeded M.D. in 1906. He was the first whole time medical officer to the Borough of Luton and was appointed in 1908 at a salary of £400 a year. The local government board advised that the salary offered should be £500 a year, and gave only a conditional approval of the appointment until such time as their recommendation was accepted. Dr Archibald was medical officer of health at Luton until April 1937 when he retired a little in advance of the usual age because of ill health. He witnessed the consolidation of tripartite health services and the development of personal health services in a borough which had a population of some 40,000 when he assumed office and which had grown to over 80,000 when he retired. He was interested in epidemiological

An Imperial Cancer Research Fund Lecture will be delivered at the College (Lincoln's Inn Fields, WC) by Dr James CRAIGIE F.R.S. on Wednesday, April 16 at 3.30 p.m. His subject is 'Relationship of Virus and Host-cell with Reference to Latent and Cryptic Infections'. The lecture is open to medical practitioners, scientists and advanced students.

Medical Notes in Parliament

The Penicillin Bill was taken in Committee by the House of Lords on March 25. On Clause 1, which controls the sale and supply of the substances to which the Bill applies, LORD MARLEY moved an addition to subsection 2 (d). This subsection authorizes the sale or supply of these substances to any authority or person carrying on a hospital clinic nursing home, or other institution providing medical, surgical, dental, or veterinary treatment. LORD MARLEY proposed to add after treatment 'the words "under the direction of a duly qualified medical practitioner, a registered dental practitioner, or a registered veterinary surgeon, or a person acting in accordance with the directions of any such practitioner or surgeon"'. He said the gap in paragraph (d) caused anxiety among qualified medical officers.

Replying for the Government, LORD LISTOWEL said institutions obtaining a supply of penicillin could not, under subsection 1 (a) of the same Clause, use it for treatment except in accordance with the directions of a qualified practitioner. LORD MARLEY said this was unsatisfactory but he withdrew his amendment and the Bill passed through Committee without alteration.

Curtis Report Recommendations

Mr ATTLEE announced on March 24 the acceptance by the Government of the recommendations of the Curtis and Clyde Committees that the task of providing a home background for children deprived of a normal home life should be brought under the supervision of a single central department. It had decided that for England and Wales, this central jurisdiction should be concentrated in the Home Office. A new and enlarged Children's Branch would be created in the Home Office with an expanded inspectorate organized on a regional basis. The primary function of this Branch would be to ensure that everything possible is done to give to homeless children not only the material care but also the sense of security and status which a normal home provides. A standing advisory committee widely representative of the many interests involved and including representatives of the Ministry of Education, the Ministry of Health and the Ministry of Labour would be appointed to assist the Home Office in its administration. In Scotland the Secretary of State proposed to assign to the Scottish Home Department functions broadly similar to those which would be given to the Children's Branch of the Home Office and to appoint a Scottish standing advisory committee. The existing special responsibilities of the Admiralty and the War Office for orphans of Service men and of the Ministry of Pensions for war orphans would continue. The Government accepted the recommendation that county councils and county borough councils in England and Wales and county councils and town councils of large burghs in Scotland should be the local authorities responsible for the welfare of all children deprived of a normal home life.

National Service Bill

Moving on March 31 the Second Reading of the National Service Bill, Mr GEORGE ISAACS explained that in normal circumstances doctors and dentists would find themselves called up round about the age of 25 but there would be many in the field of call up taking specialist courses and wanting to become specialists in one branch of their profession. When an individual requested that it should be done his call-up could be postponed and he would be liable to be called up up to the age of 29. That had been done, Mr Isaacs said to meet the needs of the professions so that men would get their additional training. At the same time it was an advantage to the Services because they would have within their ranks men with higher qualifications to assist in the professional work of the doctors and dentists in the Forces.

Mr RHYS DAVIES moved the rejection of the Bill. The debate continued on April 1, when the Second Reading was carried by 386 to 85.

Paper for Periodicals—On March 27 Mr PICKTHORN inquired why periodicals had recently been limited to 35% of their pre-war paper consumption and whether paper mills had been and were being supplied with enough coal to meet this demand. Sir STAFFORD Cripps said that owing to the shortage of coal it had been necessary to reduce the amount of paper to be licensed for periodicals. In many cases even the reduced amount of paper might not be available. The publishers had been warned of this.

Medical News

Dr J. Purdon Martin, F.R.C.P., will deliver the Lumleian Lectures before the Royal College of Physicians of London (Hall Mall East S.W.) on Tuesday, April 15, and Thursday, April 17, at 5 p.m. His subject is 'Consciousness and its Disturbances considered from the Neurological Aspect'.

The first Sir Julius Wernher Memorial Lecture of the Institution of Mining and Metallurgy on "The History and Prevention of Silicosis, with Special Reference to the Witwatersrand" will be given by Major-Gen. A. J. Orenstein, M.D., F.R.C.P., chief medical officer, Central Mining—Rand Mines, Ltd., at the Royal Institution, 21, Albemarle Street, London, W., on Tuesday, April 15, at 5 p.m. Admission to the Lecture is free, without ticket.

A conference on "Silicosis, Pneumoconiosis, and Dust Suppression in Mines," arranged jointly by the Institution of Mining Engineers and the Institution of Mining and Metallurgy, will be held at the Royal Institution, 21, Albemarle Street, London, W., on Wednesday and Thursday, April 16 and 17, and will be opened by the Minister of Fuel and Power. The programme is as follows: April 16, 10.30 a.m., opening address by the Minister of Fuel and Power. Papers on 'The Pathology of Silicosis,' by Dr A. Sutherland Strachan, 'The Pneumoconiosis of South Wales Coal Workers,' by Dr J. Gough, 'Some Aspects of the Pathology of Pneumoconiosis. Part I—The Mechanism of the Removal of Dust Particles from the Lung,' by Dr A. Polcard, Associate Member of Académie des Sciences and Académie de Médecine de France.

Some Aspects of the Pathology of Pneumoconiosis," by Dr A. Polcard. 2.30 p.m., Pneumoconiosis on the Kolar Gold Field, by Dr A. Caplan and Mr D. J. Burdon. 'The Control of Silicosis in the Haemite Mines of the North West of England,' by Dr John Crow, 'A Review of the Work of the Silicosis Medical Bureau Johannesburg,' by Dr J. M. Smith, 'Aluminium Therapy and Prophylaxis for Silicosis,' by Dr Peter W. Edwards, a paper on the treatment and prevention of silicosis in the mines of Western Australia (not yet received). April 17, 10.30 a.m., 'Development of Silicosis Suppression Methods on the Witwatersrand—Ventilation and Dust Suppression,' by Mr J. P. Rees, 'Dust Suppression in Great Britain,' by Mr J. Ivon Graham and Dr T. David Jones. 'The Government Miners' Training Schools (incorporated in the Union of South Africa)—an Outline of Two Vocational Training Schemes,' by Mr E. J. Bolitho, 'The Organization of Dust Research in South Wales,' by Dr T. David Jones, Film, 'Dust Suppression in South Wales Coal Mines,' 2.30 p.m., 'Dust-Sampling and Control,' by Mr J. P. Rees, 'The Sampling of Airborne Mine Dusts,' by Dr D. G. Skinner, Dr A. G. Withers, Dr J. H. Griffiths and Mr F. T. Williams, 'The Examination of Airborne Dust in Coal Mines for the Evaluation of the Possible Health Hazard,' by Dr D. G. Skinner and Dr J. H. Griffiths, 'Types of Rock Encountered in Mining on the Witwatersrand and their Mineral Constitution,' by Dr R. J. Bridges. Admission to the conference is free, but applications to attend must be made on the prescribed form obtainable from the secretary of either institution at Salisbury House, Finsbury Circus, London, E.C.2.

A meeting of the Middlesex County Medical Society will be held at West Middlesex County Hospital, Isleworth on Tuesday, April 15, at 3.30 p.m., when Mr R. L. Galloway will speak on "Peptic Ulceration" and Dr M. M. Deane will show a colour film on "Partial Gastrectomy."

A general meeting of the Chelsea Clinical Society will be held at South Kensington Hotel, 41, Queens Gate Terrace S.W., on Tuesday, April 15, at 6.30 p.m. for 7 p.m., when Mr Duncan C. L. Fitzwilliams will read a paper on "Sir Thomas More and Utopia."

The annual meeting of the Society for the Study of Addiction will be held at the Medical Society of London, 11, Chandos Street W., on Tuesday, April 15, at 4 p.m., when there will be a symposium on "The Uses of Amphetamine (Benzedrine)," to which Dr W. R. Bett, Dr H. Crichton Miller, Dr J. D. N. Hill, Dr H. Pullar-Strecker, Dr H. J. Shorvon, Dr J. Yerbury Dent, Prof. R. C. Browne, and Dr G. R. A. de M. Rudolf will contribute.

The Sylvanus Thompson Memorial Lecture will be delivered before the British Institute of Radiology (32, Welbeck Street, London, W.) on Thursday, April 17, at 8 p.m., by Prof. R. Sievert on "Dangers and Protection in Radiological Work."

The Third International Congress of Catholic Doctors will be held at Lisbon from June 17 to 23. Arrangements are being made for a party from this country to take part. Any Catholic doctor wishing to join the party will be welcome and should communicate as soon as possible with Dr W. J. O'Donovan, O.B.E., 130, Harley Street, W.1 (Tel. Welbeck 3349).

EPIDEMIOLOGICAL NOTES

More Smallpox Cases

During the past week smallpox has been diagnosed at Scunthorpe Borough, Lincs., and at Doncaster County Borough, Yorks., under circumstances suggesting association with the recent outbreak at Grimsby County Borough (*Journal* March 8, p. 320, and March 15, p. 362). At Bilston Borough, Staffs., the importation of smallpox from India is suspected. At Stepney London one secondary case infected in Mile End Hospital was removed on March 21. Since then there have been no further notifications.

The Scunthorpe Borough case is an unvaccinated platelayer, 35 years old resident in a common lodging house 2 Manley Street, Scunthorpe. He developed a rash on March 22 and was removed to an infectious diseases hospital on March 25, diagnosed as a case of chickenpox. On April 1 laboratory examination suggested smallpox, which was confirmed clinically on the following day. Contacts not recently vaccinated are numerous and secondary cases are already due to crop. One has been removed on suspicion. Two men who left Grimsby while under surveillance as contacts stayed at the common lodging-house at Scunthorpe at a material time. It is not improbable that other unidentified and itinerant contacts have moved on to other common lodging-houses, and special vigilance is indicated.

In Doncaster County Borough an assistant master at a preparatory school vaccinated thirteen years previously, developed a rash on March 27 and was removed to Doncaster Smallpox Hospital on March 31. Modified smallpox has been confirmed. Fortunately this patient was confined to his residence from the date of appearance of the rash and is unlikely to have infected his pupils, who must, nevertheless, be under surveillance. The source of infection is unknown, but a link with Grimsby, through another contact there, is suspected.

The Bilston Borough case is that of a soldier vaccinated in infancy, in 1944 and in 1946. He travelled from Agra to Karachi by train and thence by air via Cairo and Marseilles to Heath Row. He reached Bilston on Feb. 23 and developed fever on March 2 and a few spots on March 5. Subsequently his mother vaccinated in infancy, became ill on March 19 and developed a rash. Another unvaccinated contact sickened on March 23 and developed a rash two days later. Initially chickenpox was diagnosed, but variola virus has been cultured and there is now strong suspicion of smallpox. The rashes reported to be superficial and centripetal, have obviously given rise to considerable difficulty in diagnosis.

Discussion of Table

In *England and Wales* the notifications of infectious diseases showed only small changes. There were decreases in the incidence of whooping cough 130, acute pneumonia 41 and dysentery 25, and increases in the returns of diphtheria 28, scarlet fever 26, and measles 26.

A small decrease in the notifications of whooping cough was shown in most areas, the only exception was Yorkshire, where the incidence remained practically unchanged. Yorkshire West Riding, with an increase of 43 in the returns for acute pneumonia, was the only exception to the general decline.

The largest change in the notifications of scarlet fever was a decrease of 28 in London. The rise in the incidence of diphtheria was contributed by three counties: Lancashire 12, London 11, and Glamorganshire 11. The largest rises in the notifications of measles were Leicestershire 164, Yorkshire West Riding 159, and Southampton 113. The largest falls were Lancashire 188, Cheshire 128, and Durham 90.

There were 13 cases of dysentery in Lancashire. Notifications of cerebrospinal fever were 7 above last week's total, which was the highest level for just over four years.

In *Scotland* the only variations in the notifications of infectious diseases were decreases in scarlet fever 37 and whooping-cough 30. A fall of 8 cases in the notifications of diphtheria was recorded in Glasgow.

In *Eire* the chief feature of the returns was a decrease of 110 in cases of whooping cough. No further cases of whooping cough were reported from the outbreak in Tipperary.

In *Northern Ireland* the outbreak of measles in Belfast C.B. continued to decline and only 58 cases were notified during the week.

Week Ending March 29

The notifications of infectious diseases in *England and Wales* during the week included: scarlet fever 1,317, whooping cough 2,263, diphtheria 254, measles 10,780, acute pneumonia 1,025, cerebrospinal fever 115, dysentery 85, smallpox 1.

INFECTIOUS DISEASES AND VITAL STATISTICS

No 12

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended March 22.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year for (a) *England and Wales* (London included) (b) *London* (administrative county) (c) *Scotland* (d) *Eire* (e) *Northern Ireland*.

Figures of Births and Deaths and of Deaths recorded under each infectious disease are for (a) The 126 great towns in *England and Wales* (including *London*), (b) *London* (administrative county) (c) The 16 principal towns in *Scotland* (d) The 13 principal towns in *Eire* (e) The 10 principal towns in *Northern Ireland*.

A dash — denotes no cases. A blank space denotes disease not notifiable or no return available.

Disease	1947					1946 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever Deaths	114	10	33	11	—	67	5	58	1	1
Diphtheria Deaths	212	20	52	14	3	417	22	115	43	11
Dysentery Deaths	48	—	17	—	—	332	26	74	1	—
Encephalitis lethargica acute Deaths	3	—	1	1	1	—	—	—	—	—
Erysipelas Deaths	—	—	46	8	2	—	—	55	10	1
Infective enteritis or diarrhoea under 2 years Deaths	76	13	17	28	1	55	7	6	53	2
Measles* Deaths	11 295	513	228	26	65	1 875	597	572	39	1
Ophthalmia neonatorum Deaths	57	3	18	—	—	67	9	9	—	1
Paratyphoid fever Deaths	6	—	—	—	—	4	—	2(B)	—	—
Pneumonia influenzal Deaths (from influenza)†	1 035	68	13	12	5	976	60	35	21	—
Pneumonia primary Deaths	66	9	3	2	—	77	10	7	3	4
Poliomyelitis acute Deaths	1	—	—	—	—	1	—	—	—	—
Poliomyelitis acute Deaths	3	—	1	2	1	8	—	—	1	—
Puerperal fever Deaths	—	1	15	—	1	—	3	7	—	—
Puerperal pyrexia‡ Deaths	169	4	13	1	1	142	5	18	—	—
Relapsing fever Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever Deaths	1 362	86	178	18	52	1 325	104	192	12	7
Smallpox Deaths	—	—	—	—	—	—	—	1	—	—
Typhoid fever Deaths	1	—	1	4	4	6	—	1	9	—
Typhus fever Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough Deaths	2 277	230	354	83	12	2 190	192	122	45	4
Deaths (0-1 year) Infant mortality rate (per 1 000 live births)	574	75	89	—	21	478	69	73	35	14
Deaths (excluding still births) Annual death rate (per 1 000 persons living)	6,773	1100	846	186	6 197	972	846	257	16	—
Live births Annual rate per 1 000 persons living	10 583	1627	1387	329	8 198	1199	1024	346	27	—
Stillbirths Rate per 1 000 total births (including stillborn)	272	28	42	—	245	32	42	39	—	—

* Measles and whooping-cough are not notifiable in *Scotland* and the returns are therefore an approximation only.

† Includes primary form for *England and Wales* *London* (administrative county) and *Northern Ireland*.

‡ Includes puerperal fever for *England and Wales* and *Eire*. Return of births and deaths for *Eire* for weeks ended March 8, 15 and 22 is not yet available.

Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Consanguineous Marriage

Q—What are the medical disadvantages of marriage between first cousins? The couple in question are very much in love.

A—One of the inescapable risks inherent in any marriage is that both partners may happen to carry the same harmful recessive gene. If they do the chance is one in four that any child will receive one from each parent and so be affected. In this way, often like a bolt from the blue, one, two, or more children in a sibship will be albinos or deaf-mutes, or will develop amaurotic idiocy or retinitis pigmentosa. In any given random marriage the risk is a small one, because such genes are rare and both partners will seldom carry the identical one. Blood relatives however, share more of the same genes than do unrelated people, having, of course, received them from the same source. Actually, if a man carries a particular recessive gene, the chance is one in eight that a first cousin will also carry it. Thus the risk of a recessive defect appearing in the children is greater in a cousin marriage than in an unrelated alliance. But though relatively the risk is considerably increased, it still remains a small one absolutely, if there is no contraindication in the family history the risk is not of such an order that a wise couple knowing all the facts might be expected to decline. This particular couple might well feel that their affection for each other more than outweighs one relatively small additional risk in a project filled with risks both genetic and non genetic.

If however there is any history of the appearance of a recessive abnormality in either family, careful scrutiny of the family history would be necessary. Furthermore, in view of its presumed recessive mode of transmission, schizophrenia in either family would call for detailed investigation, this proviso might also be extended to definite schizoid personality. For a further discussion of the problems raised by cousin marriage see Roberts, *An Introduction to Medical Genetics* Oxford University Press 1940 (especially pp 63-70).

Fluorescent Fungi

Q—What ringworm fungi fluoresce under Wood's light? Are such fungi identified according to their fluorescence under ultra violet rays of known Angstrom units? If so what species react to light waves of 3650 Å and 4200 Å? References to work on this subject would be appreciated.

A—In the clinical field the microspora (human and animal) affecting hair fluoresce a bright greenish-yellow under Wood's light which emits rays of 3650 Å. Favus gives a similar but less brilliant fluorescence and endothrix infection a dull bluish grey colour. Tinea versicolor appears golden-yellow under Wood's light. Cultures of fungi can within certain limits be identified according to their fluorescence, and this applies to the trichophytia as well as to those fungi mentioned above. Reference should be made to the *Introduction to Medical Mycology* by G. M. Lewis and Mary Hopper (1943, Year Book Publications, Chicago), where the subject is fully discussed.

Cement Dust

Q—Is there any danger to health from cement dust (1) to the workers in the factory (2) to the people living in the vicinity?

A—A survey of seventeen cement plants supported previously held views that in comparison with the dust hazards from silica the problem in the cement industry is trivial. Prolonged inhalation of dust from finished cement produces such slight reaction that little or no abnormality is seen in the radiograph. In the group of 2278 surveyed the evidence of tuberculosis and other chronic infections of the lungs was less than that in the general population. Cement dust may cause con-

junctivitis, slight catarrhal changes in the mucous membrane of the nose and upper air passages, and dermatitis. The effect of cement dust on people living in the vicinity of cement factories has not been the subject of medical research although mention has been made (Standley, *Journal* March 18 1944 p 412) of irritation of the eyes from falling particles. Methods of preventing or lessening the emission of dust from cement factories involve highly technical and specialized engineering questions, on which *Industrial Dust* by P. Drinker and T. Hatch (McGraw Hill, London 1936) may be consulted.

Cider and Rheumatism

Q—Are there any grounds for the current belief that cider drinkers do not suffer from rheumatism of the arthritic type? Does cider contain a large quantity of vitamin and yeast products which might be beneficial?

A—There are no grounds for the belief that cider drinkers do not suffer from the arthritic type of rheumatism. Cider does not contain a high quantity of vitamin or yeast products. Salicylic acid is often added to cider, sometimes in very large amount, and this may be the origin of the idea. It is obvious that the value of salicylic acid for acute rheumatic fever does not justify the conclusion that cider drinkers will be protected from rheumatoid arthritis because the cider contains salicylic acid.

Nervous Exhaustion

Q—What is meant by 'nervous exhaustion'? Is there such a clinical entity? How may the condition be estimated and what treatment is advised?

A—The term 'nervous exhaustion' usually refers to a condition of psychological origin, due to such causes as lack of incentive, strain, overwork, and an incapacity to cope with the problems of life, or to the fact that the patient, owing to earlier experiences, is making too great a demand on himself with a consequent reaction in the opposite direction, and a subconscious refusal (though coupled with a conscious desire) to continue to make the effort. One often finds this conflict in those who were invalids as infants or premature babies, or lacked affection, so that life was a perpetual effort and strain and this becomes a vicious habit even when the need for such effort has passed. The futile struggle ultimately breaks them down. But exhaustion, of course, accompanies vitamin deficiency of all kinds, as well as other biochemical disorders perhaps as yet unascertained and it is not always easy to exclude the physiological factor. That a physiological factor cannot be found does not mean that it is not present. The term 'nervous exhaustion' may generally be used of the biological failure or incapacity of the organism to face the demands of life, from whatever cause, combined with lack of incentive and therefore lack of production and liberation of energy to meet those demands. Aetiologicaly we may distinguish between those conditions where for physiological reasons the individual is lacking in energy, and therefore incapable of meeting the demands of life, and those conditions in which there is lack of incentive in life, and therefore the necessary energy is not forthcoming. The lack of energy is in one case the cause and in the other the effect but the symptoms are not unlike.

High Diastolic Pressure

Q—Patients who appear to be perfectly fit and able to do heavy work are often found to have an abnormally high diastolic pressure and continue in this state for years. For example one sometimes encounters a healthy muscular man aged 40 or so with a blood pressure of 140/110 who has tachycardia and has had it for years. Such patients are often of the sympathetotonic type and seem able to vary the pulse rate at will. What are the significance as regards prognosis and the probable cause?

A—The systolic blood pressure is a measure of the pumping capacity of the left ventricle, whereas the diastolic pressure indicates the resistance against which it has to work. The higher the diastolic pressure the more work will the left ventricle have to perform to maintain an efficient circulation. A patient with a true diastolic pressure of 110 mm. and a well-compensated heart usually has a systolic pressure of over

170 mm, and only when failure sets in does the systolic pressure fall. In a healthy, muscular man with an apparent blood pressure of 140/110 this diastolic reading probably does not represent the true diastolic pressure. Errors may arise because compression of the arm in some subjects, particularly those of the sympatheticotonic type, causes reflex vasomotor spasm, so giving a false reading, or because the diastolic pressure is lower than it appears. It must be remembered that clinical methods of measuring blood pressure are rough and considerable margin for experimental error must be allowed, and the readings should be assessed in conjunction with the whole clinical picture.

Small Stature

Q—*Can you suggest treatment for an undersized patient of 9½ years, weight 49 lb (22.2 kg) and well proportioned. He seems otherwise normal. The mother is above average height, the father average, but there are some rather diminutive aunts. Is the pituitary growth hormone which has been tried successfully in California commercially available?*

A—The patient's small stature appears to be determined genetically, in view of the family history, but the mechanism is nevertheless through a deficiency of pituitary growth hormone. The condition is comparable to that of strains of dwarfed mice, which respond both to pituitary growth hormone and, to a less extent, to thyroid gland. The combined treatment is sometimes, but not invariably, successful in undersized children. There are two forms of pituitary growth hormone available in this country, but supplies are intermittent. The dosage is 5 ml intramuscularly twice weekly, or, if practicable, 1 ml daily or 3 ml three times a week. The treatment should be continued for six-weekly periods, with an interval of six weeks to allow the antibodies that form to disappear from the blood. The thyroid could be given in 1-gr (65 mg) doses daily, and continued without intermission, provided the pulse rate is not unduly accelerated.

Diuretic Treatment of Adiposity

Q—*Patients given urea crystals for obesity have not reported the diuretic effect anticipated. What is the rationale of giving urea in these cases and has it any advantage over thyroid treatment? I take it that urea would be contraindicated in persons with signs of kidney disease but is there any other associated danger?*

A—Urea is given for its diuretic effect, the extra water being lost in an attempt to excrete the heavy doses of urea and keep the blood urea at normal levels. An alternative is ammonium chloride in 7½-gr (0.5 g) enteric-coated tablets, 1 tablet thrice daily after food, or injections of a mercurial diuretic such as mersalyl. The diuretic treatment of adiposity is based on the fact that on limited diet obese patients lose weight for a while and then stop, and the effect of diuretics shows that this refractory stage is due to a retention of fluid. It is also postulated that normal adiposity is associated, at least in some cases, with retention of fluid, and many fat patients put on weight before menstruation and lose it after the period, the phenomenon being believed to be due to water retention. There is no real comparison between urea and thyroid because the chief action of the latter is to increase metabolism. Thyroid gland has, however, no specific effect on fat, and tends to catabolize protein at the same time as, or even before, fat. It is therefore of limited value in the treatment of adiposity. Urea is contraindicated in patients with renal insufficiency but apart from this it cannot be regarded as a dangerous form of therapy.

Port-wine Naevus

Q—*What is the prospect for a child of 2 with a port-wine naevus over about half her face? She is being treated with thorium X and has had four applications over a period of eighteen months. Is there any treatment other than thorium, likely to succeed without leaving disfigurement?*

A—Grenz-ray therapy (1400 r units repeated at intervals of six months on three or four occasions) is more effective than thorium X. Plastic surgery may be considered, but if some fading is achieved by the Grenz-ray therapy such disfigurement as remains may be concealed by the application of certain special cosmetic preparations.

Letters and Notes

A Method of Giving Penicillin

Dr R M DOWDESWELL (Nairobi) writes: My attention was drawn to Dr M Machado Espinosa's letter (Feb 1, p 197) on "A Method of Giving Penicillin". The method is very similar to one which I described in a paper published in the *East African Medical Journal* 1946, 23, 139, and in a note in the same journal, 1946, 23, 181. Since the publication of these trials the method described has been used in various hospitals and dispensaries in this Colony. At the Infectious Diseases Hospital, Nairobi, 1,121 cases of acute gonorrhoea have been treated during the last nine months using this technique of one injection of 150,000 units with blood with 13 failures, which responded to a second similar injection.

Last Scarce Substances Order Revoked

The Scarce Substances Order, 1946, No 490, which confirmed and established authorized alternatives for liquid extract of ipecacuanha and for tincture of ipecacuanha was revoked on March 1, 1947. This means that whenever liquid extract of ipecacuanha or tincture of ipecacuanha is ordered on a prescription it must be dispensed. This revocation ends all the Scarce Substances Orders made by the Ministry of Health during the war.

Pseudo hermaphrodite

Mr R OGIER WARD (London, W) writes: With reference to the case of the pseudo hermaphrodite described in "Any Questions" (March 8, p 322) and the advice given that if the sex remained in doubt the child should be brought up as a male and ultimately be sent to a boys' school, an African student in Uganda was pressed by the examiner in forensic medicine as to how to decide the sex in such cases, "for, you see, some day the child will have to go to school". After some thought the student replied, "Sir, I send it to a mixed school".

Shortage of Nurses

SERO MELIORA writes: My daughter, who is a S.R.N., has just returned to the metropolis to a midwifery training centre to do the district work for her S.C.M. She writes: "We are in the next-door house—three of us in one room on the ground floor. Sanitaries consists of a 'pot' as we are not supposed to use the lavatory in the house. The problem is emptying it—so we use the lavatory. Washing is next door." On arrival (after a journey seriously delayed by the weather and without food) her supper, at 9.30 p.m., consisted of beans, toast, and tea, which she had to reheat. She is not complaining—merely stating facts. I regret that I cannot have my name published with this letter—victimization is not unknown.

Sodium Morrhuate Injections

Mr G H COLT (London, W) writes: My acquaintance with the literature of varicose vein injection is not as complete as it was ten years ago. The sudden dangerous symptoms and signs of onset are generally attributed to anaphylaxis. I venture to think they may easily be due to fat embolism. The injection of air into the blood stream, even slowly, is asking for trouble. G. A. Clark pointed out many years ago (I have not got the reference now) that fat embolism was frequently missed post mortem. An authoritative summary in such cases would be of great value. Tests with facilities for animal experiment could easily settle some of the points.

Correction

In our report of Sir Andrew Davidson's speech at the Council of Social Service Conference (*Journal* March 15, p 346) the word "pulmonary" in the third line of the second paragraph should read "non-pulmonary".

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BRITISH MEDICAL JOURNAL

LONDON SATURDAY APRIL 19 1947

LOUIS PASTEUR*

BY

Sir ALEXANDER FLEMING, FRS, FRCP, FRCS

I feel that it is a very great honour to have been asked to deliver this lecture on Pasteur, but I accepted the invitation with great trepidation, for I felt that I should be unable to do justice to so memorable a subject. We are grateful to M. Leveille for coming to London and setting up this Pasteur exhibition. I saw it in Paris and was struck then with its comprehensiveness and arrangement. But M. Leveille knows that the genius of Louis Pasteur is revered in Britain as it is in France.

Louis Pasteur was just a citizen of France—not an ordinary citizen, as it turned out, and there was nothing in his origin to indicate that when he died—and 50 years after his death—he would be a national hero. His great grandfather, grandfather, and his father were tanners. Perhaps had circumstances been different one of these ancestors might have become famous, but son followed father in an essential occupation. Pasteur's father, who on the battlefield had been decorated with the Legion of Honour, appreciated the advantages of education, and Louis, instead of becoming a tanner, was admitted to the Ecole Normale in Paris, where he seized with avidity the chances of learning, particularly chemistry and physics, under the distinguished teachers of that institution. He obtained his degree, but even then there was no real indication of his coming fame.

Louis Pasteur in his youth and throughout his life believed in hard work. He lived for his work and put his whole heart and soul into it. His was not a 40-hour week. He worked so constantly in his laboratory that it was inevitable that he became a beautiful technician, and throughout his life he had no use for sloppily performed or ill-conceived experiments. His first momentous discovery was the dissymmetry of crystals. Like many others, he had been puzzled by the difference between tartaric and racemic (or paratartaric) acids. These two chemicals appeared to be identical in every way except that, whereas racemic acid solutions had no influence on polarized light, tartaric solutions rotated this to the right. When Pasteur examined the crystals of a salt of racemic acid with the microscope he noticed that the crystals were not quite identical and could be divided into two groups. In one of these groups a particular facet was on the right side while the other group had the same facet on the left. They were in fact mirror images of each other and might thus be compared with a pair of gloves. Pasteur had vision, and with extraordinary care and perseverance he separated his right- and left-handed crystals into distinct groups.

Then he made solutions of these and tested them on the polariscope. The solution of the right-handed crystals deviated the polarized light to the right, the left-handed crystals to the left, and when the solutions were mixed in equal proportions there was no deviation—it was back at the indifferent racemic acid.

A New Science

Pasteur had solved a mystery that had puzzled older and more famous chemists. Little wonder is it that he was excited and rushed out and kissed an attendant whom he met outside the laboratory door. You can imagine the feelings of young Louis Pasteur when later he visited the great Biot to demonstrate his discovery. Biot, like a careful scientist, took no risks. Pasteur was given tartaric acid and the chemicals necessary for its crystallization. He made the solutions, which Biot kept in a cupboard till the crystals had formed. Pasteur separated his right- and left-handed crystals and Biot tested them in the polariscope. It was as Pasteur had said, and we can honour Biot for his immediate remark: "My dear boy, I have so loved science all my life that this makes my heart beat." From that day Biot was Louis Pasteur's friend and helper.

But he was not to stay in Paris uninterrupted. He was sent to Dijon and later to Strasbourg as a teacher. In Strasbourg, possibly the most important thing he did was to marry Mademoiselle Laurent, the daughter of his chief. She proved a mainstay throughout his life, and well deserved the tribute of one of Pasteur's disciples: "She was not only an incomparable companion for her husband but also his best collaborator." He pursued his studies in crystallography and he pursued racemic acid. No one knew how to make it. He heard of people in Leipzig and Vienna who were supposed to be able to do so, and off he dashed. But in the end he had to make it himself, and this gained for him the ribbon of the Legion of Honour and a prize of 1,500 francs from the Pharmaceutical Society of Paris.

In another pretty piece of work which he did later he used a common blue mould, a penicillium. When this was grown on racemic acid it assimilated the right-handed portion leaving only left-handed tartaric acid. A remarkable example of the extraordinary power of selection of a living organism. People may say and did say: "What is the use of all this? Why such a fuss about a little dissymmetry of crystals?" You can answer like Franklin: "What is the use of a newborn child?" Pasteur's first scientific baby, born of tartaric acid, inspired later workers so that a complete new science of stereo-chemistry has arisen explaining structure and enabling synthesis of many organic compounds. In London this work did not pass

* A lecture delivered at the Science Museum on April 10 to inaugurate the Pasteur Exhibition, temporarily transferred to London from the Palais de la Découverte in Paris.

170 mm, and

fall But notice, for it earned for him the Rumford Medal of the Royal Society—and that at 34 years of age

In 1854 Fate ordained that Pasteur should be sent as Dean of the Faculty of Science to Lille One of the industries of Lille was the production of alcohol by fermentation of beetroot In those days the prevalent theory of fermentation was that of Liebig—that it was a purely chemical process in which yeast played no active part Pouchet and Schwann had produced good evidence that it was a living organism, but Liebig and his supporters would not have it that a living yeast took any part in the fermentation process

The father of one of Pasteur's students was worried by the irregularities of his fermentations and asked Pasteur to help him This was the stimulus that set him off on his study of fermentations, which occupied him for many years and led him on to his later work on animal infections He set to work with his microscope and found that in the unhealthy lactic fermentations the globules were elongated and quite unlike the rounded globules of yeast found in the healthy alcoholic fermentations Some of the products of these fermentations were optically active His previous work had convinced him that this optical activity was a property possessed by substances synthesized by living things, in contradistinction to substances synthesized chemically in the laboratory He was therefore predisposed to consider these ferments as living organisms In the fermentation of impure substances like grape juice and beer wort there were many complicating factors, so he prepared a culture fluid containing only a watery solution of sugar, mineral phosphate, and an ammonium salt No organic nitrogenous matter was present In this simple medium a minute implantation of yeast promptly fermented the sugar, thus confounding the upholders of the purely chemical theory of fermentation, who had maintained that without organic nitrogenous material such fermentation was impossible Perhaps more important for us in this was the fact that Pasteur initiated the method of working with a simple culture medium in which the chemical changes could be more readily observed This was an enormous advance and is the method still used by the bacteriological chemists Thus even in his early work on lactic fermentation he was laying the foundations of bacterial culture

It is quite impossible to go into details of this work here It received much criticism, but Pasteur was a fighter as well as a wonderful experimenter and he was able to confound his critics He had got to the stage when he wrote

I can bear witness to the existence of a large number of distinct yeasts setting up chemical transformations in accordance with their nature and constitution, but most frequently the nourishment suited to one allows others to develop Hence arise most complicated phenomena liable to constant variations If one does succeed in separating one of these ferments and making it grow by itself, it produces the corresponding chemical change with remarkable precision and simplicity

That is as true to-day as when he wrote it

Having got so far with these fermentations, and having shown that they were due to living organisms, the next question was, Where did these ferments come from? Did they arise spontaneously or did they come from outside? The question of spontaneous generation had been discussed for centuries Many and curious were the prescriptions for producing animals Virgil's method for producing bees was

'Kill an ox two years of age, whose young horns are just beginning to curl on his brow place him in a narrow enclosure strewn with leaves of thyme and rosemary freshly gathered, and soon from his fermenting humours there rises a swarm which fills the air like rain from summer clouds'

Van Helmont had a recipe for producing rats

Cork up a pot containing corn with a dirty shirt, let about 21 days a ferment coming from the dirty shirt combine with the effluvium from the wheat the grains of which are turned into rats, not minute and puny, but vigorous and full of activity

This sounds almost as learned as some of the explanations of things which we hear to day and possibly is as truthful

In the 18th century Spallanzani had produced experimental evidence that spontaneous generation did not exist but people were not convinced, and the controversy went on In 1859 the academy offered a prize for "an endeavour by means of careful experiments to throw new light on the question of spontaneous generation" Pasteur's studies on fermentation fitted him for this new investigation His seniors, Biot and Dumas, tried to dissuade him, but he went on

We have not time to go into the multitude of experiments which Pasteur made on this subject or into his controversy with Pouchet or Bastian, but one simple experiment must be mentioned The neck of a flask half filled with a fermentable fluid was drawn out in a swan's neck form The fluid was boiled to sterilize it, and then the flask was allowed to stand at a temperature suitable for fermentation No fermentation occurred, although it promptly appeared in a similar flask in which the neck had not been drawn out The dust dropping from the air settled on the bend of the drawn-out flask and never reached the fluid, but if the flask was tilted so that some of the fluid reached the dusty bend and was then allowed to run back fermentation promptly started This made him state "The dust suspended in the air is the only origin and the first and essential condition of life in infusions" It was at this time also that he said "It is very desirable to carry these researches sufficiently far to prepare the way for a serious inquiry into the origin of disease" That showed the trend of Pasteur's thoughts about the germ theory of disease

The First Pasteurization

Pasteur's home was in Arbois—a wine-growing country He was naturally interested in the production of good wines and I can assure you from personal experience that Arbois produces good wine, for it was in November last on the occasion of the 50th anniversary of his death that we visited Arbois and indeed Pasteur's own vineyard there The wine producers were in trouble Many of the wines rapidly became unpalatable, sour, and ropy Pasteur investigated this in much the same way as he had with other fermentations He examined with the microscope the bodies found in healthy wine fermentations these were yeasts In the spoiled wine he found other minute bodies, and he showed that it was by the fermentations set up by these that the wine acquired a nasty taste Much more important from a practical point of view was his finding that these secondary fermentations could be prevented by slight heating of the wine This did not interfere with the flavour but completely stopped the spoilage This began the process which we know as pasteurization, to the great benefit of the wine industry of France Pasteur explained also the essentials of the process of making vinegar Whether made in the French way in casks or in the German way by slowly trickling wine over beechwood shavings was the same—a minute organism, the *Mycoderma aceti*, provided the ferment, but it required plenty of air for its action So the vinegar industry also benefited

Pasteur's work now took a new turn when his friend and supporter, the famous chemist Dumas, who came from the silk country, implored him to go there and investigate

disease which was destroying the silkworms and ruining the country. Pasteur pointed out that he knew nothing of silkworms or their diseases, but Dumas had the greatest faith in the genius of his younger colleague and managed to persuade him. I have not time to go into details of Pasteur's work on silkworms—how he collected information about their life history, how he examined them, healthy and diseased, under the microscope, how for a long time he was confused by the presence of two distinct diseases, or how he finally showed that it was possible to obtain and perpetuate healthy broods by selection of healthy stock and by cleanliness. In spite of the fact that in the middle of this work he was stricken with a form of paralysis from which he never recovered he was able in the space of five years to convince the silk growers that his methods were sound, and the silk industry of Europe was restored to prosperity.

After the Franco-Prussian war in 1871 Pasteur went on a holiday to his friend Duclaux at Clermont Ferrand. There was a large brewery near by. Pasteur, as always, was interested in the fermentations. Like the making of wine and vinegar, beer-making had been largely a rule of thumb with little knowledge of what was happening, and the brewers found that often the beer would not keep. It got sour or even putrefied. Pasteur with his indispensable microscope examined deposits from good beer and bad beer and noted the differences. Then he wanted to extend his observations to the larger English breweries, and in the same year he came to London and paid his historic visit to Whitbread's. In Vallery Radot's life of Pasteur it tells how he was well and courteously received, but instead of just seeing round the brewery he wished to see some of the barm of the beer. After examining it with the microscope he suggested that it was not too good. This made them sit up and take notice, for they already knew all was not well. Then he examined other batches, and could say from his simple microscopical examinations whether they were good, bad, or indifferent. He made such an impression that when he returned a week after Whitbread's had purchased a microscope and were beginning to control their fermentations. This microscope is becoming well known from the advertisement at present in the London tube stations, and is actually in this Pasteur exhibition in the Science Museum. This immediate acceptance of new ideas and controls was certainly to the credit of Whitbread's.

Just as with wine, Pasteur found that the souring of beer was due to a secondary fermentation with contaminating microbes. The pure brewers' yeast produced the essential fermentation which made good beer, but if the vessels were contaminated with the souring microbes these grew out later and spoiled the beer. Again, just as with wine, Pasteur found that heating the beer for a short time to 55° to 60° killed these contaminations. This was the origin of pasteurized beer.

It was in 1873 that Pasteur entered new fields by being elected (by one vote only) to the Academy of Medicine. Little did the academicians know when they admitted this chemist of 53 years of age that in another ten years he would have revolutionized many of their ideas.

In his studies on fermentation he had always in his mind that many human ailments were due to microscopic living objects (the word microbe was only introduced a few years later), and human infection had been forcibly brought home to him by the death of two daughters from typhoid fever. By this time Lister had, as a direct result of Pasteur's publications, introduced antiseptic surgery and was creating a revolution in that art. Other workers were contributing to our knowledge of what we may now call microbes, and the "germ theory" was being promulgated.

Davaigne had demonstrated what he called the "dium" of anthrax. Koch had grown it outside the body and demonstrated its character and mode of growth. It was only in 1877 that Pasteur, in collaboration with Joubert, commenced his work on anthrax. He cultivated a drop of anthrax blood through many flasks of culture medium so that anything dead in the original blood was diluted to extinction. After nine passages it was calculated that the original drop of blood had been diluted in a volume of fluid equal to the volume of the earth, and Pasteur did not stop at nine passages—he did many times nine. The last of these cultures was just as infective for rabbits and guinea-pigs as was the first one. He could then state positively that the bacteridium was the real infecting agent.

Other diseases were being connected up with definite microbes, and one of these, chicken cholera, had an enormous effect on subsequent developments in medical and veterinary practice. Pasteur isolated a microbe from fowls suffering from this disease, and he and his associates had shown that healthy fowls inoculated with cultures of this microbe contracted the disease and died. But on one occasion old cultures were used for these inoculations instead of fresh ones. The fowls did not die. The microbes in the cultures were alive, but for some reason they did not kill the chickens. They made new cultures and again inoculated the fowls—some of the survivors of the last experiment and some fresh ones, the previous survivors again survived, but the fresh ones got the usual chicken cholera and died.

Attenuation and Immunization

A less observant man might have passed this by, but not Louis Pasteur. He recognized that he had by the injection of the old culture immunized the fowls against the disease. Here was a new method of preventing infection. Cultures had first to be attenuated—that is, altered in some way that they do not kill the animals. Then when injected into the animals they give the animal protection, not death. Then Pasteur applied these methods to anthrax, a disease which was killing thousands of cattle and sheep. He had to find out how to attenuate his cultures so that they would not kill the animals. This he did by growing them at a higher temperature than normal. With vaccines made from microbes grown at these higher temperatures he found he could protect animals. But there was disbelief, as there always is with something startling or unusual. How could a chemist without veterinary or medical qualifications discover these things? He was challenged to one experiment to prove his statements and he readily accepted.

On a farm, Pouilly le Fort, 25 sheep and 6 cattle were inoculated with Pasteur's vaccine and the same number were left untouched. Two weeks after the second vaccine injection all were injected with a virulent culture that was known to cause the disease. Two days after, on June 2, 1881, there was an enormous concourse of people to see the results—senators, scientists, newspaper men, and others. The result was a phenomenal success. All the uninoculated animals were dead or dying while all those inoculated with Pasteur's vaccine were alive and well. I cannot do better than tell you the result in Pasteur's own words from a letter to his children written on the morning of June 2, 1881, before he left Paris to see it himself. "The telegram tells me that when we arrive at 2 o'clock this afternoon all the non-vaccinated subjects will be dead. 18 were already dead this morning and the others dying. As to the vaccinated ones they are all well." For Pasteur 1881 was a memorable year, so it was for me, for it was then I was born.

Chicken cholera and anthrax have been defeated—erysipelas was successfully tackled, and then it

to all infections was, 'Find the microbe and make it innocuous.' And for Pasteur a vaccine was synonymous with an attenuated living culture. At that time rabies or hydrophobia was much more prevalent than it is to-day, it was a dreaded and fatal disease. It was known that it followed the bite of a rabid dog, but beyond that there was complete ignorance. (We in Britain know little of hydrophobia. The quarantine precautions on dogs wiped it out, and we shall be free so long as there are no foolish persons who from mistaken sentimentality deliberately defeat this quarantine.) Pasteur set to work on rabies. He injected saliva from a child suffering from the disease into rabbits. They died, and some of their blood injected into other rabbits was likewise fatal. In the blood of these rabbits microbes were seen, but Pasteur was not deluded as were some others into the belief that he had discovered the microbe of rabies. He found he could get the same result with saliva of children suffering from other diseases or even with saliva from healthy people. Actually he had discovered the pneumococcus—the microbe usually responsible for pneumonia. The actual microbe of rabies eluded him. He could not see it with his microscope. That is not surprising, for we now know that it belongs to the class of viruses which are so small that the ordinary high-power microscope does not reveal them. But he was not beaten. The nervous system of dogs was obviously affected, so he went to the nervous system for his material. He injected material from the brain of a rabid dog into healthy ones and reproduced the disease after the usual incubation period. Then his assistant Roux injected similar material into the brain of a dog, and it became rabid in only fourteen days. The infective agent was concentrated in the central nervous system.

There is not time to go through the hundreds of experiments which Pasteur and his collaborators made, but they found that brain tissue from a rabid dog injected into a rabbit, and then from rabbit to rabbit, became more and more virulent until it reached a certain state when it remained constant. The spinal cords of the rabbits infected with this "fixed virus" were taken out and dried for various times. The longer they were dried the less virulent they became. The dogs were immunized by injection of an emulsion of a piece of the rabid spinal cord which had been dried for 13 days. Next day a piece which had been dried for 11 days was injected, and so on till the dog received the fresh virulent spinal cord. They did not get rabies, and subsequent attempts to give them rabies failed. They were injected with infective material from mad dogs. They were bitten by mad dogs, and they remained well. They had been successfully immunized.

One problem had been solved. Dogs could be immunized against rabies. But what to do? It was an impossible task to immunize the millions of dogs in France. But was it possible to immunize a human being in the same way during the incubation period—that is between the time he was bitten and the time the symptoms appeared? The incubation period was long—several weeks—so possibly there was time, but the question was not yet solved as to whether the injection of the dried rabbit's spinal cord which did not infect the dog would be equally harmless to man. At last Pasteur's hand was forced. From Alsace came Mme. Meister, bringing her boy Joseph, who had been severely bitten by a mad dog, and imploring Pasteur to save him from the dreaded disease. Pasteur immunized Joseph Meister as he had done his experimental dogs. The injections were harmless, and Joseph Meister did not get rabies. At last it had been shown that it was possible to protect man against infective disease even after the infection had occurred. The immunization of Joseph

Meister was not a flash in the pan. It was successfully repeated on many others, and Pasteur's laboratory in Paris became the mecca of people from all over Europe who had been bitten by rabid dogs.

This may be regarded as the culmination of Pasteur's great work. Famous he had been before, but now he was a national hero. Subscriptions were invited for the foundation of an institute in which he could carry on his great work, and they poured in from all over the world. The Pasteur Institute was erected in the Rue Dutot (now renamed the Rue de Docteur Roux after Pasteur's great collaborator). On Nov. 14, 1888, the new institute was opened by President Carnot. A quotation from Pasteur's speech on that occasion summarized his philosophy.

'To believe that one has made an important scientific discovery, to be in a fever to announce it and to restrain oneself, to force oneself to confute one's own experiment, and only to proclaim a discovery when all contradictory hypotheses have been disproved—yes, this is an arduous task. But when after very many attempts one has at last arrived at certainty, on experiences one of the greatest joys the human mind can feel and the thought that one will add to one's country's glory makes this joy greater still.'

Another quotation from the speech.

I would say that two contrary laws seem to be wrestling with each other nowadays: the one a law of blood and death, ever imagining new means of destruction and forcing nations to be constantly ready for the battlefield—the other a law of peace, work, and health, ever evolving new means of delivering man from the scourges which beset him. Which of these two laws will ultimately prevail God alone knows.

How true to-day!

In 1892, on the occasion of his 70th birthday, an enormous crowd gathered in the theatre of the Sorbonne. Our Royal Society was represented by Lord Lister, who said "Truly there does not exist in the whole world an individual to whom medical science owes more than to you." That was said 53 years ago. It is true to-day except that Pasteur is now with us only in spirit.

In the new institute Pasteur was able to see his assistants and collaborators carry on his great work. His health failed, and on Sept. 28, 1895, he died in peace. His body lies in the Pasteur Institute, the useful monument erected for him in his lifetime. His spirit animates workers in microbiology throughout the world.

In succeeding years Pasteur institutes were opened in many parts of the world to carry out Pasteur's methods and, quite apart from the immediate benefits which this gave in the preparation of vaccines and the protection of man and animals, they have advanced knowledge in many ways, as can be seen from a study of the exhibits in this beautifully arranged Pasteur exhibition.

The introduction to the catalogue of this exhibition is written by Pasteur's illustrious grandson, Prof. Pasteur Vallery Radot, who is not only a great physician but a great partisan. In this he points out how throughout his scientific life Pasteur was encouraged and assisted by British scientists—Tyndall, Lister, and others. He tells of his emotion at witnessing the embrace of Pasteur and Lister on the occasion of his jubilee with these words: "Was not this gesture a symbol of the bonds uniting our two nations?"

It is good to see the line of the great Pasteur so worthily carried on.

We have surveyed Pasteur's work. Let us see briefly how it has affected us in our lives to-day. People have speculated on which of Pasteur's many discoveries is the most important. It is very difficult to say. T

hemist may say it is his early work on crystals, the pure microbiologist, that it is his refutation of spontaneous generation, the industrialist, that it is his work on fermentation of wine and beer, the agriculturist, that it is his study of silkworm disease or the protection of animals against anthrax and other diseases.

A physician will be doubtful, for almost all of them have assisted him in his work. As a microbiologist and a physician I have the greatest admiration for his last great work on rabies. It was difficult, he had so little to go on, it was so methodically tackled, and it was so successful. His work on fermentations led directly to the cure of diseases of wine and beer. There are teetotalers who may think this is a misfortune, but especially in these disturbed times such beverages seem to provide solace. But his work did more than that. The abnormal fermentations of wine and beer were cured by a process which became known as "pasteurization." We hear of pasteurization now, but it is the pasteurization of milk we hear of. It is by this process of pasteurization that much milk-borne disease is prevented in our large cities, and this we owe to Pasteur's studies on alcoholic liquors.

The Antiseptic System

There was another and even more important direct outcome of Pasteur's fermentation work. Lister, who was then working in Glasgow, read Pasteur's communications, and in them he saw the possibility of keeping germs out of the operation room. In those days nearly all operation wounds were septic and many gangrenous. We have had handed down to us the phrase "laudable pus." Then it was a sign that the patient would probably recover. Now of course pus of any kind, "laudable" or otherwise, is a reflection on the surgeon's methods.

There had been many explanations offered as to the origin of this putrefaction of wounds, but it was Pasteur's work which made Lister see the true light. The infection came from outside, so Lister sterilized as far as he could with carbolic acid and other antiseptics his hands, his instruments, and his dressings. He even used a carbolic spray to sterilize the air. Thus he revolutionized surgery and became one of the greatest figures in British medical science. It was in 1874 that Pasteur received a letter from him saying: 'Allow me to take this opportunity of thanking you most heartily for having shown me, by your brilliant investigations, the truth of the germ theory of putrefaction, and for having thus acquainted me with one principle which can lead the antiseptic system to final success.' How much life and suffering has been saved by the methods which Lister and his successors initiated as the result of Pasteur's teaching!

In his studies on spontaneous generation and on bacteria he and his colleagues introduced methods which we all use to-day. Notable among these was the introduction of the autoclave for sterilizing material by steam under pressure. This is in constant use to-day in hospitals, in laboratories, and in industry.

Let us now come to the later and most directly medical work—the protection of animals and man against infection. The experiment on anthrax at Pouilly le Fort in 1881 proved without a shadow of doubt that animals could be protected with vaccines. That was settled once and for all, but we still argue about the details of vaccine therapy, and even now there are hundreds of laboratory workers engaged in exploring the uses of various vaccines and the best way of producing them.

All Pasteur's vaccines were living attenuated cultures, and it was only in the case of rabies that they were used on man. Living vaccines have drawbacks. Although they

can be attenuated so that they do not cause disease, requires care and skill, and, human nature being what it is, sometimes one is a little careless, and instead of a living vaccine protecting it might actually give rise to infection. As "superior" human beings we might occasionally allow that with cattle, pigs, or sheep, but no one would willingly look with complaisance on the possibility of one's child succumbing to the injection of a protective vaccine. But after Pasteur's time it was found that even if the microbe in a vaccine were killed protection against many diseases could be obtained. The great advocate of immunization with killed cultures was our countryman and my own master, Sir Almroth Wright. At the end of the last century he showed that typhoid fever could be prevented by inoculation with a killed typhoid vaccine. This was a safe procedure. The microbes in the vaccine were dead and could not infect. Now the use of typhoid vaccine is world-wide, and this great scourge of armies in the field has been reduced to comparatively negligible proportions. This is not all due to typhoid vaccine. Hygiene has an important place, but so has the vaccine. In many other bacterial diseases, also, killed bacterial vaccines have been used and are being used extensively. The use of these dead vaccines was further extended by Wright to the cure of infections which had already established themselves, and large numbers of these infections have been so treated.

Rabies was in a rather different category. That was a virus disease. Pasteur could not find the microbes, so his vaccine was an emulsion of infected tissue containing a large amount of the virus. This same procedure is used to-day in virus diseases such as dog distemper, yellow fever, and influenza. Instead of the dried rabbit's spinal cord which Pasteur used, the vaccine may be made from a mouse's lung or from material obtained from a chick embryo infected inside the eggshell. Some of these virus vaccines confer a solid immunity, and as we become more and more acquainted with the viruses we shall be able to produce more and more potent vaccines. By means of the electron microscope we can now see the viruses. By various methods we can measure them, and we are gradually learning more and more about them, but the general principle of the virus vaccine to-day is much the same as that of Pasteur's original rabies vaccine.

Antitoxins and Antibiotics

This process of immunization has proceeded beyond vaccines. In Pasteur's lifetime his colleagues, Roux and Yersin, discovered a powerful toxin made by the diphtheria bacillus. Animals immunized with this toxin produced antitoxin, and every child suffering from diphtheria is now treated with this antitoxin. Much more recently it was found that this poisonous toxin could be treated with formalin, when it ceased to be poisonous but still evoked in animals the production of antitoxin. The name of Ramon of the Pasteur Institute is associated with the immunization of children by injection of this anatoxine, as he called it, or toxoid as we call it here. Many people have improved the method, it is harmless, and it certainly gives a good protection against diphtheria. It is a very serious responsibility for a parent at the present day to refuse to have his or her child immunized against this serious infection. The same method is used for protecting against tetanus or lockjaw, and it was Ramon who showed its merits in the immunization of man. In the recent war all our armies were immunized and there was almost no tetanus. Thus another scourge of war was eliminated.

Then there is another method of dealing with bacterial infection in which I am myself particularly interested—mean penicillin. Penicillin belongs to the class

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stances called antibiotics. These are substances produced by living bodies which have the special property of killing or interfering with the growth of micro organisms. It was Pasteur and his colleague Joubert who in 1877 first described this phenomenon of bacterial antagonism. Pasteur did not pursue this subject, he had other more obviously important matters in hand. If he had gone on with it, who knows but that we might have had penicillin in the last century or perhaps even before I was born.

I have said nothing about the laboratory accommodation which was provided for Pasteur during his life. At the end perhaps it was adequate, but in the earlier years when he made his great studies on fermentation it was lamentable. Nowadays it would be considered disgraceful that any scientist, much less a scientist already famous, should be so badly housed. An American newspaperman described my own laboratory as like the backroom of an old-fashioned drug store, and yet my laboratory is adequate and reasonably modern. What would they have said about Pasteur's attic? It only shows that it is not the grandeur of the laboratory but the grandeur of the man that matters, and that the marble halls so common in certain parts of the world are quite secondary to the brain of the worker.

We have seen something of Pasteur's scientific accomplishments. We have seen something of what they have led to, and something of the debt which the world owes to his genius and perseverance. Not even a partial paralysis could daunt him, and much of his best work was done after that illness. Pasteur was the founder of a science, "microbiology." He was a chemist who gradually became a biologist. His successors were mainly biologists, but in recent years microbiological science is becoming more and more chemical. In the short space of 70 years it is completing a circle from chemistry through biology to chemistry again. But Pasteur was not only a scientist. He was an artist of considerable merit and he was a very human man, adoring his family and his home and his country. His father, his wife, his children, and his grandchildren were very dear to him, and it is a great pity that his grandson, Professor Pasteur Vallery Radot, could not be with us in London to-day.

There have been admirers who claimed for Pasteur more than he had done. That is unnecessary and does not help his memory. He did in his lifetime sufficient to make ten men great. That is enough. It is a pity to gild the lily. He was one of those rare individuals thrown up at intervals throughout the world's history to restore order out of chaos. He was a great Frenchman, but it is not only France which has to thank him. The whole world is deeply in his debt, and we here in London take this opportunity of rendering homage to the memory of our great benefactor, Louis Pasteur.

Negotiations have been completed for close co-operation between the Prince of Wales's General Hospital, London, N., the largest voluntary general hospital in North East London, with 260 beds, including its convalescent home at Nazeing, Essex, and the Bearsted Memorial Hospital, London, N., which is a voluntary maternally hospital. The first stage of this hospital's new building at Stoke Newington is now rapidly nearing completion and will be opened in July. The new building when completed will have a total of 100 maternity beds and will be the most modern maternity unit in Britain. It is proposed that in addition to general medical and surgical service, already supplied by the Prince of Wales's General Hospital, these two hospitals will eventually provide a complete obstetric and gynaecological service for the district. With this association the following hospitals will now participate in the North London Postgraduate Medical Institute, which provides senior postgraduate teaching under the aegis of the British Postgraduate Medical Federation of the University of London: Prince of Wales's General Hospital, North Middlesex County Hospital, Chase Farm Hospital, North-Eastern Fever Hospital, Bearsted Memorial Hospital.

EFFECTS OF CERTAIN DIETS ON LOSS OF NITROGEN IN URINE EXPERIMENTAL BURNS

BY

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After burns or other injuries the urinary excretion of nitrogen may be definitely increased. Cuthbertson (1936), Peters and his associates (Leach *et al.*, 1943, Croft *et al.*, 1945), and others have observed that the extent of burning affects the amount and type of nitrogenous material excreted. Investigations by Taylor and his associates (1943), Co Tui *et al.* (1944), and Elman, Cline, and Davey (1943) have shown that large amounts of nitrogen must be administered after extensive burns if nitrogen equilibrium is to be maintained. Croft and Peters reported that the increase in nitrogen loss after burns could be reduced substantially by giving methionine, a protein supplement, to rats maintained on a moderate low-protein diet. In their studies, rats of either sex, weighing from 100 to 150 g., were placed on a basal diet containing 10% casein and 10% dry yeast until a satisfactory nitrogen balance was obtained. Under either a standard burn covering approximately one-third of body surface was produced in water at 73°C., and the effects of various supplements added to the diet were studied. In control groups of animals an increased nitrogen excretion in the urine occurred. In groups receiving a supplement of 1% methionine or 18% casein little was noted, while groups receiving supplements of L-cysteine, or an amino-acid mixture including only L-methionine showed no significant difference in nitrogen excretion from the controls. This observation that the amino-acid can replace the extra protein supplement supports directly the hypothesis that the nitrogen loss is due to the raiding of tissue protein molecules for "methionine." The finding that neither alanine (as a source of amino groups) nor cysteine (as a source of sulphur) had the same effect suggested to Croft and Peters that the well-known function of methionine—that of methylation—was responsible for the effect observed.

Experiments have been performed in this laboratory with rats maintained on both normal and deficient diets. The results confirm only in part, and extend and modify the conclusions of Croft and Peters. Prof. Peters has examined some of the results of our experiments, and his comments have been most helpful.

Experimental

1. First Methionine Series.—Young female rats of the Wistar strain, weighing between 100 and 150 g., were placed on a diet of 15 g. of fox chow a day until a relatively constant urinary output of nitrogen was obtained. This usually occurred in from 10 to 14 days. Under anaesthesia they were then subjected for a period of 30 seconds to water at 73°C., in a manner similar to that described by Croft and Peters. Most of the animals had a burn amounting to about one-third of the surface area of the body, was immersed in heated water. On the day after the burn and daily thereafter a buffered solution of methionine equal to 1% of the diet was injected subcutaneously. Six of the nine rats used in the experiment were weighed daily and urinary nitrogen estimated by the method made at 48-hour intervals for ten days after the burn.

Finely ground food was placed in small dishes outside the individual cages in such a manner that the rat could not enter the dish or readily scatter the food. After the first day or two in the cages little or no scattering occurred. The circular bottoms of the cages were of stainless fine-mesh wire screening. Urine dropped through upon waxed funnels and ran into test-tubes containing concentrated sulphuric acid. Macro-Kjeldahl nitrogen estimations in duplicate were done on a 5-ml aliquot of the sample after it had been made up to a standard volume. A pledget of fibre glass was placed in the funnel as an additional safeguard against faecal or food contamination. The weight range of the rats was fairly narrow, and grouping was carried out by using a table of random numbers. All animals received the same amount of food, the control and test groups consumed approximately the same amount.

2 Second Methionine Series—The first experiment was repeated, using 20 female rats ranging from 140 to 160 g in weight. Since in the first experiment no significant rise in nitrogen excretion took place after burning, a temperature of 85° C was selected instead of 73° C. Twelve animals were given a supplement of methionine amounting to 1% in the 15 g of ground stock diet fed daily. In other respects the procedure was similar to the previous study.

3 Third Methionine Series—Twenty-one adult female rats, 170 to 205 g, were divided into three groups of seven. They were fed a low-protein (12%) diet (Table I, Diet 1) *ad libitum* for seven days, and then given the amount of their average daily consumption for a further seven days before burning. One group received the basal diet throughout. Another group received the basal diet plus a supplement of methionine (1% of diet) throughout. The third group received the basal diet until the day of the burn, and were then given a diet supplemented with methionine. Burning was carried out as before, in water heated to 55° C. In this experiment, however, nitrogen estimations were performed on the collected urine from each group rather than from individual rats. Therefore only a group figure is available.

4 Fourth Methionine Series—Twenty-three young female rats weighing from 70 to 90 g were fed 8 g a day of a diet deficient in methionine (Table I, Diet 2). The

TABLE I—Diets in Burn Experiments

Diet 1	%	Diet 3	%
Casein	10	Casein	8
Fibrin	2	Fibrin	7
Beef dripping	6	Zein	2
Corn oil	2	Cellulose	2
Salts	2	Salts	5
Vitamin supplement	1	Vitamin supplement	1
Sucrose	77	Beef dripping	10
Choline chloride	0.1	Corn oil	2
Cod liver oil conc.	0.015	Sucrose	62.3
		Choline chloride	0.34
Diet 2	%	Methionine	0.119
Casein	10	Histidine	0.132
Fibrin	2	Cod liver oil conc.	0.015
Arachin	2		
Cellulose	2	Vitamin Supplement	(per 10 g diet)
Salts	5	Thiamine	50
Vitamin supplement	1	Riboflavin	25
Beef dripping	10	Pyridoxine	20
Corn oil	2	Calc. pantothenate	100
Sucrose	65.3	Niacin	100
Cod liver oil conc.	0.15	Vitamin A	at least 300 i.u.
Choline chloride	0.3	Vitamin D	at least 75 i.u.
Phenylalanine	0.3		

procedure followed in experiments 2 and 3 was continued, with the exception that the temperature was decreased to 75° C. In a preliminary experiment with this diet, burning at the higher temperature had resulted in a high mortality. After the burn collections were made at three instead of five 48-hour intervals. Eleven rats received a methionine supplement and twelve acted as controls.

5 Fifth Methionine Series—Twelve adult female rats, 180 to 200 g, were fed 12 g a day of the same diet as in the fourth series. The procedure was similar to that described in the previous series.

6 Cystine Series—Young rats, 70 to 90 g, were fed 8 g a day of the same basal diet as in the fourth and fifth methionine series. The experimental animals received a supplement of cystine equivalent in sulphur content to the methionine supplement formerly given (810 mg per 100 g cystine). Choline chloride in an amount of 0.34 g % was present in the diet. The procedure followed was similar to that described above. Ten rats received the cystine supplement, while eight acted as controls and received the basal diet only.

7 Lysine Series—A final experiment was performed in which young female rats weighing from 70 to 96 g received a diet (Table I, Diet 3) designed to be deficient in lysine. This diet, however, contained 17% protein, in contrast to the previous basal diet, which contained only 14% protein. The experimental procedure and dietary intake (8 g a day) remained the same.

Results

In the first experiment, in which burning was carried out at 73° C, there was no appreciable increase in urinary excretion after the burn, either in the control or in the experimental group.

In experiment 2, in which a temperature of 85° C was used to produce the burn, a significant increase in the average daily urinary nitrogen excretion occurred after burning. There was no significant difference between the

TABLE II—Amino acid Composition of Diets (mg per 100 g diet)

Amino-acid	Diet No 1	Diet No 2	Diet No 3	Estimated Requirement (Rose 1937)
Methionine	348	371	457	600
Threonine	548	620	637	600
Valine	708	768	739	700
Leucine	1216	1256	2826	900
Isoleucine	710	880	871	500
Arginine	550	752	527	200
Histidine	290	342	297	400
Lysine	930	1060	733	1000
Phenylalanine	660	610	1011	700
Tryptophan	220	203	162	200
Cystine	88	101.3	137	

After burning rats in the experimental group were fed Diet No 1 supplemented with 1% methionine.

In Diet No 2 *dl*-phenylalanine—300 mg per 100 g diet—was added raising the intake of this amino acid to 910 mg per 100 g diet. After burning 1% methionine was added to the diet of the experimental group. In the experiment involving cystine an amount equivalent in sulphur content to 1% methionine—namely 810 mg per 100 g—was added in place of the methionine.

In Diet No 3 levels of methionine and histidine were raised by adding 119 mg methionine and 107 mg histidine per 100 g of diet. After burning lysine 367 mg per 100 g diet in the form of 458 mg of lysine hydrochloride, was added to the diet of the experimental group.

TABLE III—Mean Increase in Daily Nitrogen Excretion (in mg of N)

Series	Control	Treated	P Value*
Methionine 2	63.1 ± 9.1 (8)	56.8 ± 11.0 (12)	0.7
" 4	45.7 ± 3.7 (12)	31.6 ± 4.7 (11)	0.02
" 5	37.4 ± 12.5 (6)	13.0 ± 8.7 (6)	0.15
Cystine	25.0 ± 2.1 (8)	28.2 ± 5.6 (10)	0.63
Lysine	50.2 ± 3.4 (6)	52.8 ± 4.6 (5)	0.69

Bracketed figures indicate number of animals.

* Fisher R. A. *Statistical Methods for Research Workers* Edition 8 Oliver and Boyd 1941.

methionine-treated group and the control group— $P=0.7$ approx (Table III). After burning, an immediate increase in body weight occurred in both experiments.

In series 3, as figures are available only on the excretion of nitrogen by groups of animals, it is not possible to analyse the results satisfactorily. Nevertheless, the figures give no indication that on this diet the supplementary methionine decreased the loss of nitrogen. Table II shows that the diet was deficient in several amino-acids besides methionine.

In series 4, with a specific deficiency of methionine in the basal diet given to young rats, there was a significant

difference ($P=0.02$) in the increase of nitrogen excretion after burning between the methionine-treated group and the control group. The group which received a supplement of methionine (1%) in the diet showed less increase in nitrogen excretion than the control group (Table III).

In adult rats receiving the same methionine deficient diet (series 5) no significant difference in nitrogen excretion was noted— $P=0.15$, approx (Table III).

A comparison of the increase of nitrogen excretion in the control and experimental groups of the cystine series (No. 6) shows no significant difference ($P=0.63$). Although the sulphur deficiency of the diet was made up by a cystine supplement equivalent to methionine 1%, and an adequate amount of choline was present in the diet, the effect of methionine noted in series 4 did not occur (Table III).

In the final experiment, when the lysine deficiency in the diet was made up, the increase in nitrogen excretion after burning remained of the same order as that of the control group. When compared statistically a P value of 0.69 was obtained (Table III).

Discussion

Cuthbertson (1936) found that administration of diets rich in certain proteins and of a high calorie value decreased the loss of nitrogen after injury. Croft and Peters (1945) reported that administration of the single amino-acid methionine was capable of replacing good-quality protein in reducing the nitrogen loss. The present experiments confirm this action of methionine, but suggest strongly that it occurs only when a deficiency of methionine exists in the diet. In the preliminary group of experiments, when rats were fed the laboratory stock diet (20% protein) and burned at 73°C , little increase in nitrogen excretion took place, but at 85°C a significant increase did occur. On a low-protein diet burning at 75°C produced a definite increase in nitrogen loss both in control and in treated groups, but on this diet, using 85°C , a high mortality was encountered. When methionine (1%) was added to the chow diet in the first experiment no significance could be attached to the difference in nitrogen excretion between experimental and control groups.

When a methionine-deficient diet was fed to young rats (in which the methionine requirement is probably higher than in adult animals) and a methionine supplement (1%) was added after burning, the groups fed the supplement excreted less nitrogen than did the untreated group. With fully grown animals no such difference existed, though the P value (0.15) might be considered suggestive in view of other experiments.

From these results and a study of the diet used by Croft and Peters, it is suggested that their basal diet (14% protein) was probably deficient in several amino acids, and particularly in methionine.

In the case of the cystine-supplemented diet no significant difference in nitrogen excretion from the control group could be demonstrated. An amount of sulphur equivalent to the methionine supplement was present and adequate choline (as a source of methyl groups) had been included. The suggestion that the activity of methionine is associated with its methylating function is not supported by this result. The addition of lysine to a lysine-deficient diet likewise failed to influence the nitrogen excretion.

It is difficult to draw general conclusions from nutritional experiments of this type. The nutritional demands under abnormal conditions such as existed in these experiments are not well known. It is not clear whether it is the general level of protein intake, or the ingestion of specific com-

binations of essential amino-acids or of certain individual acids, which is most directly concerned in preventing tissue breakdown or in hastening repair after trauma. The demands for growth and other body functions and the presence of other essential food factors no doubt affect these requirements. It does seem safe to assume that if a relative deficiency of methionine exists, whether due to dietary deficiency or to metabolic requirements, its replacement may reduce the amount of nitrogen lost after burning under certain specific conditions. The experimental evidence thus far produced suggests that this action is a specific effect of methionine, and cannot be produced by the administration of cystine plus choline.

In both dietary and toxic types of liver injury supplements of methionine or choline confer a degree of protection to animals fed basal diets low in protein (Miller and Whipple, 1942; Daft *et al.*, 1942; Messinger and Hawkins, 1940). Drill and Loomis (1946) have reported that no protection against liver damage due to carbon tetrachloride is given when methionine is added to a normal diet. However, in experiments involving the use of the lipotropic agents in experimental cirrhosis, one of us (E. A. S.) has produced evidence that a methionine deficiency may exist in relatively high (35%) mixed protein diets. In this case a supplement of choline or methionine produced a dramatically favourable effect.

The experimental basis for the use of methionine in the treatment of burns would seem to limit its use to cases in which an absolute or relative deficiency of this amino acid exists.

Summary

A methionine supplement (1%) to a stock diet did not reduce the urinary loss of nitrogen after burning.

When a methionine deficiency existed in the basal diet of young rats, however, a supplement of methionine lowered the nitrogen excretion.

When similar diets were given to adult rats a suggestive but not statistically significant decrease in nitrogen excretion followed the administration of methionine.

Cystine (in an amount equivalent in sulphur content to the methionine supplement) plus an adequate choline intake was ineffective in reducing the nitrogen loss in young rats.

A lysine supplement added to a lysine deficient diet was also ineffective.

The experimental basis for the use of methionine in the treatment of burns would therefore appear at present to be limited to the application of the finding that methionine is effective in young animals receiving a diet very low in this amino-acid. With a more drastic dietary deficiency of methionine, or a more extensive injury, the beneficial effect of giving this amino acid to adult animals might be revealed.

We appreciate the help of Prof. C. C. Lucas of this department in planning the diets and experimental procedures.

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RATIONS AND NUTRITIONAL NEEDS

BY

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AND

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Before the introduction of bread rationing the amounts of nutrients present in rationed foods* gave an inadequate picture of the sufficiency of the diet available to individuals or groups because of the large contribution made by bread to the nutritive value. The main contribution of bread is in respect of calories, protein, and the B vitamins, and its inclusion among the rationed foods was a step of fundamental importance. The rationing of bread reduced considerably the flexibility of the national diet, for it was formerly the main elastic reserve whereby those with large appetites could readily satisfy their needs. With the introduction of bread rationing it became inevitable to provide an increased supply for those with large energy requirements. Energy needs depend not only on obvious factors, such as body size and intensity of work, which are physiologically predictable, but also on unpredictables inherent in the personality or constitution of the individual. Because of the multiplicity of factors, particularly the unpredictables, that determine the needs for energy, it is beyond the wit of man to devise a workable scale of energy allowances strictly applicable to each individual in a mixed community. The rationing scheme is necessarily based on the average requirements of sections of the population. These averages embrace a wide range of variations which cannot be fully and accurately provided for in a national scheme. It is therefore inevitable that the rations should vary in accordance with individual requirements from relative excess on the one hand to relative deficiency on the other.

The purpose of this paper is to compare the amounts of nutrients particularly calories, in the rations with the theoretical needs of different sections of the population, to ascertain the gaps between these two, and to examine the means whereby the gaps can be bridged.

One of the fundamental principles in the scheme of rationing is that it should provide the bulk of the essential nutrients required by mothers, children, and invalids (priority classes). Many of the foods of special value for these classes, such as milk and eggs, are also good sources of energy. Consequently, their rations yield a larger proportion of their energy needs than is the case with other classes so that the gap between the energy content of the rations and theoretical needs is smaller. Notwithstanding the rationing of bread there still exists considerable flexibility in the rationing system, and this derives from one or more of the following: (a) unrationed foods, (b) canteen school or similar extra meals, (c) the use of 'points' to the best advantage, including exchange of points into bread units (B.U.s) and (d) diversion of rations from family members with small needs to others with greater needs (the family pool).

(a) *Unrationed Foods*—The chief of these is potatoes, but they are relatively bulky: 16 oz. (454 g.) which is probably as much as the ordinary consumer ever eats yields only 260 calories. Fruit and vegetables are relatively poor sources of energy: 8 oz. (227 g.) which is a fairly generous daily amount, yields on the average only about 50 calories. There remain a few other sources and a few other foods of less importance the procurement of which depends upon a complexity of

factors, together they would probably yield not more than about 150 calories a day in normal circumstances.

(b) *Canteen and Other Meals*—Those who have access to public eating places could get almost any proportion of their requirements from this source, but permanent residents in hotels must surrender their ration books. School meals are planned to provide a maximum of 1,000 calories daily. Canteen meals and snacks could provide up to 1,000 calories or more daily.

(c) *Exchange of Points to B.U.s*—The food value obtainable from a given number of points is variable, but, generally speaking, better nutritional value can be obtained from spending points on simple things, such as dried pulses and sardines, than on luxury foods, such as expensive canned fruits and biscuits. Exchange of all points to B.U.s would produce an average gain of some 350 calories, or about 50 per exchanged point a day.

(d) *The Family Pool*—As pointed out below, the rations of young children provide in themselves more than enough calories for their needs. In addition, the energy needs of women and of old men are about 80%, or less, of those of the ordinary male, but the rations for all these are identical. It therefore follows that a family comprising one or more such people would have some spare rations to pass on to those with bigger appetites. For instance, about 100 calories a day would be provided by one ration of bacon and cheese, plus 1 oz. (28 g.) of fat weekly. These spare rations would, in addition, provide a "lubricant" for the greater consumption of unrationed foods such as potatoes.

Rations and Requirements Compared

Table I sets out the rations and allowances for different sections of the population, and Table II shows the amounts

TABLE I—Food Rations, Priority Allowances and Certain Expected Distributions per week (November 1946)

	Up to 1 year	1 year	2, 3 years	4 years	5-10 years	11-13 years	14-17 years	Normal Adult	Expectant Mother	Nursing Mother	Manual Worker (Male)	Manual Worker (Female)
Cheese (oz.)	2	2	2	2	2	2	2	2	2	2	2	2
Bacon (oz.)	3	3	3	3	3	3	3	3	3	3	3	3
Sugar (oz.)	7	7	7	7	7	7	7	7	7	7	7	7
Fats (oz.)	35	35	35	63	63	91	91	63	77	63	105	77
Bread (oz.)	8d	8d	8d	8d	1/4	1/4	1/4	1/4	2/4	1/4	1/4	1/4
Meat (cost)	4	4	4	4	4	4	4	4	4	4	4	4
Jam (oz.)	7	7	7	7	5 1/2	5 1/2	3 1/2	2	9	7	2	2
Milk (pints)	3	3	3	3	4	4	4	4	4	4	4	4
Eggs (no.)	4	4	4	4	4	4	4	4	4	4	4	4
Dried egg (oz.)	4	4	4	4	4	4	4	4	4	4	4	4
Sweets (oz.)	8	8	8	8	8	8	8	8	8	8	8	8
Points (no.)	x	x	x	x	x	x	x	x	x	x	x	x
M/Food orange juice	x	x	x	x	x	x	x	x	x	x	x	x
M/Food cod liver oil	x	x	x	x	x	x	x	x	x	x	x	x

The distribution of milk and eggs to non-priority consumers has been taken as 2 pints and 4 per week respectively. Infants under 6 months do not receive the priority allowance of eggs.

For conversion into metric measures: 1 pint = 568 ml., 1 oz. = 28.35 g.

of nutrients derivable from the rations and compares these amounts (less deductions for losses of vitamins B₁ and C due to cooking) with the requirements suggested by the Technical Commission of the League of Nations, which we regard as the appropriate scale for the population of Great Britain.

The most noteworthy features of the comparison are: (a) *Children*. The rationed foods provide enough or more of calories, protein, and iron up to 10 years, (b) of vitamins A and C up to 5 years, and (c) of calcium up to 2 years. *Expectant mothers*. The rationed foods provide enough or more of protein, calcium, iron, and vitamins A and C. *Nursing mothers*. The yield of all nutrients from the rationed foods is less than requirements. *Adolescents (14 to 17 years)*. The amounts of all nutrients provided by the rationed foods are less than requirements. *Normal consumers and manual workers*. The amounts of protein, calcium, and iron in the rationed foods are rough-

* By rationed foods is meant those strictly rationed (e.g., meat, bread, fat, cheese, etc.) all 'points' and milk and eggs the distribution of which is controlled.

about the same as, and of all other nutrients less than, requirements

We now consider for each section of the population how the gaps between rations and needs can be made up. We confine our attention to energy—for brevity, and because experience of present diets has made it clear that, given all rations and enough unrationed foods to provide the energy requirements, the resultant diet is usually about sufficient in all the nutrients cited in Table II and in riboflavin and niacin, which are not included in the table.

Young Child—It is clear from Table II that if children below the age of 5 were to consume all their rations they would get more than enough energy without eating any unrationed foods at all. It is the general custom, however, and from the nutritional point of view one to be commended; that children from about the age of 2 participate in the family meals. In this way they would probably obtain about 100 calories or more daily, depending on age, from the unrationed foods. It follows that children below 5 years should have 500 or more calories a day to spare from their rationed foods to go into the family pool.

School-child and Adolescent—Up to the age of 14 years* the feeding of the school-child should present no problems. Indeed, between 5 and 10 years the rations alone yield more calories than are needed, and if a school meal is eaten the family pool could be enriched by the equivalent in calories

about reach his target. But if he requires more than 3,000 calories a day, as an active youth of about 16 may well do, it would be necessary to get a substantial helping from the family pool and/or change more points into BUs, to the detriment of the diet in a qualitative sense. If the adolescent's occupation entitles him to the designation "manual worker" then the extra 12 oz (340 g) of cheese and six BUs (630 calories daily) which he can get should make it easily possible for him to satisfy his needs.

Normal Consumer—We need only consider the normal male. The energy requirement of the average man in a community as given by the League of Nations is 3,000 calories, a figure which includes all grades of work from sedentary to very heavy. For the purposes of the bread rationing scheme most classes of manual workers from moderate to very heavy are included in the category of manual workers. The normal male consumer therefore embraces the large group of men whose activities vary from sedentary to light work, probably a very small number of the moderate work category, and a large number of oldish men whose requirement is mostly less than that of the sedentary class. Weighing up all these varying requirements, it seems reasonable to place the average needs of the normal male consumer at about 2,600 calories, but it should be clearly understood that this average figure covers a range which may well be of the order of 2,200–3,000. At

TABLE II—Nutrients Provided per Day by the Rations Priority Allowances and Expected Distributions of Milk and Fresh Eggs shown in Table I (November 1946)

Age in years or Ration Group	Up to 1		1		2 and 3		4		5-10		11-13		14-17		Normal Male		Expectant Mother		Nursing Mother		Manual Worker (Male)	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
Calories	1 776	800	1 776	1 100	1 745	1 300	2 029	1 500	1 995	1 900	2 279	2 630	2 190									
Protein (g)	60		60	42	57	46	67	50	64	60	74	85	66									
Calcium (g)	11		11	11	11	12	11	13	9	14	10	15	0									
Iron (mg)	9		9	5	8	7	10	8	11	11	13	16	1									
Vitamin A (i u)	6 019		6 019	3 000	5 822	3 000	5 822	3 000	1 578	3 000	1 578	3 000	1 480									
B (mg)	0.77		0.77	0.50	0.74	0.59	0.92	0.68	0.87	0.86	1.04	1.18	0.90									
Ascorbic acid (mg)	33		33	30	33	30	33	30	6	30	6	30										

A = Nutrients provided by foods in Table I

B = Requirements on the League of Nations scale

and all nutrients. The gap between rations and needs is only about 300 calories between 11 and 13 years. This gap could be more than made good by the school meal, which is scheduled to supply up to 1,000 calories (Circular 1571, 1941, Board of Education). For adolescents between 14 and 17 years the gap is of the order of 800 calories or more. Adolescents who remain at school up to 18 and partake of the school meal should have no difficulty in satisfying their requirements. Those who leave school at 14 and go to work in a place provided with a canteen likewise should have little difficulty. For those with no such facilities it may not be easy to make good the gap of 800 or more calories. Certain categories of adolescents living in schools and colleges which are not eligible for school meal allowances can, on special application, get an extra allowance of three BUs weekly. These would provide about 215 calories daily, leaving still about 600 or more to be made up. How this could be done is shown in Table III. The special allowance of three extra BUs applies only when the student is in residence, when on vacation he is in exactly the same position as the adolescent who lives at home all the time and has no canteen or similar facility. It can be seen from Table III that such people may find it difficult to satisfy their needs unless there are younger children in the family with spare rations. The table shows that if he changes six of his eight points into BUs and eats 1½ lb (680 g) of potatoes a day he can just

the lower end of the range there would be no difficulty in securing enough, and there would almost certainly be a surplus to put into the family pool. At the top end of the range, however, there might be some difficulty in satisfying needs. If we place the needs of the ordinary male consumer at 2,600 calories he has to get 760, say 800, calories from unrationed foods or in other ways (see Table III). A meal taken in a restaurant should yield 600 calories or more, thus leaving about 200 calories to be made up from potatoes, etc. The figures in Table III make it clear that he should have little difficulty in doing this. If, however, he cannot get a restaurant meal he would have to change six of his eight weekly points into BUs and eat as much as 1½ lb (680 g) of potatoes daily to reach his requirements. This exchange would, however, impoverish his diet in qualitative sense, and if he were to forgo the exchange he could probably get no more than about 500 calories from unrationed foods, thus leaving a gap of, say, 300 calories to be filled. Failing a family pool to dip into he would have to change all his points into BUs, eat more potatoes and other things such as sausages and fish if he can get them, or else go hungry.

Expectant Mother—The rations of the expectant mother leave a gap of about 550 calories to be made good by potatoes, vegetables, fish, sausages, and offal, changing six points into BUs, and, if need be, by dipping into the family pool. The way in which her diet could be brought up to the desired level of 3,000 calories is shown in Table III.

* The school leaving age has now been raised to 15 years.

Table III It is assumed that she can eat $1\frac{1}{2}$ lb (680 g) of potatoes daily. If she prefers bread she could obtain only enough to replace 1 lb (454 g) of potatoes by changing five more points into BUs, but the variety of her diet would suffer. This situation, however, would only arise with the first child. Children in the family up to about 14 would provide a substantial reserve of rations.

Nursing Mother—The rations of the nursing mother leave a gap of about 900 calories. Her infant's rations amount to about 1,800 calories, whereas its requirements are about 800. The nursing mother could therefore meet all her needs from the rations of herself and her infant without consuming any unrationed foods.

Manual Worker—The male manual worker is left with a deficit of about 1,200 calories to make up. Large numbers of manual workers have access to canteens. Actual surveys of meals supplied at canteens operated by a well-known catering firm show that in the autumn of 1946 meals and snacks served daily provided from 530 to 1,570 calories per head. The canteens in which the surveys were carried out were for workers ranging in activity from sedentary to heavy work. It would therefore seem from this finding that the heavy worker is able to get up to 1,500 calories daily at his canteen, thus filling the gap for the man requiring 3,500 calories. If the worker's diet were still

It is very probable therefore, that the numbers who require more than 3,500 calories a day are few and between.

Miner—The energy requirements of the miner are probably about 3,500 calories on the average. He is entitled to special rations of 12 oz (340 g) of cheese, 10d worth of meat, and six BUs. These alone provide about 700 calories, leaving 500 calories to be made up from unrationed foods, which as Table III shows should present little difficulty. He would require to eat $1\frac{1}{2}$ lb (680 g) of potatoes a day, but he need not change any points into BUs. Canteen facilities would, as in other instances, make it easy for him to secure his requirements. Those miners who require, say, 4,000 calories daily, and there may well be some, would obviously have less difficulty than the ordinary manual worker in attaining this or even a higher level of intake.

Hospital Patient—There is no need to consider the patient suffering from complaints, such as peptic ulcer and diabetes, for which there are priority allowances. It will only be necessary to pay attention to those patients who are all relatively well, as in most hospitals these constitute the majority and require a fairly substantial diet. Broadly speaking, the rations of such a patient are the same as the domestic rations plus certain extras which the hospital

TABLE III—Bridging the Gaps between Rations and Requirements

	Adolescent		Normal Male		Expectant Mother		Manual Worker (Male)		Miner		Hospital Patient	
	Amount per week	Calories per day	Amount per week	Calories per day	Amount per week	Calories per day	Amount per week	Calories per day	Amount per week	Calories per day	Amount per week	Calories per day
Rations		2 200		1 840		2 440		2 300		2 300		2 200
Requirements		3 000+		2 600		3 000		3 500+		3 500		2 500
Gap		800+		760		560		1 200		1 200		300
1 Canteen school or similar meals and snacks		1 000		600		600		1 500		1 500		—
2 Special BUs (No.)	3	215	—	—	—	—	6	430	6	430	—	—
3 Change points to BUs (No.)	6	300	6	300	1	50	6	300	—	—	—	—
4 Potatoes (oz)	168	390	168	390	168	390	224	520	168	390	84	190
5 Vegetables and fruit (oz.)	56	50	56	50	56	50	56	50	56	50	56	50
6 Fish (oz)	10½	20	10½	20	10½	20	10½	20	10½	20	21	40
7 Sausage or offal (oz)	7	40	7	40	7	40	7	40	7	40	7	40
8 Extra cheese (oz)	—	—	—	—	—	—	12	200	12	200	—	—
9 meat (oz)	—	—	—	—	—	—	10½	100	10½	100	—	—
Sum of Nos	2-7	1,015	3-7	800	3-7	550	2 & 4-8	1 260	2 & 4-9	1,230	4-8	320
	3-7	800	4-7	500	4-7	500	2-8	1,560	—	—	—	—

The rations of the expectant mother include her special allowances of meat, milk, eggs and bread; the rations of the miner and manual worker (male) do not include the special allowances of cheese and meat which are listed separately (see numbers 8 and 9) in Table III.

insufficient for his needs he would have to have recourse to the means indicated in Table III—change of points to BUs, etc. The British Restaurant or other eating-places could be used if a canteen were not available at the place of work, but those who are out of reach of any sort of extra meals are not so well placed to fill the gap between rations and requirements. Certain classes of heavy workers, such as farm workers, quarrymen, and lumbermen, are allowed an extra 12 oz (340 g) of cheese and six BUs weekly, providing about 630 calories a day, thus leaving about 570 to be obtained from unrationed foods. Table III shows that they should be able easily to get about 1,260 calories, but they would need to eat 2 lb (908 g) of potatoes daily. If a workman required substantially more than 3,500 calories he would, unless he were able to extract a substantial amount from the family pool, have to change more of his points into BUs in order to reach, say, the 4,000-calorie goal. If he changed his remaining two points into BUs he would get an additional 100 calories, which would give him altogether 3 960 (2,300 + 1,560 + 100) (Table III). Knowledge of the energetic expenditure of the modern industrial worker is scanty. The only figures we possess date from before or shortly after the 1914-18 war. Since that time workmen's tools and conditions in industry generally have so altered that work is becoming less and less laborious, thus demanding less energy expenditure.

patient gets. These extras amount approximately to the following: milk, 3 pints (1 7 l), dried milk, 7 oz (200 g), fats, 2 oz (57 g), dried eggs, 0.3 oz (8.5 g) weekly. These extras yield about 330 calories a day, and together with the amounts derivable from the ordinary rations make up a total of nearly 2,200 calories. The requirements for the average patient of the above type is probably about 2,500 calories, so that he has a gap of 300 calories, which can easily be filled in by unrationed foods (Table III). Even if there were no spare rations from patients who are on light diets there should be little difficulty in making up a diet to this level. In addition, certain other concessions have been made to hospitals—for instance, jellies, soft drinks, starch products, hospitals are also generally well placed to obtain supplies of fish and sometimes offal and poultry, all of which help to ease the burden of catering. The only account that has been taken of these concessions is that the allowance of fish in Table III has been placed at 3 oz (85 g) instead of $1\frac{1}{2}$ oz (42.5 g) a day. Sick people are notoriously difficult to cater for, and the longer they remain in hospital the more exacting they become. In hospitals where the bulk of the patients are relatively well, and few are so ill as to be restricted to light diets, the provision of varied, appetizing, and adequate meals is a task demanding much ingenuity and artistry as well as knowledge of dietetics. In tuberculosis and orthopaedic

hospitals, for instance, the great majority of the patients are on full diet, and there are few, if any, spare rations

Summary

The rations for each important section of the population have been evaluated and compared with the League of Nations scale of requirements. The comparison is summarized above.

In those instances where the yield of nutrients from the rationed foods is less than requirements suggestions are made for meeting the deficit by one or more of the following, having regard to prevailing dietary habits: (a) consumption of unrationed foods, (b) canteen and similar meals, (c) exchange of points into BUs, and (d) the family pool.

In making these suggestions attention has been confined to energy requirements, because experience of wartime diets has shown that, given the full rations, the additional unrationed foods necessary to satisfy energy requirements also provide, or almost provide, a sufficiency of all important nutrients.

It has been found that the filling of the gap should present no great difficulty for the great mass of the population who can, if necessary, supplement their rations from (b) and (c) sources, but it may not be easy for adolescent and other males whose requirements are above the average for their class and who are not entitled to special rations and cannot supplement their diet from sources (b), (c), or (d).

A SIMPLE FORMULA FOR THE CALCULATION OF ATMOSPHERIC DRYNESS

BY

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The following case, though an extreme one which occurred during the stresses of wartime, illustrates the fact that in British practice too little attention is usually devoted to the atmospheric conditions of operating theatres. They often get too hot, not only in summer-time but also in winter, when central heating is operated with more enthusiasm than discretion, and their humidity tends to rise with the addition of steam from sterilizers. The control of these conditions should be especially cared for in a place where the working staff are expected to maintain a high standard of mental alertness, and where the heat-regulating functions of the patient, like all the functions of his nervous system, are set in partial abeyance by anaesthesia.

Case Report

During the war an underground hospital was built with a view to its use in emergency. An anaesthetist was asked to comment on the suitability of the operating theatre it contained. The ventilation was far from efficient and when the sterilizers were in operation and several people were working in the theatre the atmosphere became extremely hot and moist. The anaesthetist in his report pointed out that patients when anaesthetized tended to become poikilothermic, and that in such an atmosphere complications—for example ether convulsions due to the breakdown of thermal equilibrium—would be likely. This report was not taken very seriously and later the anaesthetist was required in circumstances which admitted of no denial to set to work in this operating theatre. Some 30 cases were operated on successfully. One day a man was brought in for operation on bilateral inguinal herniae.

He was a ship steward aged 31. His temperature was normal, pulse 60 respirations 18, and blood pressure 120/80. He had no history of previous illness. He was a perfectly healthy man except for the herniae which he wished to have operated on. After preliminary medication with omnopon and scopolamine, anaesthesia was induced by 0.75 g of pentothal, and continued by 6 litres per minute of gas and oxygen (the latter in 25% concentration) with ether. After half an hour he was seen to be sweating profusely, as indeed everyone in the theatre was, and the volume of his respiration started to increase. The thermometer hanging on the wall registered 81° F (27.2° C)

and the atmosphere was very moist. The total volume of gases delivered to the mask was increased to 12 litres per minute, still in 25% concentration, and after 45 minutes ether was discontinued. After 55 minutes the patient was red and sweating, the hyperpnoea was no better, and his pulse had risen to 126. The hernia on the right side was finished in 60 minutes, and at the request of the anaesthetist the operation on the other side was abandoned. On the patient's return to the ward his temperature was found to be 106° F (41.1° C) and his pulse 160. Cooling treatment was given, and oxygen and CO₂ administered. Within an hour he was dead. At necropsy no appearances other than those of heat-stroke were found. The underground theatre was not thereafter used.

Noteworthy features of this case are: (1) it was a case of pure heat-stroke, unaccompanied by any sign of convulsions, (2) there was no question of sweating being impaired by atropine, (3) there was no question of anoxic anoxia, (4) if the hyperpnoea led to any serious degree of CO deficiency, this was combated by the administration of CO in mixture, (5) there was no question of sepsis or pre-existing fever.

Calculation of Drying Capacity of Air

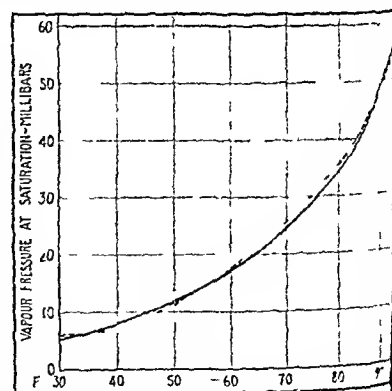
Moisture in the atmosphere is usually estimated by means of the "wet- and dry-bulb thermometers," which when exposed to an atmosphere not entirely saturated with water vapour will show readings differing by a certain number of degrees. The lower temperature of the wet bulb is caused by abstraction of heat in the process of evaporation of some of the water covering it. For scientifically accurate results the thermometers must be subjected to considerable air movement, and in America the "sling-psychrometer" is used for this purpose. The instrument is whirled through the air at a considerable velocity on the end of a sling. In England the usual open-air method is to expose the thermometers in a Stevenson screen, by which they meet with a slighter movement of the air, and in indoor conditions the thermometers are simply hung in a room in comparative calm.

The partial pressure of the water vapour contained in the air may be expressed in millibars by the empirical formula

$$P = S^w - f \Delta$$

where P is the actual pressure in millibars of water vapour in the observed conditions, S^w the pressure at saturation point at the temperature of the wet bulb, Δ the difference in Fahrenheit readings between the two thermometers, otherwise termed the "depression," and f is a constant which depends on the pressure and velocity of the air passing over the bulbs. When using the sling psychrometer the value of this constant is 0.367, in England for use with the Stevenson screen, the Air Ministry has adopted the value of 0.444. In the calm and not precise conditions of thermometers suspended in indoor air the round value of 1/2 is probably accurate enough.

The values of the partial pressure of water vapour at saturated conditions at various temperatures are well known.



The continuous line follows the curve, the broken line indicates the curve $y = \frac{1}{10}x^2 - \frac{1}{2}x + 12$

and have been plotted in the form of a curve in the accompanying figure. When these values are expressed in degrees Fahrenheit and millibars, it will be seen that the curve of saturation pressures between the temperatures 30° and 90° has a remarkable similarity to the parabola

$$y = \frac{1}{100} x^2 - \frac{1}{2} x + 12$$

The greatest error introduced by using this equation occurs in the neighbourhood of 76° F at which the true value of the saturation pressure is 30.66 millibars, and the value calculated by the equation is 31.76, an error of a trifle over 1 millibar. Elsewhere this error decreases, and at three points over the indicated range the calculated value coincides with the true value.

Using the equation, one may write

$$S^w = \frac{1}{100} W^2 - \frac{1}{2} W + 12$$

where W is the temperature Fahrenheit of the wet bulb. Hence, from the formula $P = S^w - f \Delta$, and taking $f = \frac{1}{2}$,

$$P = \frac{1}{100} W^2 - \frac{1}{2} W + 12 - \frac{1}{2} \Delta$$

But $\Delta = D - W$, where D is the temperature Fahrenheit of the dry bulb, and the formula thus becomes

$$P = \frac{1}{100} W^2 - \frac{1}{2} D + 12$$

Partial saturation of the atmosphere by water vapour is usually expressed in terms of "relative humidity," which is the ratio of its actual vapour pressure to the pressure which would be attained by saturation at the same temperature, expressed as a percentage. Using the term H for relative humidity, and S^d to express the saturation pressure at the temperature of the dry bulb, one may thus write

$$H = 100 \frac{P}{S^d} = 100 \frac{\frac{1}{100} W^2 - (\frac{1}{2} D - 12)}{\frac{1}{100} D^2 - (\frac{1}{2} D - 12)}$$

Thus, as may be seen, to estimate the relative humidity the only figures required are the squares of the thermometer readings, each divided by 100 and diminished by half the dry-bulb reading less 12. For example, if the dry bulb reads 60° F and the wet bulb 55° F, half the dry-bulb reading less 12 will equal 18, and subtracting from each of the squares the relative humidity is found to be

$$100 \frac{30.25 - 18}{36.00 - 18} = 68\%$$

If the dry bulb reads 71° F and the wet bulb 67° F, the relative humidity is found to be

$$100 \frac{44.89 - 23.5}{50.41 - 23.5} = 79\%$$

The relative humidity is, however, not a very valuable figure if, as is usually the case, it is desired to estimate the capacity of the air to absorb moisture, since the total capacity of the air varies greatly at different temperatures, and at low temperatures is so small that even a small relative humidity does not indicate a great residual ability to absorb moisture.

For practical purposes the drying capacity of the air is better expressed as the "saturation deficiency," or the number of millibars by which the partial pressure of the water vapour actually present falls short of the saturation pressure at the same temperature. This figure, expressed in terms of the equation, becomes

$$\begin{aligned} S^d - P &= (\frac{1}{100} D^2 - \frac{1}{2} D + 12) - (\frac{1}{100} W^2 - \frac{1}{2} D + 12) \\ &= \frac{1}{100} (D^2 - W^2) \\ &= \frac{1}{100} (D + W) (D - W) \end{aligned}$$

The above expression, which might be called the "index of drying power" of the air (and approximates the true value of the saturation deficiency in millibars), thus becomes a figure which can rapidly and easily be calculated direct from the thermometer readings without the help of tables, should these not be available. For example, the thermo-

meters might show readings of 50° F and 45° F. The sum by the difference, and dividing by 100, the index of drying power is found to be 4.75. In another place they might show 75° F and 68° F, by the same calculation the index is found to be 10.01. In the second case, though the depression of the wet bulb is only 2° F greater, the air has more than twice the drying power.

Discussion

Wet- and dry-bulb thermometers are rarely seen in operating theatres, but I would suggest that were they more commonly used, and the proposed simple calculation of the index of drying power carried out from time to time in conjunction with readings of the dry bulb, the results might in many cases prove illuminating. The importance of the wet-bulb temperature was long ago pointed out by Haldane (1905), who found that, whatever the dry-bulb temperature, heat-regulation would begin to break down when the wet-bulb temperature rose above 88° F (31.1° C). Probably 70° F (21.1° C) should be regarded as the upper limit of safety in an operating theatre.

The hazards of hot and moist atmospheres have been emphasized, but those at the other extreme are scarcely less important. Cold surroundings will produce or aggravate surgical shock, and a very dry atmosphere will facilitate the production of high static electrical potentials with a corresponding risk of explosion of inflammable vapours. Such dryness is but rarely encountered in Great Britain but I have on at least one occasion heard the crackle of a static discharge in a theatre when a dry blanket was quickly pulled away from a trolley.

The formula ($P = S^w - f \Delta$) and the figures for partial pressures are taken from the Air Ministry Hygrometric Tables, M.O. 265 (1940), published by H.M. Stationery Office, and I have to thank the Director of Bidston Observatory for drawing my attention to that useful publication.

Summary

It is pointed out that an assessment of the drying capacity of the air can be made by a no more complicated procedure than finding the product of the sum and difference of the wet and dry-bulb readings.

It is suggested that the atmosphere of operating theatres should be more rigorously investigated and controlled.

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TRAUMATIC URAEMIA: RECOVERY

BY

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AND

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Below is reported a case in which a penetrating wound of the right thigh with division of the femoral artery and vein, without any apparent injury to the abdomen or left leg, led to an ischaemia of both legs. This was followed by a great increase of blood urea and other signs suggesting the onset of traumatic uraemia. After splanchnic block the blood urea fell and the general condition improved sufficiently to permit amputation of both legs. Following amputation progress was uninterrupted. Trueta and others (1946) suggest that splanchnic block should prove of value in

traumatic uraemia. The result in this case seems to give some support to that suggestion.

Case Report

The patient, an agricultural worker aged 65, was found lying in a pool of blood after his horse and cart had returned to the farm without him. As he was alone, no details of the accident were available. It seems likely that the cart passed over his right leg.

He was admitted on July 5, 1946, about two hours after the injury, in *extremis* with no ascertainable pulse or blood pressure. The only visible injury was a small puncture wound of the inner side of the right thigh. There was no bleeding from this wound on admission. X-ray examination showed no bone injury. The transfusion of 5 pints (2.8 l) of plasma and 1 pint (0.57 l) of blood (group B) raised the blood pressure to 110/60. No other immediate treatment was given.

On the morning after admission it was obvious that there was no circulation or sensation in the right leg below the knee. The left foot in which the circulation had appeared satisfactory on the previous evening now showed cyanosis of the toes. The popliteal pulse was palpable but neither the posterior tibial nor the dorsalis pedis could be felt. There was no evidence of injury to this leg. The transfusion cannula had been inserted in the left ankle. Routine treatment for vascular injury was carried out—that is, heat to trunk, exposure of limbs, no smoking, 1 oz (28 ml) of brandy or whisky four-hourly. In view of impending gangrene of the right leg and the failing circulation of the left leg, exploration of the wound was considered advisable. This was carried out about 22 hours after the injury. There was considerable muscle damage, and the femoral artery and vein were completely divided at the junction of the middle and lower thirds and thrombosed. The wound was excised and closed with drainage after icing with proflavine-sulphathiazole powder. The following day the patient's general condition was poor. He was at times irrational and incontinent. The fluid intake was maintained—102 oz (2.9 l). The output was difficult to assess because of incontinence, but appeared to be lowered—20 oz (0.6 l). The blood pressure rose to 145/80. The general condition was about the same on July 8. The right leg was avascular to the knee, and the left avascular to the level of the ankle. The blood urea was 168 mg per 100 ml, plasma chloride, 525 mg NaCl per 100 ml (90 m equiv/litre), plasma bicarbonate, 56 vols per 100 ml (25 m equiv/litre), plasma protein, total, 5.42 g per 100 ml (albumin 3.52 g). The fluid intake was 84 oz (2.4 l) and the output 49 oz (1.4 l).

In view of these findings splanchnic block was advised, being carried out by Dr MacKay of the department of anaesthetics, 40 ml of 5% "novocain" was injected by the post route under 0.2 g of thiopentone. After the injection the blood pressure dropped 20 points. Investigations on subsequent days were: July 9, blood urea 184 mg per 100 ml, haemoglobin (?) (specimen taken soon after splanchnic block), July 10, 128 mg, 50%, July 11, 96 mg, 42%, July 13, 72 mg, 50%, July 15, 80 mg, 40%, July 19, 50 mg, 62%.

On July 18 the difficulty with regard to measuring fluid output persisted. The general condition of the patient remained about the same. There was general emaciation but otherwise no serious deterioration. Gangrene of both legs was well developed. The right leg was dry, requiring above-knee amputation. There were some blisters on the left leg and mild cellulitis. An above-knee amputation of the right leg was performed and 2 pints (1.1 l) of blood was given. Next day the general condition improved, and he was rational for longer periods. The pulse was 110, blood pressure 130/80, haemoglobin 62%, blood urea 50 mg per 100 ml. On the 24th the haemoglobin was 64% and the blood urea 28 mg per 100 ml. A below-knee amputation of the left leg was made on the 25th and 2 pints (1.1 l) of blood were given. On July 31 the haemoglobin was 84%.

Since the second amputation the progress has been uneventful. Incontinence has completely ceased and the patient is rational. He eats and sleeps well, and the stumps are practically healed.

REFERENCE

Trueta J and others (1946) *Lancet* 2 237

MASSIVE PENICILLIN DOSES IN GENERAL PRACTICE

BY

D P WHEATLEY, MB, MRCS

In the *Journal* of Nov. 30, 1946 (p. 842), it was stated that the writer knew of no comparative data for larger doses of penicillin than 100,000 units, or of such doses at infrequent intervals. I venture, therefore, to record a few minor conditions treated by this method in general practice.

Case Reports

Case 1—Mrs S, aged 45, had been troubled for some time with recurrent and severe boils in the nose. The usual duration of one of these was one to two weeks. Two days before I saw her one had started, and she consulted me as she was particularly anxious to go away for a week end two days later. She had a full blown and very painful boil just inside her nose. I gave her 200,000 units of penicillin by intramuscular injection, this being repeated the following day. The next day the boil had almost completely subsided and gave her no further trouble.

Case 2—Mr P, aged 32, had had a large whitlow on the third finger of his left hand for three days. It was already discharging but the whole finger was grossly reddened and swollen. In addition, he felt unwell, and an eruption of small furuncles had broken out all over his body. He was given 200,000 units of penicillin. The next day he felt very well in himself although there was no significant change in the whitlow. A further 200,000 units was administered, and the following day the whitlow was discharging profusely, most of the swelling had subsided and the furuncles had almost disappeared. Two further injections of 200,000 units were given, and he was able to return to work one week after the beginning of the infection. He was seen a week later, when the finger was practically healed.

Case 3—Mr S, aged 42, had had a severe carbuncle just below his left elbow for three days, there was much inflammation, and several heads were beginning to form. He felt unwell, and had a slight temperature. He was given 200,000 units of penicillin. The next day he felt much better, his temperature had fallen and the heads of the carbuncle had increased in size and were already discharging. A further dose was given and the next day the lesion was discharging profusely, much of the inflammation had subsided and the patient was later able to express the main core of the carbuncle. Two further injections were given, and a week later (ten days from its onset) the lesion had completely subsided. No local treatment was given.

Case 4—Master P, aged 5, had had a purulent conjunctivitis gradually getting worse over a period of one week. When seen his left eye was completely closed, much swollen, and a purulent exudate oozed from under the lids. He was given 50,000 units of penicillin. The next day he was able to open the eye and much of the swelling had gone down, although there was still a purulent discharge. Two further doses of 50,000 units were given on the following two days. The eye was then perfectly normal, except for one or two small tags of crusted exudate on the lashes.

Case 5—Miss F, aged 12, had a large sty on the lower lid of her left eye. This had been treated with ung. hyd. oxid. flav., and had all but cleared up when it broke out again. There was a similar occurrence after penicillin ointment. In all she had suffered from the sty for a period of two weeks. A single injection of 200,000 units of penicillin was given, but she declined a further injection, as she did not relish the procedure. As it happened, this was not necessary for by the next day the condition had cleared up.

Case 6—Mr G, aged 52, developed a carbuncle on his neck following an eruption of boils, he had never had either before. When first seen the carbuncle was of ten days' duration. He had several small healed boils, and another carbuncle three days old, was forming on his right thigh so far without a head. He was given four daily injections of 200,000 units each of the highly purified white crystalline penicillin. At the end

this time only a scar remained at the site of the carbuncle on his neck, the one on his thigh had completely aborted

Case 7—Mr K, aged 41, had had a carbuncle on his right forearm for five days. He complained of pain up the arm and in the axilla. He was anxious to return to work as soon as possible, and 200 000 units of penicillin was given twice daily for three days and a single dose on the fourth day. By this time the swelling had nearly subsided and the carbuncle was discharging freely.

Comment

The successful treatment of the above cases would seem to justify the use of large doses of penicillin at infrequent intervals, such as can conveniently be carried out in general practice. The particular dosage was chosen on the grounds of economy, larger doses might be even more effective and might possibly be of use in more serious conditions. In Cases 3, 6, and 7 the carbuncles cleared up in about five days and the patients were fit for work within a week, indeed, one patient continued working, though against advice, during treatment. This is an important consideration when the cost of the treatment is taken into account.

The introduction of the more highly purified white crystalline penicillin will probably greatly increase the value of this form of treatment.

Summary

Seven cases of minor conditions commonly met with in general practice yet which had responded poorly to routine treatment, have been described. All responded strikingly to large daily injections of penicillin. In each case it was considered that there was a clear indication for this form of therapy, and in none was any local treatment given after starting penicillin therapy. It is of interest to note that the one patient who was given injections twice daily did no better than the others. In the few cases so far treated by this method no failure has been observed.

Medical Memoranda

A Case of Thrombosis of the Abdominal Aorta

The following case of thrombus formation on an atheromatous ulcer of the abdominal aorta immediately above the bifurcation of the common iliac arteries is thought worthy of record because of the disparity between the gross pathology and the symptoms produced. A remarkable feature was that in spite of a massive arterial occlusion no pain was experienced. Boyd (*Textbook of Pathology* 4th ed, 1943) states that thrombus formation on an atheromatous ulcer of the aorta occurs much less frequently than might be expected.

CASE RECORD

A man aged 47 was admitted to the Falkirk Royal Infirmary complaining of numbness and coldness of both lower limbs of three days' duration. Seven days previously, while climbing a steep hill, he was seized with a pain in the left praecordium extending down the left arm to the wrist, and a feeling as if his left leg was swelling and about to burst. After resting for half an hour he continued to climb the hill although the rest had not relieved the pain. On reaching the top he broke out in a cold clammy sweat and felt as if both legs were swelling to bursting point. His legs would no longer support him and he had to sit down and was later taken home in a taxi. In bed apart from his legs and some residual praecordial pain he had no complaint. The legs were normal in colour and muscle power was normal. The next day the praecordial pain and the numbness in his legs disappeared. On the third and fourth days he had no complaint whatsoever although he remained in bed. On the fifth day he suddenly broke out in a cold clammy sweat and his right leg became numb and cold from the sole of the foot to the hip. The leg became discoloured and muscle power was lost. There was no pain. Later that day his left leg from the sole of the foot to the knee became gradually numb and cold. Again pain was conspicuous by its absence. He also became incontinent of urine and faeces. Two days later he was admitted to the infirmary. On two occasions two months previously he had experienced slight pain in the calves of both legs on climbing a hill. This passed off quickly after rest.

On admission he was seen to be a well built man whose face was somewhat congested and who had a fair degree of clubbing of the fingers. The right leg showed marked discoloration and was cold and pulseless. The line of demarcation was about 5 cm below the inguinal ligament. There was complete loss of sensation and muscle power. The left leg was similarly affected immediately below the knee joint. The heart was irregular in rhythm and force and the heart sounds were of very poor quality. The blood pressure was 110/80. Examination revealed no abnormality of any of the other systems. The Wassermann reaction was negative. He died some nine hours after admission.

Post-mortem Examination—There was an atheromatous ulcer about 2 cm in diameter on the anterior wall of the aorta about 4 cm above the bifurcation of the common iliac vessels. It had involved the intima and media and was on the point of rupturing through the adventitia. There was a large adherent thrombus over the site of the ulcer which extended down both iliac vessels to their bifurcation and involved 2 cm of the left internal iliac. There was also a great deal of patchy calcification over the area covered by the thrombus. Proximal to this the aorta appeared normal, as did the other arteries. The heart was dilated and showed a marked fibrosis of the myocardium, the wall of the right ventricle being parchment-like. The right ventricle showed an old coronary thrombosis. An interesting feature was the complete absence of rigor mortis of the affected limbs.

I am indebted to Dr T Kay MacLachlan, Consultant Physician, Falkirk Royal Infirmary, for permission to publish this case.

ROBERT PAUL M B, Ch B,
Medical Registrar
Falkirk and District Royal Infirmary

A Case of Dissecting Aortic Aneurysm Diagnosed Clinically

In view of the infrequency of the clinical diagnosis of cases of dissecting aortic aneurysm I am grateful for an opportunity to publish this case. Dissecting aortic aneurysms are comparatively rare lesions, and particularly so in women, the incidence in men to women is three to one (Paul White, 1946).

CASE REPORT

A well nourished obese woman aged 40 was admitted to hospital at midnight on Jan 24 1947. The patient was in an acute state of shock. She was ashen grey, clammy, and perspiring. Her pulse rate was about 100, irregular, and of very poor volume. It was impossible to record the blood pressure in the right arm, but the systolic pressure in the left arm was 70 mm. She was very restless but was able to give her history fairly well. This was as follows. At 12 noon on Jan 24, suddenly after a very heavy morning's work, she experienced a "terrible pain" between the scapulae and radiating slightly towards the back of the neck, she fell into a chair. She vomited twice and when seen at 2.30 p.m. the same day by her husband she was acutely shocked and "helpless" she coughed a very small amount of bright-red blood. The only relevant past history was that she had had a cough for the last three weeks, but otherwise was well and active. She had five children alive in the case of the youngest child labour was induced at the seventh month for "kidney trouble and blood pressure".

Clinically it was impossible to determine the size of the heart, and the heart sounds were almost inaudible. There were no abnormal physical signs in the lungs, abdomen, or central nervous system. The fundi showed arteriosclerotic changes, and no exudates were seen. It appeared that this patient had had an acute circulatory catastrophe. Coronary thrombosis seemed a possible alternative diagnosis, but the site and nature of the pain in the back and its maximum intensity at the onset were both points in favour of a dissecting aneurysm. She died at 11 a.m. on Jan 25.

Post-mortem Findings—The pericardium was considerably thickened and there was a large haemopericardium. The weight of the heart was 25 oz (0.7 kg), and the left ventricle was hypertrophied. There was a break in continuity of the intima of the aorta in the transverse portion opposite the origin of the innominate artery. This was some 1/2 in (1.25 cm) long in the longitudinal direction. This break was continuous with a cavity in the wall of the aorta and dissected about one half the circumference of the aorta. The cavity contained blood clot, and extended down to the aortic valves. The coronary arteries were fairly healthy. There was extensive atheroma of the intima of the aorta more marked distally. The left kidney was small, with the capsule adherent and its surface was slightly granular.

I wish to thank Dr E H Brindle for permission to report the case, and Dr J R Mackenzie for much helpful criticism.

RAYMOND C GLEDHILL M B Ch B,
House physician General Infirmary, Burton on Trent

REFERENCE
White, Paul D (1946) *Heart Disease*. New York: Macmillan Co.

Reviews

"A VERY PRACTICAL SCIENCE"

Fundamentals of Immunology By W C Boyd, Ph D Revised reprint (Pp 446, illustrated 33s) London Staples Press, Ltd

Immunology is indeed, as Prof Boyd writes in his first chapter, 'a very practical science, concerned with methods of preventing disease or influencing its course, but it touches clinical medicine at unrelated points. In a few instances prophylactic inoculation is useful, antisera, of which we once hoped so much, are effective in still fewer, various serological reactions are used in diagnosis. Nevertheless we learn from the Rh reactions that what may now seem merely test-tube serology may at some time become the key to the aetiology and treatment of a serious disease. Until more is known of the physical chemistry of proteins and of the nature of inter-molecular forces many events in serology will remain disconnected.'

In teaching students this complicated subject, any detail of which may prove to be of vital importance, Prof Boyd considers that the chief emphasis should be on serology, 'if by that we mean the science which studies the fundamental mechanism of immunological reactions and their theoretical foundations.' He recounts fully our present knowledge of antibodies, the relation of the specificity of antigens to structure, and the nature of antigen-antibody reactions. Some of the more advanced material is printed in small type to distinguish it from that 'which the beginner can and should be expected to master,' but even the remainder is more than any beginner could digest. Prof Boyd, who does not oversimplify his subject, modestly hopes that the book will be of some use to the professional immunologist. He might have claimed much more: the book should be of the greatest value to any who are engaged in or intend to take up immunology as a special study. He presents the theoretical aspects of the subject fully and clearly and has co-ordinated much material that previously lay scattered about the literature. The book is written in his usual agreeable style.

J R MARRACK

NUTRITION

Food and Health. An Introduction to the Science of Nutrition By A Barbara Callow, MSc, MSc Third edition (Pp 184, illustrated 6s) Oxford The Clarendon Press 1946

Food Control and Nutrition Surveys Malabar and S Kanara By K G Sivaswamy, et al (Pp 225 Rs 4) Madras Servinda Kerala Relief Centre, Royapettah

Inadequate Diets Deaths and Diseases and a Food Plan for Madras By K G Sivaswamy, et al (Pp 84 Rs 2) Madras Servants of India Society, Royapettah

The first of these books is an introduction to the science of nutrition designed for students and the general reader and is particularly relevant in these days of world food shortage. The previous edition has been largely rewritten. In addition to the facts usually found in a book on nutrition there is useful information on choice of foods, special diets, the effect of cooking on nutritive value, and very extensive food tables. As a short survey for the general reader this book is strongly recommended.

The authors of the two books from India discuss the appalling malnutrition and morbidity in some of the States—where indeed in certain areas the death rate is higher than the birth rate. The books are well documented and contain precise suggestions for improving the health and diet of the masses—such as the growing of more food, the subsidizing of agriculture and a basic diet for the poor, the control of food, rents, and wages and an increase in the purchasing power of the poor.

BASAL METABOLISM

Hypometabolism. A Clinical Study of 308 Consecutive Cases By Esben Kirk, MD, and Sven Ancher Kvorning, MD (Pp 84 Dan Cr 7.25 or 7s 6d) Copenhagen Einar Munksgaard London Heinemann Medical Books 1946

The authors have studied the basal metabolism of the majority of patients admitted to the medical department of the Holstebro District Hospital in Denmark during the years 1940, 1941, and 1942. They have not recorded the number of patients investi-

gated, but in 308 cases the basal metabolic rate was found to be below 88% of normal. An analysis of the findings from the clinical examination of these 308 patients is the subject matter of this monograph. In 30 myxoedema or cachexia strumipriva was the cause of their hypometabolism, in 44 there was reduced physical activity, the patient often being bed ridden, in 41 the intake of food was greatly reduced. Low basal metabolism is expected in these three groups.

Of greater interest is the number of women with 'hypogonadism' in the series, these, mainly patients whose ovaries had been removed or who suffered from oligomenorrhoea constituted 21% of the total. The mechanism of their reduced metabolism is uncertain, but secondary hypothyroidism is a possibility. In the largest group—109 patients—21 were considered to be healthy, while the remainder had various ailments not usually thought to affect the metabolism. The metabolic rates of a random sample of this group conformed to the left-hand section of an ideal distribution curve the right-hand section of which was obtained from control cases. The authors believe these had a 'physiological hypometabolism,' and suggest that some healthy individuals may have basal metabolic rates considerably below 'normal.'

R BODLEY SCOTT

X RAYS IN UROLOGY

Urologic Roentgenology By Miley B Wesson, MD Second edition, thoroughly revised (Pp 260, 258 engravings 27s 6d) London Henry Kimpton 1946

Although no great advance in x-ray examination of the urinary tract has been made since the previous edition of this book technique has steadily improved. With the help of the radiologist it is now possible to diagnose lesions formerly discovered only at operation—a striking example being that comparatively rare lesion, renal aneurysm. The author has replaced many of the old illustrations with new, rewritten most of the text, and included the latest references. Comparison of the old plates with the new reveals the progress in this branch of medicine. This is certainly the finest collection of urological x-ray illustrations that have appeared in any book and the text is lucid and concise.

Our only criticism is that the author is occasionally rather dogmatic. This is particularly noticeable in the chapter on hydronephrosis, from which the inexperienced reader may easily conclude that all forms of hydronephrosis are caused by obstruction and that the nature of the obstruction can usually be discovered, whereas in many cases the precise aetiology remains obscure. However, as the author points out in his preface, dogmatism in a book of this type has certain advantages. His aim is 'not to supply a treatise but to provide a vade mecum which will help the newcomer in urologic roentgenology to interpret his pictures.' Dr Wesson admirably achieves this end. His book can be highly recommended not only to the general reader but to specialists in this particular subject.

K WALKER

APHORISMS ON CANCER

Quelques Verites Premieres (ou soi disant telles) sur le Cancer By René Huguenin Preface by M Gustave Roussy (Pp 140 200 francs) Paris Masson et Cie 1946

This book on basic truths about cancer is one of a series designed to present the fundamental truths of medicine, so far as they are at present recognized, in the form of aphorisms reminding practitioners of rules of practice which they should not lightly transgress and indicating to students what is of capital importance in their studies. The form of presentation is of doubtful value, nevertheless Huguenin writes with the authority of wide experience, and much of what he says is stimulating. As it stands, the book is an interesting supplement to orthodox textbooks.

After a general discussion of the nature and origin of cancer there is a section on the diagnosis of the individual varieties. A chapter on the habits of growth and spread of cancer leads to a discussion of therapeutic measures, and a final chapter is devoted to cancer as a social problem. The emphasis of the book is on early exact, and complete diagnosis and on judicious choice of treatment. Huguenin insists that in its early stages cancer presents no distinctive clinical signs or symptoms, the orthodox textbook descriptions apply

to advanced stages and are commonly useless or even misleading in the quest for early diagnosis. There is no single method of treatment appropriate to all kinds of cancer. Correct choice of treatment, upon which the patient's life depends, requires precise knowledge of the type of the tumour, its extent, its usual habits of growth and dissemination, and of concomitant lesions. A diagnosis which is sufficiently early and exact can often be established only by histological examination, and he is a warm advocate of biopsy, and especially of per-operative biopsy in the theatre, with the surgeon prepared to act promptly on the findings. He discusses the knowledge and skill required from surgeon and pathologist to ensure reliable results and the subsequent procedure to minimize the risks of biopsy. Huguenin is impressed by the importance of general and local conditions favouring or impeding the growth and spread of cancers, though dearth of knowledge of these factors precludes at present, the influence on therapeutics which they may exert in the future. The isolation of French medicine during the war no doubt accounts for the cursory reference to treatment of carcinoma of the prostate by oestrogens, and the author seems to write without personal acquaintance with the method. Personal experience and reflection inform the rest of the book.

L. FOULDS

ACTION OF DIGITALIS

La Digitale et Les Strophanthines Pharmacodynamie-Thérapiutique. By D. Danielopolu (Pp 206 illustrated. No price given) Paris: Masson et Cie 1946

It is interesting to read the opinions of an author from Bucharest on such a subject as the action of digitalis, we learn how different his standpoint is from ours. He does not regard as important the increased force of ventricular contraction that digitalis causes, nor does he discuss its action in depressing conduction in the bundle of His; he says nothing of digitalis causing a reduction in the number of impulses reaching the ventricle from a fibrillating auricle or of an extra-cardiac action of digitalis whereby increased venous tone reduces the venous pressure at the entrance to the right auricle.

Danielopolu is chiefly concerned with the relation between the digitalis glycosides and acetylcholine and he shows from a series of experiments that in the presence of strophanthin the effect of acetylcholine and of vagal stimulation is strikingly increased. This augmentation of the action of acetylcholine is seen in both cardiac and many other tissues in the presence of, for example strophanthin in concentrations which it must be said are rather high. Though increased vagal action slows the heart few to-day consider that vagal slowing is closely connected with the beneficial action of digitalis. However, we tend to overlook the observations made by Lewis, Drury and Iliescu which seemed to puzzle those who made them that when atropine is injected into the vein of a fully digitalized patient with fibrillation there is a sudden large acceleration in the ventricular rate from 70 or 80 to 160 or even 180. There may therefore be more truth in Danielopolu's viewpoint than we usually admit. Increased acetylcholine action may, however, affect more than the heart rate for it is becoming apparent that all substances which prolong the refractory period and diminish conduction in cardiac muscle are acetylcholine antagonists and that acetylcholine not merely inhibits the heart but is concerned in the transmission of the contractile process and perhaps in the contractile process itself. If that should prove correct the importance of the relation between digitalis glycosides and acetylcholine will be firmly established.

J. H. BURN

Volume LXV of the *Transactions of the Ophthalmological Society of the United Kingdom* for the session 1945 has been published by A. Churchill at 40s. It comprises full reports of the proceedings of that society at the annual congress held in London in April 1945; it also includes the Dove lecture and other papers read before the Oxford Ophthalmological Congress at its thirty-first annual meeting. Among the main subjects dealt with in this volume are ocular sequelae of head injuries, plastic repair of the lids, traumatic detachment of the retina, the sympathizing eye, compression and invasion of the optic nerves and chiasma by neighbouring gliomas (Geoffrey Jefferson's Dove lecture), injuries to the eyeball and retrobulbar neuritis (paper by L. E. Werner read to the Irish Ophthalmological Society).

BOOKS RECEIVED

[Review is not precluded by notice here of books recently received]

Allergy in Theory and Practice By R. A. Cooke, M.D., Sc.D. F.A.C.P., et al. (Pp 572 40s) Philadelphia and London: W. B. Saunders 1947

The authors discuss allergy in all its aspects and intend the book for general practitioners as well as specialists.

A Plan for Science By the Science Advisory Committee of the Communist Party (Pp 32 6d) Watford: Farleigh Press 1947

A memorandum on the application of science to industrial and social problems.

Diseases of the Retina By H. Elwyn, M.D. (Pp 587 45s) London: Churchill 1946

The author discusses disturbances in circulation, vascular malformations, degenerative and inflammatory diseases, tumours, retinal detachment, developmental abnormalities, and radiation injuries.

Le Probleme Biologique du Cancer By J. Delarue (Pp 200 300 francs) Paris: Masson 1947

The author considers the aetiology of cancer, experimental evidence, the pathology and clinical aspects and the treatment of cancer.

Le Chirurgien en presence de l'Etat Diabétique By J. Bréhant (Pp 541 1,200 francs) Paris: Masson 1946

Includes discussion on surgical procedures for diabetic patients, surgical complications of diabetes, surgical treatment of diabetes and traumatic diabetes.

L'Epilepsie Chronique By P. Hartenberg (Pp 160 240 francs) Paris: Masson 1946

A monograph on the aetiology and symptomatology of idiopathic epilepsy.

Le Probleme des Tuberculoses Atypiques By R. Burnand et al. (Pp 435 760 francs) Paris: Masson 1946

A collection of studies on atypical tuberculosis, including tuberculosis of the skin and the lungs, and discussion of the anatomy, pathology, and bacteriology.

Le Diabete et sa Pathogenese By L. Ambard (Pp 162 240 francs) Paris: Masson 1946

A monograph on the pathogenesis, symptomatology, and treatment of diabetes.

Tuberculosis in Newfoundland By T. O. Garland, M.D., D.P.H. and P. D. Arey Hart, M.D., F.R.C.P. (Pp 58 No price) Newfoundland: Trade Printers and Publishers 1946

A report of an investigation into tuberculosis in Newfoundland, where the disease is particularly widespread.

Anatomy and Physiology By C. F. V. Smout, M.D. 2nd ed. (Pp 470 30s) London: Edward Arnold 1947

This book is planned in accordance with the syllabus of the Chartered Society of Physiotherapy and is intended for students of massage and medical gymnastics.

La Psychologie de L'Intelligence By Jean Piaget (Pp 212 80 francs) Paris: Armand Colin 1947

After discussing intelligence in adaptive processes the author considers its relation to perception, habit, and in the elaboration of thought.

Studies on the Influenza A-Epidemic of January-March, 1941, at Groningen (Holland) By J. A. R. Van Bruggen, M.D. et al. (Pp 79 10s) Leiden: Stenfert Kroese

A monograph on an influenza epidemic in Holland, with photographs, from the Leiden Institute of Preventive Medicine. In English.

A History of the Worcester Royal Infirmary By W. H. McMenemey, M.A. (Pp 356 21s) London: Press Alliance 1947

The author stresses the value of democratic management and local enterprise as well as the need for nation-wide planning.

Heparin in the Treatment of Thrombosis By J. E. Jorpes, M.D. 2nd ed. (Pp 260 18s) Oxford: University Press. Geoffrey Cumberlege 1946

A survey of the chemistry, mode of action, and therapeutic use of heparin for the physiologist and physician.

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BREAD RATIONING AND CALORIES

So long as bread was not rationed everyone could get as many calories as he wanted. Not everyone actually got as many calories as he did before the war, partly from dislike of the food that could be bought, partly from a permanent failure to adapt—similar to the temporary failure shown by McCance and his colleagues¹ in their experimental study of rationing. But one of the objects of rationing bread was to reduce the consumption of grain. If consumption is reduced can people still obtain as many calories as they want? Bransby and Magee (p. 525) set out to answer how males and females of different ages and activities can keep their intake up to the level recommended by the Technical Committee of the League of Nations. They estimate the number of calories supplied by rations—that is, by those foodstuffs of which the supply is restricted by regulations. In some cases the rations by themselves supply all the calories needed. In the case of "normal" males, adolescents, manual workers, and pregnant women there is a gap of 560 to 770 between requirements and the calories supplied by rations and the extra BUs allowed. Bransby and Magee propose that this gap can be closed by calories from 4 sources: (1) Unrationed foods, of which potatoes are the most important, other unrationed foods supplying not more than 200 calories per head per day; (2) Canteen and other meals taken "off the ration"; (3) Exchange of points to BUs, since the average calorie value of points is less than that of the bread for which they can be exchanged; (4) The family pool. The third source could, at most, provide an extra 350 calories per head per day. But to change points to BUs involves the sacrifice of much of the little variety of diet that we can now expect. It would mean giving up baked beans, cereals (including all oat products), dried fruit, and sardines. In practice the exchange ran mainly in the opposite direction, so long as the exchange of BUs for points was allowed. It is unlikely that a family will change points to BUs on any scale so long as it can stave off hunger in any other way.

Between 50 and 60% of school-children are not able to get dinner at school, the possible number is limited by the lack of accommodation. Factories over a certain size must provide canteens, and some smaller factories also do so, but a large proportion of factory workers have no canteen, the number of British Restaurants has been

limited by the difficulty of finding suitable buildings, adolescents may find it difficult to afford meals in canteens. Certainly less than half the school children and manual workers obtain extra rationed food in the form of meals away from home, the rest must get from other sources any extra calories they need. Bransby and Magee suggest that owing to the extensive use of machinery for heavy work the average needs of manual workers may be lower than estimated, but it is just those workers who do heavy work with their own muscles who are the least likely to be able to get meals from canteens. We then have to consider how far the gap can be closed by unrationed foods, of which the most important are potatoes. Here Bransby and Magee seem out of touch with realities. The supply of potatoes for human consumption in 1943-4 was, according to *Food Consumption Levels*² 255 lb per head per year, or 5 lb per week. According to the *Monthly Digest of Statistics* production has not risen by much since then. At present it is difficult to get the 5 lb per head per week, and owing to the frost, the late spring, and flooding we may be short of potatoes not only until the new crop is raised but during the next potato year also. Yet the authors write of the consumption of 10½ lb per week by adolescents, normal males, pregnant women, and miners and of 14 lb a week by other manual workers.

We are left then with the fourth source—the family pool. The average amounts of unrationed foods supply about 400 calories per head. With average consumption of these foods the gap, if no outside meals are eaten, ranges from 160 calories (pregnant women) to 370 (manual workers). On the other hand the rations of children of 1 to 5 years (about 5% of the population) supply some 500 more calories than the children need. The average requirements of men and women over 60 years old cannot exceed the 1,840 calories their rations supply. At ages between 5 and 10 rations are sufficient to meet requirements (1,900 per day) according to the scale used by Bransby and Magee. But Bransby and Wagner³ found that children in this age group in Stockport and Stoke on Trent ate the equivalent of about 2,200 calories. There is no reason to suppose that these children were eating more than they needed, so children of this age group should not contribute to the family pool. School-children of 11 years and upwards also need both their rations and the average amount of unrationed foods in spite of their extra allowances of BUs.

The average number of calories taken by women in middle class was, according to Widdowson and McCance⁴ and Widdowson and Alington,⁵ about 2,150 per day, that rations and an average of unrationed foods would leave them about 100 calories to spare. But many of these women were in sedentary occupation, as a whole women probably need all the calories their rations and the average amount of unrationed foods supply. The groups, therefore, whose requirements are exceeded by the calories supplied by their rations plus the average amount

¹ *Food Consumption Level in the U.S.A. Canada and the United Kingdom* 1944. H.M.S.O. London.
² *British Medical Journal* 1945 2 682.
³ *J. Hyg. Camb.* 1936 36 13.
⁴ *Lancet* 1941, 2 361.

of unrationed foods are children up to 5 years and old people. This surplus would, if it were shared, provide those adolescents, normal males, and manual workers who do not get canteen meals, and make up some 17% of the population, with about 400 calories a day and would close the gap. But this distribution is not possible unless the adults, families with young children, and old people take considerably less than the average amounts of unrationed foods, instead of cutting down their purchases of bread.

However unsatisfactory it may be, the family pool is the solution that is adopted in practice. It is based on the principle of women and children last. On this principle the children of families studied in the surveys made during the depression of the early twenties got less than they needed for normal growth, in the lower income groups the pregnant women, whose diets were studied by McCance, Widdowson, and Verdoe-Roe,⁶ received well under the 2,440 calories their present rations supply, although they were allowed a pint of milk a day by the local authorities the average amount they kept for themselves was only 1/4 pint.

Rationing of bread is an evil in a class apart from that of the rationing of other foods. Our diet may not be so dull as some would make out, but there are not sufficient amounts of appetizing foods nor sufficient variety to induce people to eat more than they need, the results of such surveys as have been published confirm this. Rationing of the main source of calories must reduce the intake below needs unless the supply of other foods is increased, if it is to succeed in one of its objects—the restriction of the consumption of cereals. Another object of bread rationing was to check its use for feeding fowls. This could have been achieved as well or better by restricting the number of hens kept by domestic poultry keepers to the number for which the poultry keeper can obtain rations of balancer meal. As it is, the families that do not need all their rations of bread can give the surplus to their fowls, since the exchange of BUs to points was stopped they no longer have any incentive to refrain from doing so. To take oat products off points at this time of the year is to invite their use for feeding chicks.

It should not be necessary to speculate about the effects of bread rationing. The Ministry of Food has for years conducted a survey of the consumption of food by representative families throughout the country. But on the principle that 'any material collected at the public expense by public servants for the public benefit should on no account be made public, the results are still treated as "confidential," and only a few details have leaked out. Oddly enough, Ministers of Food have preferred to quote estimates of the total amounts of foodstuffs going into 'consumption' and the intake of nutrients based on these, when they have these more useful figures in their Department. It is little use to tell us that the supply per week of fresh and frozen meat is some 32,000 tons, or about 1 oz. per head, when we know by experience that the amounts we actually get are considerably less.

VITAMIN C IN THE SPRING

The ascorbic acid in our diet is usually at its lowest in March. By then the amount in potatoes has fallen to a half or a quarter of the level in new potatoes, and green vegetables have become scarce. The supply of vitamin C rises slightly in April and May as more green vegetables appear, but does not reach high levels before the end of July. This year the vitamin C trough will be deeper and more prolonged, for potatoes are becoming scarce, and owing to the long cold winter green vegetables are very scarce and the spring vegetables will be late. In institutions where special care is taken over the supply and cooking of vegetables the average daily intake of vitamin C falls in ordinary years to about 20 mg during March. Many people get less than 10 mg a day. At present they may find it difficult to get even that, for half a pound of boiled potatoes eaten shortly after cooking will supply no more than 5 or 6 mg.¹

Does this shortage matter? Can the population as a whole live without any impairment of health on 10 mg or less of ascorbic acid a day for some two months, preceded by two months or so in which the supply was little higher? How much ascorbic acid do we need in order to maintain full health? Animals that make their own ascorbic acid have some 0.4–0.5 mg of it in 100 ml of plasma. The concentration in the plasma of guinea-pigs, which depend on their food for their ascorbic acid, rises to this level when they are getting the optimum amount for the healing of wounds. To reach such levels an adult human being needs about 50 mg a day. The highest claims of benefit from such large intakes are those of Campbell and Cook,² who found much more rapid healing after extraction of teeth when large doses of ascorbic acid were given, and those of Hunt³ and other surgeons for the improved healing of wounds. Conclusions about healing after extraction have been criticized on the ground that no allowance was made for the effect of the first extraction or the rate of healing after the second, and it is not certain that the control subjects of operations were strictly comparable. Several experiments with supplements of ascorbic acid provide little evidence of benefit. Bransby and colleagues⁴ reported a slight reduction of the incidence of gingivitis but no other improvement among children taking 50 mg of ascorbic acid a day, though many of the control children must have been getting under 10 mg a day. Linghorne and his colleagues⁵ have recently found that the frequency of gingivitis was less in groups of men who had 75–80 mg of ascorbic acid a day than among those who had 22 mg.

The League of Nations adopted 30 mg of vitamin C a day as a desirable daily intake. This figure was presumably based on the experiments of Gothlin,⁶ who observed signs attributed to lack of ascorbic acid in individuals after some ten weeks of deprivation, they recovered when allowed 13 to 24 mg per day. Since then Pijoan

¹ Oliver M. *Chem. Ind.* 1943 62 146

² *Br. J. dental J.* 1942, 72 213

³ *Br. J. Surg.* 1941 28 436

⁴ *British Medical Journal* 1946 1 193

⁵ *Canad. med. Ass. J.* 1946 54 106

⁶ *Acta med. scand.* 1937 92, 1

and Lozner⁷ have kept one person for fifteen months on a diet which supplied about 20 mg a day, the concentration of ascorbic acid in the leucocyte layer of the blood remained steady, wounds healed, and health remained good, though the concentration in the plasma was near zero. When the intake was 10 mg a day the concentration in the leucocyte layer fell, an indication that the body's stores of ascorbic acid were being used up. Johnson and his colleagues⁸ found that young men can do strenuous work and keep in good health for two months without any ascorbic acid in their food. The Accessory Food Factors Committee of the Medical Research Council showed by experiment (the full results of which have not been published) that individuals could exist on a vitamin-C-free diet for a long time before showing signs of deficiency and, moreover, amounts of vitamin C of the order of 10 mg a day cleared these signs up.

Our outlook on this type of experiment may be changed by one of the results of an experiment conducted by the Accessory Food Factors Committee.⁹ Two persons out of a group who were deprived of vitamin A for over a year were subsequently found to have tuberculosis. They had been examined before the experiment, and no signs of tuberculosis had been observed. The development of tuberculosis or activation of a quiescent focus may or may not have been a coincidence, but it will no longer be possible to start such experiments with the light-hearted assumption that any damage will be slight and reversible. The minor and obvious defects, such as impaired dark adaptation, may be cured by relatively small doses of the vitamin, but the more serious damage remains. Apart from this the results of experiments vary. In other observations by responsible workers on deficiency of vitamin A (for example, those of Booher and colleagues¹⁰ and Steven¹¹) dark adaptation has been impaired far sooner than in the experience of the Accessory Food Factors Committee. And the effects of experimental deficiency are different from those of spontaneous deficiency disease. In clinical scurvy the gums are swollen and bleeding and heal promptly on treatment with ascorbic acid, in experiments, such as that of Crandon,¹² the gums may remain healthy in a person who in other respects is in a very bad way. Vilter and colleagues¹³ have recently drawn attention to the anaemia, curable with ascorbic acid, in cases of clinical scurvy, but anaemia is not observed in experimental deficiency. Again, the Accessory Food Factors Committee found follicular keratosis to be one of the early signs of such deficiency (quoted by Cuthbertson¹⁴), but in many cases of clinical scurvy that occur in England this skin condition is not seen. Both the amounts required and the response to deficiency seem to be influenced by factors we do not yet understand. It is possible that Gothlin's observations, in which one of the first signs, as in scurvy, was swelling and bleeding of the gums, give a better indication of the requirements of the population as a whole.

As the evidence stands at present we may well doubt whether daily intakes of 10 mg of ascorbic acid are sufficient to maintain people in full health, particularly as Linghorne and his colleagues reported numerous complaints from officers that men on a low intake were longer on repair jobs than before, and that a number of them complained that they tired easily. It is essential, therefore, that we should make the fullest use of such sources of vitamin C as we have. Potatoes should not be mashed and should be eaten soon after they are cooked. There is little hope of persuading more than a few people to eat green vegetables raw, even if there were the greens to eat. Mustard and cress are more tempting, and one of the small boxes in which they are sold holds about 2½ oz., which contains about 50 mg of ascorbic acid, the same amount as is contained in one orange. One box a week will supply ascorbic acid at the rate of 7 mg a day. With such other vegetables that can be bought it should be possible to get nearly 20 mg a day.

PENICILLIN DOSAGE

How penicillin can be administered parenterally with the least trouble consistent with efficiency has been a major problem from the earliest days of its therapeutic use. It was for some time assumed that the ideal to be aimed at was the continuous maintenance in the blood of an adequate therapeutic level—a concentration, that is, which would at least inhibit the growth of the micro-organism causing the infection. If this is to be achieved with economy frequent doses are necessary, the longer the interval between them the greater must be not only the individual dose but the total, daily amount given. This policy, carried to its logical conclusion, demands continuous injection, and it is in fact only by the intravenous or intramuscular drip that an adequate blood level can be maintained by an expenditure of only 100,000 units daily. Nevertheless many patients in the early days received this amount of penicillin in the form of three-hourly injections, and although they can have had an adequate blood level only for part of each interval the treatment usually succeeded. We are now seeing the intermittent method in its turn carried to extremes, not of choice but by force of necessity in the circumstances of general practice. We are encouraged to believe that large doses injected only twice a day, or even larger only once a day, will achieve the effects required. Elsewhere in this issue Dr D. P. Whistler gives an account of 7 patients—4 of whom had boils and carbuncles, the others purulent conjunctivitis, a whitlow and a sty—6 of whom responded well to a single daily injection of penicillin in no case exceeding 200,000 units; the single patient who had this dose twice daily is said to have done no better than the rest.

It was suggested in the answer to a question to which this author refers in his opening sentence that a systematic study of the comparative effects of three-hourly and twice-hourly penicillin administration might well be undertaken. We again commend this proposal to anyone in a position to undertake it. Only a controlled clinical trial on a considerable scale can establish the uses and limitations of "massive" penicillin dosage. It may be that too much importance has been attached to blood levels, that diffusion into the infected area, as demonstrated in wounds by M. E. Florey and her colleagues,¹ enables an effect to be exerted locally long after penicillin has disappeared.

⁷ *J. Hosp. Hosp. Bull.* 1944 75 303

⁸ *J. Nutr.* 1945 29 155

⁹ *Nature Lond.* 1945 156 11

¹⁰ *J. Nutr.* 1939 18 459

¹¹ *Trans. Ophthal. Soc.* 1942 62, 259

¹² *New Engl. J. Med.* 1940 223 353

¹³ *J. Lab. Clin. Med.* 1946 31 609

¹⁴ *Report on Newfoundland* 1947 H.M.S.O., London

the blood. If this is the explanation of the efficacy of large dosage at long intervals it may apply only to certain types of lesion and not to others, for reasons dependent on the rate of formation of the inflammatory exudate. In default of more exact knowledge it is probably advisable to treat more serious cases by three- or four-hourly injection wherever possible. From another point of view it might be said that frequent doses should always be given when this is possible, since they are certainly more economical, our present consumption of penicillin is enormous, and the exportable surplus might be much larger with advantage to the national economy. Possible alternative methods for the future, whereby a continuous effect may be maintained without frequent visits or the services of a nurse, are inhalation, oral administration, and injection in an oil base. All are extravagant methods; the last is the only one by which a single dose will give an effective blood level for twenty-four hours. Although this effect has been obtained in the U.S.A. by Romansky and Rittman² with a highly refined beeswax-peanut oil preparation, we know of no evidence that corresponding preparations available in this country will give so prolonged an effect.

LOUIS PASTEUR

The work of Louis Pasteur is at present being commemorated by an exhibition at the Science Museum, South Kensington. The greater part of the material has been transferred direct from the Palais de la Découverte at Paris, but there is in addition an exhibit by the Wellcome Historical Medical Museum, consisting largely of original manuscripts and apparatus of Pasteur. It is a good thing that the French Government has arranged this exhibition, since Pasteur is one of those men whose greatness in many fields can bear commemoration. The inaugural address to the Exhibition was given by Sir Alexander Fleming, and is printed in full in the opening pages of this week's *Journal*.

Of all the non-medical scientists who have enriched medicine Pasteur is probably the greatest. His outstanding characteristic was the ability with which he cut through the difficulties of a new subject, leaving it thereafter a new science. There was little in his early career to foreshadow such greatness. In an important examination in chemistry—his own subject—his paper was marked "mediocre," yet within a very few years he had differentiated between tartaric and paratartaric (racemic) acids, and shown that the optical differences between dextro- and laevo-rotatory tartaric acid crystals were correlated with minute physical differences in the crystals themselves. This work really laid the foundations of stereo-chemistry.

Perhaps the most lengthy of all Pasteur's investigations were those which he devoted to the subject of fermentation. He began these just after he went to Lille in 1854 as Dean of the Faculty of Science, and they were continued, with some intervals until 1876 when his great work *Etudes sur la Fermentation* was published. Quite early Pasteur showed that if a solution of pure sugar containing ammonium phosphate and some chalk is allowed to stand, a gas is evolved, and lactic "yeast" settles at the bottom of the vessel. He thought that the ferment probably came from the air, since the reaction did not take place with heated air. He stoutly maintained that yeast is a living organism, and in doing so incurred the lasting hostility of Liebig. These lactic acid studies formed the foundation of all Pasteur's fermentation studies, and indeed of the science of bacteriology. They led to his important work on negar and the souring of wine, and finally on diseases of beer. It has been said that Pasteur was a practical worker

rather than a theoretical scientist, and in all these subjects Pasteur's work led to marked improvements in the processes of manufacture or storage of the respective beverages.

These researches also gave Pasteur a method of filtering the air which was admitted to potentially putrescible liquids. They thus enabled him to enter the strictly bacteriological field in an attempt to disprove the theory of spontaneous generation. Almost at the start he carried out experiments which attained their end, and his *Memoire sur les Corpuscules Organiques qui Existent dans l'Atmosphere* (1862) is a classic of science. Pasteur proved that air contained germs, but that it was possible to supply heated air to a boiled infusion without the latter being affected. However, if unheated air is subsequently introduced the infusion is infected. He further demonstrated that atmospheric air can be admitted to a putrescible medium without infection taking place, provided that the air enters through a long neck which is so bent as to trap the germs. These important results were extended almost at once by Tyndall, and Pasteur and Tyndall were jointly responsible for the final overthrow of the theory of spontaneous generation.

Despite the fact that Pasteur is the father of modern bacteriology, he and his followers discovered few new organisms. Pasteur's mind began working in the direction of prevention. His earliest practical application of his views was in connexion with a disease of silkworms (*pebrine*), and very soon he was absorbed in his experiments on the prevention of anthrax in animals. His work on chicken cholera led to his methods of attenuating organisms for injection (1880), and on this foundation rests the modern science of immunology. His final and greatest effort in this field was his research on rabies, a disease which appealed greatly to the popular imagination.

During his lifetime the Royal Society twice honoured Pasteur. In 1856 he was awarded the Rumford Medal, and at a later date the Society gave him its highest honour—the Copley Medal. His own country has honoured him by the foundation, among other institutions, of the Institut Pasteur and its many branches. As Bulloch said, "There is no department of bacteriology that he did not enrich by his genius."

OCCUPIED HOLLAND

Holland is one of the most thickly populated countries in the world, and about one-fifth of its area lies below sea-level. Most of its people live in the three small industrialized provinces of Utrecht, North Holland, and South Holland. Before the war the health services were of an excellence appropriate to the high standard of living enjoyed by the Dutch—a way of life that was nevertheless precarious, depending as it did on a complex drainage system and trade with a great overseas empire.

The withdrawal in September, 1944, of the remnants of the First Airborne Division across the Lower Rhine, while for us merely postponing the possibility of victory over the Germans until the following year, was a major disaster for the whole Dutch nation. Starvation fell upon the land, afflicting especially the inhabitants of the cities and larger towns, and was accompanied by those diseases that flourish in an underfed, cold, overcrowded, and ill-housed population. The Chief Medical Officer of Public Health in the Netherlands, Dr. C. Banning, elsewhere in this issue (p. 539) explains what this meant in terms of death and disease. The rapid spread of tuberculosis, acute poliomyelitis, and typhoid fever was something which could have been predicted. Quite unpredictable was the rapid increase in the number of cases of diphtheria—50 times the 1939 figure—and also the relatively high number of adults affected.

² *New Engl. J. Med.* 1946, 233, 577.

Dr Henriette A Lohr (p 540) describes the effects of starvation and malnutrition. Her findings correspond closely with those of other observers in this field.

Conditions were at their worst during February and March of 1945, and were aggravated by an unusually cold spell of weather which froze many of the canals. The official ration was reduced to 340 calories a day, but many were too weak to stir out of doors to collect even this. In the three industrial provinces, the so-called B2 area or western district, 15,000 people died of hunger, and 80,000 cases of hunger oedema were known. First the Swedish Red Cross, and later airborne supplies from Britain, provided a certain amount of food, but lack of internal transport rendered distribution difficult. In contrast to this tale of disaster Dr J G G Borst (*Supplement*, p 57), the professor of medicine at Amsterdam University, shows how a well-organized and united medical profession was able to thwart the dictates of their German oppressors. In the main it was by means of passive resistance, since active resistance by the medical profession as a whole can result only in harm to their patients. Dr Borst writes that "the medical profession was also the only section of the population which unflinchingly and successfully resisted the encroachments of the Compulsory Labour Service." For many this meant the added discomforts of going into hiding—"under water," as they called it—and, for others, terms of imprisonment. Dutch doctors also played an active part in the resistance movement. Many wounded soldiers and airmen stranded in occupied Holland owe their lives and subsequent freedom to the skill and courage of the doctors and nurses. Because of their professional duties they were allowed greater freedom of movement than most civilians, and they made excellent liaison officers between various sections of the resistance movement.

Like us, the Dutch are suffering from a shortage of hospital accommodation and, to an even greater extent, from lack of trained nursing staff. However, they are hard-working people, and they are rapidly rebuilding their homes, their standard of living is now well above ours, and the flooded fields are again under the plough. Wooden huts have been ordered from Sweden to provide sanatoria for the many cases of tuberculosis resulting from the war. Those who were privileged to be with the Dutch behind the German lines during the winter of 1944-5 felt nothing but admiration for them. Doctors and nurses short of food and medical supplies spared themselves no pains for the sake of their patients. In spite of all difficulties they retained their professional integrity.

CUTANEOUS DIPHThERIA AND THE HEART

Absorption of diphtheria toxin from the usual site of infection—namely, the tonsillo-pharyngeal area—gives rise to myocarditis in a proportion of cases which may vary from 10 to 25%. Thus in 1922 Schwensen¹ recorded a rate of 17% in a series of 568 cases, 118 were classified as "severe," and there were 8 deaths. At the Herman Keeser Hospital, according to Top,² 21% of 1,828 cases were affected. Such an incidence includes both the early manifestations such as heart block, which is often fatal, and the late disturbances of rhythm from which death is less usual. Burkhardt, Eggleston, and Smith,³ who analysed the results of clinical and electrocardiographic studies in 140 patients with diphtheria, divided their cases of myocarditis into two groups. A first group of 23 patients showed mainly alterations in the S-T wave and lowered amplitude of the T wave. These changes occurred on an average 15 days from the

onset of the disease with a range of 5 to 39 days. The second group of 17 patients showed conduction defects which were noted earlier—on an average 8 days after onset with a range of 5 to 13 days. An interesting finding was that the latter changes took place in a much younger group of patients than the former. Most of the patients who developed signs of myocarditis also showed signs of some form of nervous lesion. Alsterd⁴ recorded somewhat similar changes and in a later paper⁵ suggested that a negative or isoelectric T-wave might in recovered cases persist for many years.

When diphtheria toxin is absorbed from the skin the picture presented is not so clear. Although most cases are diagnosed late and many have peripheral nerve lesions, a much smaller proportion develop myocarditis. Kay and Livingood⁶ have recently analysed a series of 140 cases of cutaneous diphtheria in the India-Burma theatre of war. The bacteriological diagnosis was not entirely satisfactory under field conditions, but judged by the extent of the local ulceration there were 50 mild, 72 moderate, and 18 severe cases, with only one death. Myocarditis developed in 4 of the severe, in 3 of the moderate, and in none of the mild cases. Electrocardiographic studies were made repeatedly, and the most frequent abnormality was depression or inversion of the T wave—a change which appeared usually between the fourth and seventh weeks, 4 of these patients had peripheral nerve damage. Such findings run parallel to those of Cameron and Muir,⁷ who in 66 cases found paralysis in 12 but made little comment on cardiovascular changes beyond noting that the only fatality was due to circulatory failure. Myocarditis would thus seem less frequent, less severe, and rather later in appearance in the course of cutaneous diphtheria. That severe circulatory failure occurs is undoubted, indeed it was the sudden death of one of their early patients which aroused Kay and Livingood's interest in the subject.

The inclusion of many mild infections in the records of cutaneous diphtheria might in part explain this difference. Once the condition is kept in mind the diagnosis may become common in the Tropics, for skin sores abound and bacteriological examination often yields positive results even in quite atypical lesions. Clarkson⁸ found diphtheria bacilli in 20 out of 30 infected wounds, but although 2 cases developed peripheral neuritis he did not seem to regard the infection with undue alarm. Chronic wounds particularly showed a high incidence of *C. diphtheriae*. It is a pity that such cases arise in appreciable numbers only under conditions which preclude examination of the patient's immune status, even the results of Schick-testing would be valuable in their assessment. But this cannot be the explanation, for in the series analysed by Kay and Livingood 43.5% of the cases developed a nerve lesion. The other reason may lie in the fact that diphtheria is carried more rapidly and easily to the medullary centres from faucial lesions and that in cutaneous diphtheria the centres are, therefore, to some extent spared, with a consequent reduction in late circulatory defects. Despite extensive work on the cardiac complications of diphtheria there is still need for further study to elucidate the relative importance of peripheral and central damage in its pathogenesis.

We announce with regret the death of Dr C. Lo Leipoldt, formerly Editor of the *South African Medical Journal* and Medical Secretary of the Medical Association of South Africa.

¹ *J infect Dis* 1922 30 279 308

² *Handbook of Communicable Diseases* 1941 Mosley St. Louis

³ *Amer J med Sci* 1938 195, 301

⁴ *Quart J Med* 1932, ns 1 277

⁵ *Lancet* 1933 1 413

⁶ *Amer Heart J* 1946 31 744

⁷ *Lancet* 1942 2 720

⁸ *Ibid* 1944 2 395

OCCUPIED HOLLAND

I THE PUBLIC HEALTH

BY

C BANNING, MD

Chief Medical Officer of Public Health in the Netherlands

Before the war Holland ranked among the highest of nations regarding health. The death rate of babies was extraordinarily low. During the war the mortality rate increased regularly without, however, the summer top feared so much in former times. Immediately after the liberation, in the summer of 1945 in spite of the good food supply the death rate of babies was so high that we could again speak of a 'summer top'. Many babies died within a few days with toxic appearances for which we could find no definite cause. Necropsy revealed no obvious reasons for the deaths. Per 1,000 born live there died in the whole kingdom

	Under 1 Week	1 Week to 1 Month	1 Month to 1 Year	Total
1939	15.5	4.3	13.9	33.7
1940	16.0	5.3	17.9	39.1
1941	16.5	6.2	20.9	43.4
1942	14.5	4.4	18.5	39.8
1943	14.2	6.3	19.8	40.3
1944 (1st half year)	15.5	7.4	20.7	43.5

As regards infectious diseases Holland could be proud of its abnormally small number of cases. During the war diphtheria spread in a startling manner, and it was observed that the higher age groups were gradually being affected in large numbers. The epidemic started in 1942, in the southern provinces and in the course of the next year or two spread over the whole country. In spite of the high figures recorded the number of cases is believed to have been still higher for owing to poor communications many doctors were unable to report all the cases to the Inspector of Public Health.

Besides the steep rise in diphtheria there was an abnormal increase in the number of cases of typhoid fever. Already in 1942 and 1943 cases were nearly five times as numerous as in pre-war years but in the first six months of 1945 the rise was still more startling. How could it be otherwise? Families were herded together under extremely bad hygienic conditions. Thousands of houses and many water pipes had been destroyed, medicines, disinfectants, and coal were scarce and there was a total lack of soap. Fortunately the number of cases of typhoid is now declining. Scarlet fever also showed a rise, but not to the same degree as diphtheria and typhoid.

Reported Cases of Illness				Reported Deaths			
	Diph- theria	Scarlet Fever	Typhoid Fever	Acute Polio- myelitis	Diph- theria	Scarlet Fever	Typhoid Fever
1939	1,273	10,257	172	403	75	24	25
1940	1,770	8,841	108	111	103	34	21
1941	5,457	7,197	161	445	213	35	21
1942	10,007	12,694	521	196	873	35	27
1943	16,000	25,466	531	1,931	2,515	23	50
1944	60,226	22,470	472	1,180	7	76	222
1945*	49,730	4,785	4,855	190	7	7	7

* Provisional figures

Tuberculosis

Tuberculosis causes much concern. All our strength will have to be exerted to combat this illness. The following table shows the rise of the total death rate of tuberculosis as well as the death rate per 10,000 inhabitants and the increase per cent over 1939.

	Total Deaths from Tb	Deaths per 10,000 Inhabitants from Tb	Increase over 1939 (%)
1939	3,600	4.10	—
1940	4,051	4.37	6.6
1941	5,005	5.92	44.4
1942	7,445	8.13	50.0
1943	6,557	6.99	70.5
1944 (1st half year)	7,289	8.75*	102.0*

* Calculated on death rate per annum.

The fight against tuberculosis in Holland is carried on in Tuberculosis Consultation Bureaux. Holland is divided into districts each having a consultation bureau with branch consultation bureaux in the smaller places and it is possible for every citizen to visit them. Admission to the bureaux is free for everybody from the poorest to the richest. The work of the consultation bureaux is to detect contact cases. The rise in tuberculosis can be noted not only from the mortality rate but from the increased number of cases which visit the consultation bureaux. In 1939 the new registrants were 60,377, in 1942 122,795, in 1943 157,844. In 1939 the consultation bureaux reported 13,560 cases of tuberculosis in 1942 24,622 and in 1943 27,981.

A recent investigation of the bureaux showed that 50,000 cases of tuberculosis are known in the Netherlands. Thousands have to wait for months for admission to a sanatorium. All the sanatoria are filled to capacity and it will take years to reach the favourable pre-war standard. Sanatorium and hospital facilities are being increased by providing wooden barracks, 300 of these having been ordered in Sweden. Every barrack will house 18 patients. Our greatest trouble is not lack of equipment but lack of medical and nursing personnel.

A Period of Malnutrition and Starvation

Malnutrition did not appear over the whole of Holland but only in the so-called B2 area or western district (the provinces of Utrecht, North Holland and South Holland). In these provinces live half the population of the Netherlands—namely, 4 to 5 millions. The big cities—Utrecht, Amsterdam, Haarlem, Leiden, The Hague and Rotterdam—are situated in the B2 area. When the Allied Forces marched into Nijmegen and Arnhem (September 1944) and our Government in London ordered a universal railway strike the whole railway personnel obeyed. The Germans closed our non-agricultural provinces from the agricultural northern and eastern provinces as a reprisal. Seyss-Inquart laid an embargo on all the provisions which were transported from the north and east to the west, in order to maintain our already small rations. By this closing and also because the Germans took away every means of transport, the western district was doomed to hunger.

The reserve of provisions in the western district was in such a state that the disaster already foreseen became a reality. The winter of 1944-5 was the winter of the notorious "hunger journeys." Officially no provisions were allowed to be transported, but it was often possible for people to break through the German line towards the north and the east. In that cold winter thousands of girls and women on bicycles without tyres or with a hand-cart, etc., badly dressed with poor footwear, and starving went in search of food. Journeys of 100 to 200 miles (160 to 320 km) were no exception. They came home laden with 30 to 50 kg of potatoes and some wheat, and could live for a few more weeks on that. Men between 16 and 50 years of age did not dare to show themselves in the street as they were constantly being rounded up and deported to Germany; consequently our women and girls had to carry out this almost superhuman task.

During the winter the population of this B2 area lived without light gas heat, laundries, soap or enough clothing, blankets, and food. Tulip bulbs and sugar-beet (officially distributed) plus some bread of very poor quality, were all we had to live on. After October, 1944, butter and animal fats were no longer distributed. As for other fats from September 1944 to the end of March 1945—7 months—1.3 litres of oil was distributed per head which means less than 0.2 litre per month. Officially there was also 100 g of cheese per month but often meat coupons were of no value because no meat was available. The bread ration gradually decreased. In the course of the war it had come down from 2,200 to 1,800 g a week then to 1,400 g and later to 1,000 g. In November 1944 it was 800 g, and in April, 1945, 400 g a week. Potatoes were rationed at 1 kg a week, but were hard to get.

As for the number of calories that were officially available per person I submit the following figures:

In the last week of Oct., 1944	about 1,300 cal. per day
Nov., 1944	900
Dec., 1944	550
Jan., 1945	460
Feb., 1945	340

Owing to the close co-operation of the Catholic and Protestant Churches the so-called "latent" supplies present in the B2 area could be mobilized, and because of this activity many thousands of Dutchmen were able to hold on a little longer until, in the course of the first quarter of 1945, the Swedish Red Cross brought some relief. The number of calories could then be increased to 525, and it was possible to distribute a food parcel of 700 calories a day for some weeks. But the last weeks of April, 1945 brought a severe cut—viz., to 400 calories a day. During the week before the liberation there was nothing left in the western district. Just for a few days a distribution of 230 calories a day, and then—no more. And in the very depth of this misery came the "finest dropping of the war," and Allied bombers threw out manna from Heaven. The German ration of 230 calories a day during the last days of April, 1945, was changed into the weekly "Allied" ration of

800 g bread	125 g meat	$\frac{1}{2}$ tin bacon
900 g biscuits	100 g cheese	2 bars of chocolate
200 g fat	200 g beans and peas	1 kg potatoes
100 g butter	200 g sugar	1 litre milk

Consequences of the "Hunger Rationing"

The first cases of death as a consequence of hunger were officially registered in the beginning of January, 1945. The death rate from hunger increased rapidly each week. Altogether at least 15 000 people died of hunger in B2 area, while about 80 000 cases of hunger oedema were known. First I will give a survey of the general death rate in the four big cities of the western district in the first half of 1939, 1944, and 1945.

Community	General Death Rate 1st Half year			Ratio (1939 = 100)			Death Rate per 1 000 Inhabitants		
	1939	1944	1945	1939	1944	1945	1939	1944	1945
Amsterdam	3 655	4 399	9 735	100	120.2	266.3	4.60	5.69	12.61
Rotterdam	2 616	3 260	7 827	100	124.6	299.2	4.25	5.39	12.94
The Hague	2 419	2 940	6 458	100	121.5	267.0	4.86	6.50	14.38
Utrecht	776	1 112	2 065	100	143.2	266.1	4.67	6.54	12.15

The death rate was greatest in February and March, when food rations were smallest. In the smaller towns the death rate increased in almost the same ratio as in the big cities, while the rate in the country districts, although increasing, was not so serious as in the towns. It is remarkable that in the big cities the death rate of men was much higher than the death rate of women. It is not clear to what causes the higher death rate among men was due. Heavier work was not a likely cause, for many factories and offices were either forced to a standstill or had to carry on with a greatly decreased working time. The women did wonders in the way of physical effort—it was they who went out for food under the most unfavourable conditions. Moreover the high male death rate occurred in all age groups, including infants and the groups over 50 years. As hundreds of thousands of men had already been deported to Germany and others had "gone underground"—i.e., they hid somewhere in the country—the death rate for men might have been still more unfavourable. It is now known that 75% of those who died from malnutrition were men.

Death Rate from Malnutrition in The Hague in 1945

Age Group	Total Death Rate			% of Dead from Malnutrition		
	1st Quarter 1945	2nd Quarter 1945	Half year 1945	1st Quarter 1945	2nd Quarter 1945	Half year 1945
Under 1 year	28	24	52	2.12	3.09	2.48
1-4 years	14	11	25	1.06	1.41	1.19
5-9	5	0	5	0.38	—	0.24
10-14	0	2	2	—	0.26	0.10
15-19	3	1	4	0.23	0.13	0.19
20-24	10	4	14	0.76	0.51	0.67
25-29	12	7	19	0.91	0.90	0.90
30-34	13	9	22	0.98	1.16	1.05
35-39	16	10	26	1.21	1.28	1.24
40-44	43	20	63	3.26	2.57	3.00
45-49	62	29	91	4.70	3.74	4.35
50-54	90	36	126	6.83	4.63	6.01
55-59	153	62	215	11.60	8.00	10.26
60-64	154	93	247	11.67	12.00	11.80
65-69	586	373	961	44.43	48.32	45.87
Over 80 years	130	93	223	9.86	12.00	10.65
Total	1 319	776	2 095	100%	100%	100%

What strikes one when examining the death rate from malnutrition is the fact that persons in the older age groups were

those mostly affected. This is exemplified in the figures for The Hague given in the preceding table. Consequently in The Hague as many as 84% of the deaths due to malnutrition were of persons over 50 years while 56% were of those over 65. In the age group 5-35 years there were very few deaths—in The Hague only 3.14% of the total. The growing up period of 5-19 years came out exceedingly well, whereas the percentage for the infants was fairly high. I dare not say to what degree the combination of hunger plus cold played its part in this trouble. Though I give only the figures for The Hague, those for the other big cities in the western district (Rotterdam, Amsterdam, Haarlem, Leiden, Utrecht) show exactly the same picture. The western district paid heavily for this war, suffering as it did from so severe a famine.

Relief Measures

And now for the question how we combated the hunger. On May 3, 1945 some days before the German Headquarters capitulated consequently when the war was still going on in B2 area, four Allied officers entered that area. It was the "Advisory Committee" for the "Special Feeding Teams" who were ready in the southern part of our country to help B2 in its great need. The leader of this "Advisory Committee" was Sir Jack Drummond (England), the others were Dr. Leach (USA), Dr. Beattie (England), and Dr. Loutit (England) together with myself. The 50 special feeding teams (each of them with a doctor as its leader) were distributed over the most threatened places in B2. Their activities started in the hospitals, later on they shifted to the polyclinics. The teams brought specially prepared food, together with laboratories and instruments. At the same time large quantities of food were dropped on the aerodromes and loaded ships came up "Waterweg" to Rotterdam, while from the east via the province of Gelderland, thousands and thousands of tons were brought by trucks. The result of all this was that by May 15 there was a considerable decrease in the number of deaths from malnutrition—a decrease which continued till the beginning of August, when it disappeared altogether.

II CLINICAL IMPRESSIONS*

BY

DR. HENRIETTE A. LOHR

Amsterdam

Whereas in Paris hunger osteopathy was seen as early as 1941 the first case of osteomalacia caused by food deficiency in Holland was described in March, 1943. Afterwards there were many cases of hunger osteopathy.

The chief symptoms in hunger osteopathy are pain and stiffness of the back, the lower limbs, the feet, and now and then also in the arms and ribs. The patients move about in a curious stiff way, and when rising out of a chair have to heave themselves up by their hands. Coughing and sneezing may be painful. In some cases, as the complaint was thought to be of rheumatic origin, gold therapy had been tried, but in vain. On x-ray investigation one finds translucent notches or bands of decreased opacity, so called looser zones where the bone has been replaced by osteoid. They are located chiefly in regions of stress and strain. In some cases there are deformities with callus formation. Hunger osteopathy is regarded by certain authors as "the result of a combined deficiency of multiple food factors, of which animal protein might be one and of which vitamin D is probably the most important." Untreated hunger osteopathy develops progressively into typical osteomalacia. Twenty-two of our cases occurred in women. We are inclined to ascribe this peculiar sex distribution to a difference in food habits between men and women, rather than to hormonal distinction between the sexes. Generalized osteoporosis is often present, but may be slight in early cases. Our cases improved with rest in bed, a full diet especially rich in animal protein and calcium (milk) with extra vitamin D by mouth or by injection. The patients lost their pains within two weeks. X-ray examination demonstrated objective improvement within two months. It is our impression that vitamin

* Abridged from an address to the London Association of Medical Women's Federation, Sept. 24, 1946.

was the most important therapeutic agent. It made no difference whether the vitamin was given by mouth or by injection."

From 1944 children were seen with Barlow's disease, which had become unknown in Holland, and rickets was increasing rapidly. Pellagra was observed in psychiatric patients from 1941, and afterwards cases occurred in mental hospitals, though they were fewer than had been anticipated. There were, however, many cases of perniosis, which probably had some connexion with nicotinic acid deficiency, and mouth and tongue sores, which undoubtedly had. The same can be said of beriberi: we did not see many definite cases, but there was an unusual number of patients with polyneuritis and there still is. From 1942 we all had polyuria especially at night, quite frequently amounting to more than 3 litres a day. It must be considered as a latent oedema.

Food poisoning by mushrooms and by beech nuts was seen from 1942. Up to 1943 there had been 223 cases of the latter. Beech nut poisoning is characterized by intestinal troubles, severe headache, difficulty in breathing, a cloudy effect on the brain and in some cases a rabies-like condition. It can be avoided by removing the germ of the nuts. The illness passes in a few days and is never dangerous. Botulism brought about a state resembling myasthenia gravis.

Partly as a result of the coarseness of the food and partly owing to psychic strain, cases of ulcer of the stomach and of the duodenum increased. Stolte and Beaumont state that at the Onze Lieve Vrouwe Gasthuis at Amsterdam during the 44 months from January, 1936, to September, 1939, there were 392 ulcer cases in the wards, whereas during the 46 months from September, 1939, to July, 1943, there were 633. The number of ulcers of the lesser curvature was relatively higher than before the war and the perforations had increased considerably.

Treatment of diabetes mellitus became very difficult on account of the lack of insulin and of suitable food. All diabetics except the very severe cases had to do without insulin and had to be reduced to hunger diets. During the 'hunger winter' these were symptom free though sugar-beet was their principal food. Afterwards they suffered severe relapses. Lack of fuel during the very cold winters of 1941 to 1944 was the cause of a much higher incidence of rheumatic diseases and perhaps also of nephritis. The latter, however, was apparently contagious like trench nephritis during the war of 1914-18. It was characterized by severe uraemia and oedema with a blood pressure that was only moderately high. Blood pressure in general had a tendency to be lower than usual, probably because of undernourishment.

Poliomyelitis and Diphtheria

During 1943 there was a bad epidemic of poliomyelitis and its contagiousness was clearly demonstrated in a home for children. Most of our bacteriologists now adhere to the theory of faecal infection. Lack of soap may have influenced this epidemic. We always have had some cases, mostly during the summer months in Amsterdam they amounted to 8 or 9 a year. During 1943 in Amsterdam alone 655 cases were notified and there probably were many more. The abortive form with intestinal trouble, headache and moderate temperature is not easily recognized and cannot be detected from the specific reactions in the spinal fluid as during an epidemic these reactions are positive in many who have not been manifestly ill. These persons must all have undergone infection and gained immunity as a consequence. In the course of one year the population may be said to be 'durehseucht' as the Germans call it. To be sure in the next year there were only 51 new cases.

Already in 1941 the figures for diphtheria were showing a tendency to rise. In Amsterdam new cases were shown to belong to the *intermedius* and not to the local *mitis* strain. The next year brought a very bad epidemic and this time it was caused by the *gravis* strain which had been imported from Germany. From a mean figure of 100 cases a year in Amsterdam we had nearly 8,000 cases in 1944 among which were many severe infections with early death from toxæmia or paralysis even after many months. The infection moreover was made worse by the lack of serum and could not be controlled until after our liberation when we were able to

obtain the potent new British sera. During this epidemic many adults fell ill, even those who had had diphtheria before, as the former *mitis* infection gave no protection against this new strain. This epidemic therefore proved fatal to many adult people as well as children.

Hunger Oedema

The official report of the percentage of people with hunger oedema during the spring of 1945 has not yet been published. Most of the population were showing some slight degree of oedema, and all of us had nocturia. In many people the oedema did not become manifest until the summer, when we had salt again. The oedema still has a tendency to return, perhaps because our food is poor in protein. Though there is a predilection for the lower parts of the body, other parts may become involved through various causes—for instance, local infection or mechanical irritation. A very frequent location was the face. In oedema formation the protein content of the blood plasma is not the only factor, for in some cases of oedema the blood protein was not lowered at all. Prof. Formyne is of the opinion that hunger oedema has some features in common with nephritic oedema as regards distribution, the possible normality of blood proteins, and the lack of a rise in venous pressure.

With regard to the last feature however, Stolte has pointed out that the tissue pressure is very much lowered as a consequence of the loss of fat and part of the muscle tissue. There is a curious contrast between the dry leathery skin in some parts which is loose and can be lifted up in big folds, and the solid oedema in other parts. Venous pressure cannot be high with such a low tissue pressure. In another respect there is a difference between the nephritic oedema and hunger oedema as the latter is low in protein. Renal function was normal and there were no indications of cardiac insufficiency. Most people had a very pronounced bradycardia and lowered blood pressure. Damage to the capillary wall must be an important factor, as the Rumpel-Leede phenomenon was always present. Low tissue pressure is another factor, and lowering of blood albumin plays a part in some cases.

Dr. Adelsberger, from her experiences in German camps, made a distinction between two types of starvation—a dry form and one with oedema. We had the same experience in Holland, inasmuch as between February and May, 1945, people collapsed in the streets and died from starvation, with very low body temperatures, showing little or no oedema and sometimes not seeming so very thin either, the latent oedema having taken the place of the intertissue fat. During this cold winter body temperatures of 27-29°C were not uncommon in these people and most of them died. It proved very difficult to raise these low temperatures. After our liberation the number of patients with manifest oedema increased considerably. Even with a very poor diet and rest they would sometimes lose their oedema in a short time showing a diuresis of 3-5 litres a day. All of these patients had anaemia, sometimes in a macrocytic form which was not cured either by iron or by liver. It was not the deficiency anaemia of Lucy Wills, but rather an aplastic form, the bone marrow showing very little activity. It responded to proper feeding very slowly, and then often changed into a hypochromic anaemia, which reacted to iron.

Psychic factors were an extreme lassitude and apathy, with considerable irritability. Anxiety states and psychosis were sometimes seen. Many elderly people took to their beds and died because they could not be bothered with the trouble of standing in queues to get a pint of thin soup. Others were frozen to death from lack of fuel. The Bureau of Churches has done much good work in seeking out and feeding these people.

Polyneuritis was and is still a common disease. In some rare instances there was a neuritis of the optic nerve with central blindness, weakness of the muscles, considerable muscle irritability and a tendency to cramps, which persists in some. The blood calcium was lowered in many instances. Chvostek's sign and Trousseau's phenomenon were only occasionally present.

Many people had intestinal troubles, which were aggravated by the diet of sugar-beet and tulips. For some time we had half a loaf of bread and 4 kg of potatoes for the whole

and nothing more, these rations amounting to 300 calories a day. Though people went far afield to get food, they often returned with little or nothing, and were weakened by days of walking or cycling.

People who collapsed, standing in queues or going about the little work that was yet done, did not show orthostatic hypotension, but a low blood sugar. They swayed some time before actually falling down, sweated and seemed completely dazed. In extreme cases of starvation hunger disappeared and food was refused because of difficulties in swallowing. In elderly persons death from cold was caused by lack of fuel, but at the same time there may have been a deficiency of the thyroid gland as a result of starvation as at necropsy the gland was found to be small and leathery. Basal metabolism was lowered in most people from 20 to 30%. Strange as it may seem during a period of hunger, in cases of hypothermia some advocated the use of thyroid.

A curious feature was that some girls and young women got fat on a diet totally insufficient. This condition is probably a mixture of myxoedema and hunger oedema, but the oedema is not demonstrated very easily. It is difficult to cure this condition with our present food supply. Even now there is a serious lack of protein and a relative abundance of carbohydrates. These patients are not benefited very much by thyroid extract. They complain of weakness and severe headaches, which sometimes are made worse by thyroid therapy. Treatment of starvation with or without oedema has consisted in rest in bed and a diet of skimmed milk with glucose and vitamins. Very slowly the food intake has been raised. Kaolin, lactic acid, charcoal, and opium proved of value in the treatment of intestinal trouble. Intravenous therapy of casein preparations, amino-acids, and blood or plasma transfusions did not prove of much value.

We have learned some things during this hunger period. Even those who didn't get oedema have experienced a curious change in their outlook and behaviour, which varied from complacency and apathy to irritability. Formerly we may have scoffed at the poor for not being able to grasp the many opportunities which life offers to better their conditions. We never realized the fundamental significance of food. People who have been starved many times, like the Indians, are apt to have an outlook on life and a standard of behaviour different from those of more fortunate ones. There is to-day nothing perhaps of more importance than the effort to obtain food control for the whole world and nothing more necessary than to improve upon it until it is possible to provide adequate food for all countries and for every man and woman and child of the community. Not until this is achieved will it be possible to assess the intellectual and moral qualities of the various races or to expect their willing and active co-operation towards pacification and unification of the world.

THE PASTEUR EXHIBITION

The United Nations Educational, Scientific, and Cultural Organization (Unesco) organized last year, as part of its International Month, an exhibition commemorating Pasteur, which was shown at the Palais de la Découverte in Paris. This has now through the co-operation of the Cultural Relations Department of the French Foreign Office and our Ministry of Works, been brought to the Science Museum, South Kensington, where it will be on view free until May 26. It was opened on April 9 by M. René Varin, the Cultural Counsellor to the French Embassy in London, who said that perhaps Pasteur's most striking quality was his patience, which exemplified the aphorism that genius is a capacity for taking infinite pains. Throughout his life he had never set himself a plan of research but had let problems come to him. The work which had first made him famous has led to his revolutionary discoveries on the nature of fermentation by which he had discovered the traditional notion of spontaneous generation. From that he had passed to diseases of silkworms, anthrax, fowl cholera, swine fever, and rabies. His love of science and humanity was entirely altruistic. He was completely indifferent to the standing of the persons he helped, and although he had had many

opportunities of self enrichment he had neglected them. He was an intensely religious man and spent the night awake and at prayer before he first used his antirabic serum on a human patient.

France was naturally proud of Pasteur, the more so because his qualities of tenacity and patience were relatively rare among Frenchmen. These very qualities had perhaps served to link him more closely with his English hosts, for whom he had performed some of his most notable work. Visitors would see an admirably penned letter in French from Lord Lister to Pasteur, and another in which Pasteur acknowledged the inspiration he had received from the works of Lister and Jenner. The intimate connexion of these three great men, in their will to help humanity, was a strong tie between their two countries.

Sir Henry Dale regretted that His Excellency the French Ambassador M. Massigli, could not be present but thanked him, M. Varin and his colleagues, and M. André Léveillé, Director of the Palais de la Découverte, who was directing the temporary installation of the exhibition in London. Dr H. Shaw, the director of the Science Museum, had co-operated in arranging for this display, to the great gain in instruction and interest of all who visited it. An important addition had been made by the loan of a collection from the Wellcome Historical Medical Museum, and by the specimens lent by the Dewar Laboratory at Edinburgh and Messrs. Whitbread. The exhibition gave visitors the opportunity and privilege of recalling vividly with intimacy and detail the life and scientific achievement of one of the greatest of all the distinguished sons of France and one of the outstanding figures in the science of all the world in all the four centuries since modern science had begun. No adequate estimate could be made of the value in human health, happiness and prosperity of all Pasteur's discoveries. His marvellously consistent career, which the exhibition served to teach and reinforce, pointed however, one lesson. Pasteur did not set out on his life's work with even a thought that it would lead to discoveries revealing the nature of fermentation, putrefaction or eventually of infectious diseases as due to specific living micro-organisms. He did not even start as a biologist, but as a mineralogist and crystallographer. His first great discovery, which at the early age of 34 had won for him the Rumford Medal of the Royal Society, had been of the crystallographic and optical asymmetry of the two kinds of tartaric acid. From that discovery he had followed the natural lead of his genius to recognize the connexion between such asymmetry and the chemical activities associated with life. Thus in logical and unbroken sequences he had come to discover living organisms as the causes of fermentation, putrefaction and infectious diseases to expose the fallacies in all the appearances which had led men to believe in spontaneous generation and to lay the scientific foundations of all our knowledge of specific immunity. These discoveries had led to revolutionary changes in the conditions of civilized existence and represented an almost incredible sum of achievement for one man's life, but they represented the achievement of one who throughout his life remained a single-minded seeker for truth for its own beauty and interest who had humbly accepted Nature's answer to his inspiring questions and faithfully followed the clue wherever it led.

Sir Henry concluded by saying he hoped the exhibition would strengthen still further the ties of intellectual and cultural sympathy and of scientific comradeship between France and Britain, and that as in Pasteur's day, so now the work of scientists would help both peoples to rise above the losses, injury, and deprivations which a greater and even more cruel war had left in its train.

Dr H. Shaw, Director of the Science Museum, moved a vote of thanks to the French authorities for placing the exhibit at the disposal of the Science Museum and for the strenuous work they had done to make it ready, and to the other contributors to its success.

The exhibition includes several portraits of Pasteur, masters, disciples, friends and colleagues, enlarged maps of Strasbourg, Lille and other towns and districts he lived in, pictures of the Ecole Normale where he investigated molecular dissymmetry of Salins and Monteviers where he worked on spontaneous generation and other places famous by association with him, and of members of his

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He was a capable sketcher and pastel painter, and some of his portraits of his father, mother, and friends are shown. Striking models illustrate the preparation of antisera in laboratories in France's Oriental possessions and enlarged photographs and display panels show graphically the significance of his discoveries of micro organisms and immunity factors. The Wellcome Museum exhibit includes crystals and diagrams showing the foundations of stereochemistry which Pasteur laid. Much of his original apparatus is on view, together with some of his personal possessions.

[Sir Alexander Fleming's inaugural lecture on Pasteur appears in the opening pages of this week's *Journal*.]

Correspondence

Treatment of Post-operative Pulmonary Atelectasis

SIR—In his letter (April 5 p 468) Dr M H Armstrong Davison speaks of bronchoscopic aspiration, which, all observers agree is the ideal method of treatment and which should be undertaken as soon as signs of atelectasis appear.

I cannot agree with this remark, for if generally accepted it would lead to many unnecessary bronchoscopies and would serve to encourage the neglect of the various simple procedures which are quite effective in most cases.

I fully agree with Dr Davison that atelectasis is the commonest post-operative chest complication. Its incidence depends however on many factors working together, before, during and after the operation and culminating in retention of sputum in the bronchi. Our efforts should be directed to preventing this occurring or minimizing its effects in addition to the treatment of the established condition. It is not enough to rely upon some one trick or other, in which category, incidentally, falls the method described in your annotation as a new treatment. I have always resisted the attempts to put bronchoscopic suction in a prominent place in treatment because the careless or inexperienced will thereby be encouraged to take no steps to prevent sputum retention or to establish bronchial drainage by simpler postural means. I am often asked to bronchoscope patients with atelectasis after abdominal operations in whom not the slightest attempt has been made to relieve the condition by the simple change of posture (lying flat on the side two or three times a day) and encouragement to cough. I find bronchoscopic suction is but seldom needed in these cases although it is of the greatest value after many operations upon the thorax. The use of postural coughing and other simple measures is mentioned in only the three last lines of Dr Davison's letter and is having their place. They form the bed rock of management. Moreover although in expert hands bronchoscopic suction is no great burden and is effective in unskilled hands and when the patient is a child or of a difficult build it may be far from a simple procedure or a light burden.

The method of injecting water through the wall of the trachea is an unnecessarily unpleasant way to provoke coughing. If it is desired to start a fit of coughing by the irritation of water in the trachea why not use the large hole provided by nature—that is the laryngeal aperture—instead of puncturing the trachea? A curved laryngeal cannula would be just as effective—I am, etc.

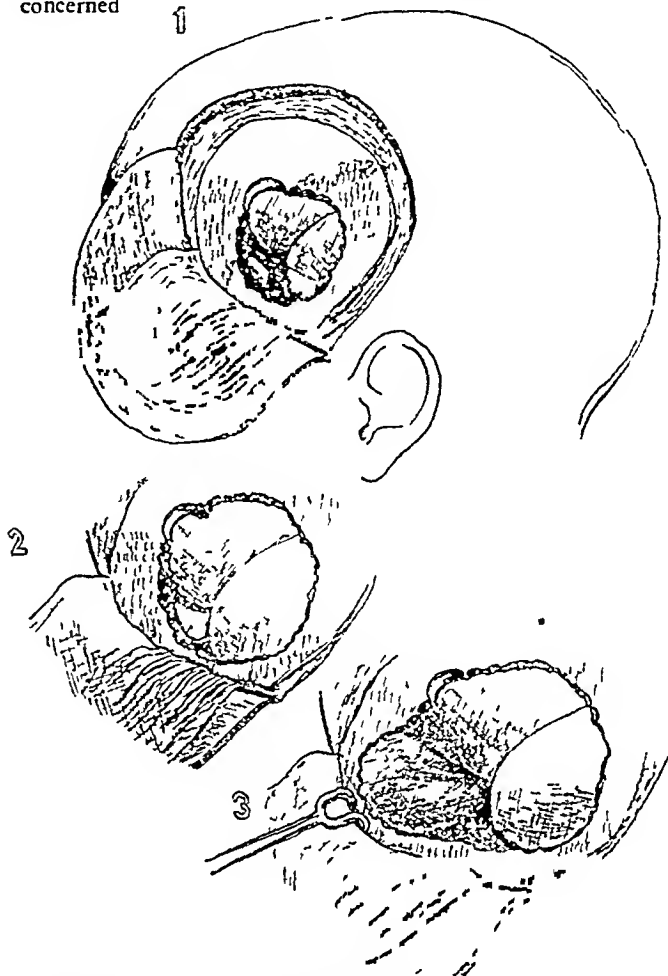
LONDON W 1

R C BROCK

Orbitotomy

SIR—Mr H B Sallard's article (March 29 p 408) favouring the more generalized use of the Krönlein operation rather than the transfrontal route advocated by the late Dr Walter Dandy must appeal to those interested in the surgery of the orbit. Although Dandy's justification is not to be accepted as a *bona fide* comment for it was based on an assumption that a small incision precluded recognition of the true distribution of a lesion, there is much to be said in favour of the approach as possibly some modification of it. Nevertheless, Sallard's proposal calls for some further consideration. It should be remembered that the aesthetically result of the Krönlein operation is not the least of its merits and is hardly supposed to be a time-consuming procedure in cases in which the lateral

approach to the orbit has been carried out by highly reputable ophthalmic surgeons. My usual experience of the result is that much is to be desired, in so far as the final appearance is concerned.



An approach based on modification of both methods seems to offer much. In fact for the last two years I have operated through the scalp incision of Dandy's procedure, but have avoided the reflection of an osteoplastic flap. The scalp having been reflected the temporal muscle is turned down from the crest. A perforation is made from the temporal fossa into the orbit and the defect extended by means of nibbling forceps, to produce a combined cavity consisting, if necessary, of the orbit, the middle fossa and the anterior fossa. By such means a very extensive decompression is permitted. This operation has been found applicable to all forms of orbital exploration, more especially is it of value for the extensive relief it affords in a case of exophthalmic ophthalmoplegia.

As one may appreciate from the operative sketches, the somewhat facetious designation of the exposure as the "pawnbroker operation" will appear appropriate. I am indebted to Dr S L S Schwarzwald for the drawings—I am, etc.

LONDON W C 1

HARVEY JACKSON

The Revolution in Anaesthesia

SIR—Times have changed but still how often does this occur? A patient made stuporous with scopolamine and 'omnupon' is brought to the anaesthetic room, and after his throat has been sprayed with a solution of cocaine he is rendered completely unconscious by means of an intravenous barbiturate. The next few minutes disclose a scene of bustling activity. An endotracheal tube is inserted and this tube or the patient's face is attached firmly to that particular form of anaesthetic apparatus favoured by the anaesthetist. Cyclopropane is next administered and the patient barely breathing but still indissolubly linked to the machine, is taken into the operating theatre. A short time elapses till the surgeon complements the anaesthetist on the quiet relaxed operation field. An audible sigh of relief is heard. If on the other hand the

remark 'He's still a bit tight, doctor' is passed, how quickly a shot of tubarine secures the desired result, while the reply 'He's a very resistant type' satisfies honour, but none marvels at the miracle of what the human body can withstand. Several hours later the patient is just sufficiently conscious to be told that his operation is over, and he sinks once more into the twilight of that half-world known as 'recovering from the anaesthetic'. He does recover and reaches convalescence, often without complications, yet none wonders at the miracle. Possibly the picture is overdrawn but if it is a caricature the implications are nevertheless true.

We use to-day powerful agents which have revolutionized anaesthesia. Is it strange therefore to affirm that when they are used the whole conception of anaesthetic administration must also be revolutionized? Every phase of modern technique affects the respiratory act either centrally or mechanically. The anaesthetist must breathe for the patient, and the old conception that as long as the patient was breathing everything was all right must be forgotten and a new approach substituted. The moment these drugs and these methods are used the anaesthetist is wholly responsible for the gaseous exchange in the lungs of his patient and hap what hap *there must be no anoxia*. This can only be assured by the constant and intelligent manipulation of the rebreathing bag of a sound closed circuit. Till this is realized, shock, ileus, post-operative vomiting, and many other complications will always occur.

The day of heavy premedication has passed, for with the advent of the intravenous barbiturates the terror of induction has been removed and the slow recovery of consciousness and the essential reflexes consequent on the production of pre-operative peace, should now never be seen. Minimal premedication given at the right time is all that is required nowadays.

Cribe's theory of shock is now outmoded, it has been replaced by the solid biological fact that so long as blood loss is made good and provided that there is no anoxia with few exceptions the lighter the plane of anaesthesia the more readily can the neurovascular mechanism of the body withstand the onset of shock. It is sufficient, therefore, to maintain the patient in a light first-plane anaesthesia by the judicious use of the intravenous barbiturates, supplemented when necessary by the exhibition of a minimal quantity of cyclopropane, while relaxation is secured by the addition of *d* tubocurarine chloride. When these three drugs are used in combination they potentiate each other in a remarkable way, consequently toxic after-effects are greatly minimized but there must be no anoxia.

Anaesthesia conducted on these lines, no matter how severe the operation, will present a patient who coughs on the table and will often speak, one who on being returned to the ward is able to sit up immediately and is fully co-operative within half an hour. After this if he is nursed in a steam tent and an adequate fluid intake is assured—by the intravenous route if necessary—the bronchial secretions are kept fluid, with the result that coughing, with the wound area adequately supported, is productive and post-operative complications are avoided.

These few observations result from the experience in the use of *d* tubocurarine chloride over a period of two and a half years—I am, etc.

Liverpool

JOHN HALTON

Anaesthesia for Caesarean Section

SIR—The recent discussion on anaesthesia for caesarean section at the Royal Society of Medicine reported in your issue of April 5 (p 463) gives the impression of undiluted and almost unchallenged spinal, epidural, or caudal anaesthesia as being the method of choice. If this is so I feel that it is unfortunate and should not be left uncontested. The various speakers pointed out the disadvantages, such as the need for taking readings of blood pressure during operation, the not infrequent necessity for stimulants and the fact that it was not suitable for certain types of case, but insufficient stress was laid upon these disadvantages and the effect upon the patient was barely mentioned.

It must be admitted that an experienced anaesthetist can make a success, surgically speaking, of practically any type of anaesthesia one likes to mention. There is no onus on an obstetrician to make himself familiar with spinal anaesthesia in its various techniques, but there is, I would suggest, every

onus upon him to familiarize himself with the details of local anaesthesia. This was referred to by Mr C Macintosh Marshall and Prof Chassar Moir, but it was not sufficiently emphasized that this can often be a life-saving method. It is applicable either alone or with the addition of inhalation or intravenous anaesthesia for any and every case in which this operation is required, and in those in which the patient's condition gives rise to anxiety it is very often the only type of anaesthetic which should be used. If this were more widely recognized a considerable saving of life could undoubtedly be effected.

Its disadvantages lie only in a little added discomfort to the mother and the distaste many of us have for operating upon a conscious patient. The former can be largely avoided by careful handling and good technique, the latter by the use of inhalation anaesthesia in addition, which is, I believe the real method of choice. It is, however, very hard to better the results obtained from the point of view of both patient and surgeon by a sequence of gas, oxygen, and chloroform, followed after delivery of the child, by a little ether or what you will given by a competent anaesthetist—I am, etc.

London W 1

F NEON REYNOLDS

SIR—The recent interest in this subject at the Royal Society of Medicine (April 5, p 463) and Dr T C Gray's article on the use of *d* tubocurarine in caesarean section (April 5, p 444) will no doubt result in many conflicting opinions. While it is encouraging to read of dissatisfaction with the older method, it is disappointing to see so little support for the use of local anaesthesia. The only objection appears to be that it is unpleasant for the patient, and even so great an advocate as Mr C Macintosh Marshall refers to ameliorating the rigours of this method. In my view the unpleasantness is greatly exaggerated, chiefly by those who have used the method only a few times and who have discarded it after the initial disappointments which inevitably precede the attainment of a satisfactory technique.

Failure is usually due to one of two reasons. The first mistake is to expect too much from local anaesthesia alone. In the lower-segment operation it is practically impossible to deliver painlessly a head deeply engaged in the pelvis without the aid of some additional anaesthetic. Closing the abdomen may also be painful if the operation has not been completed in reasonable time and the effect of the local anaesthetic is wearing off. Both of these disadvantages may be met by the addition of gas and oxygen when necessary. The amount required is minimal, and a high proportion of oxygen can be given, because adequate relaxation should be obtained from the local anaesthetic. The second mistake concerns the actual technique. A considerable amount of deep "fanning out" of the injection is necessary in the suprapubic region. This is where most of the discomfort is felt, and it is aggravated by the pressure of the Doyen retractor. Needless to say the injection is greatly facilitated by the use of a continuous action syringe. The use of a sucker will minimize the painful swabbing of the peritoneal cavity.

The psychological approach to the patient is also important. Conversation and an explanation of what is happening are a great help, and it should be remembered that most operations are extremely hard. The use of 'omnupon' and scopolamine immediately after the birth of the child undoubtedly has a retrograde amnesic effect.

In this unit local anaesthesia has been used a great deal although it was discarded temporarily after the first few attempts for the reasons given above. It is now used more than any other method, but only with the object of delivering the baby entirely with local anaesthesia. After this, although the operation can be completed without further anaesthesia, there is no reason to withhold gas and oxygen, and it is usually given.

If this combined method is planned deliberately, and the addition of gas and oxygen after the birth of the child is regarded not as a "failure of local anaesthesia" but as an essential part of the technique, there should be no need to look for other methods involving complicated apparatus—'aided' respiration, foetal narcosis, and the constant watch for sudden collapse of the mother—I am, etc.

North Herts Maternity Unit

D W JAMES

Co-operation of Obstetricians and Paediatricians

SIR,—Reference has been made in recent numbers of the *Journal* to the desirability of obstetricians and paediatricians co-operating in their joint interest in the newborn infant. I should like to emphasize the value of such an experience in the light of the practice in the Belfast Medical School.

Every month the obstetricians and paediatricians of the maternity hospitals in Belfast meet to review the obstetric and paediatric problems of the previous month. The audience includes, in addition to the pathologist, anaesthetist, obstetric and paediatric registrars and tutors, senior and junior R.M.O.s and the appropriate members of the nursing staff. Representatives of the Ministry of Health and of the Belfast Corporation Maternity and Infant Welfare Department also attend. The programme includes statistics of the number of births, proportion of caesarean and forceps deliveries, etc., data relating to maternal and infant mortality and morbidity, as well as details of stillbirths and neonatal deaths. Discussions take place on incidents of special interest and questions are answered by the obstetrician and paediatrician in charge, with reports from the pathologist. Following this general review there is always time for discussion on one or more selected topics (sometimes presented by one of the registrars or tutors), often based upon an analysis of statistics obtained from the hospital records.

The value of this meeting is obvious, as obstetricians and paediatricians learn something of the problems as seen by the other. The sustained interest of those who attend regularly month after month has been sufficiently encouraging to make the meetings a recognized feature of the Belfast Medical School. The project owes its inception to the inspiration and enthusiasm of Prof. C. H. G. Macafee—I am, etc.

Belfast

F. M. B. ALLEN

Diphtheria in an Immunized Community

SIR—I have read with great interest the articles in your issue of March 22 on outbreaks of diphtheria in a highly immunized community and in adults. I have observed since 1941 in Italian populations an increase of diphtheria in adults in comparison to the child morbidity, and since then the same phenomenon has been described in nearly every country in Europe and elsewhere. But I was surprised not to find any mention of the method of restoration of diphtheria immunity in adults and vaccinated children described by G. Bousfield (*Journal* June 16 1945, p. 833). We have tried the oral administration of toxoid in adults (in Milan and Naples) and have obtained with the vaccine we have prepared better results than the Bousfield ones: one 100-Lf tablet daily for seven days was sufficient in more than 90% of the adults to provoke a very striking increase of antitoxin in the blood serum after 20 to 25 days (in many cases from <0.02 unit to more than 2 units). After these results it is difficult to exclude *a priori* the possibility of immunizing also small children by this method or some modification of it, and we have undertaken experiments in this direction. But it is certain that a new weapon against diphtheria in adults is already in our hands, and we should not forget to use it largely—I am, etc.

Naples

E. CARLINFANTI

Arsenical Encephalopathy

SIR—A case of arsenical encephalopathy with which I had to deal in 1938 showed the typical signs mentioned by Dr J. M. H. McMurray (March 22 p. 388)—headache developing in an Indian after the third intravenous injection of N.A.B. followed by convulsions and death within 48 hours, with high terminal temperature.

But this case differed from those of Dr McMurray and from that mentioned by Drs G. Hipps and R. Goldberg (March 8, p. 296) in that the patient was a congenital syphilitic. Before coming to this country he had undergone courses of treatment with myosalvarsan and bismostab intramuscularly so it would seem that it is the intravenous route of arsenical therapy which is the factor in the causation of encephalopathy—I am, etc.

London SW 1

J. STUART HENSMAN

International System of Weights and Measures

SIR—May I plead with Dr J. M. Hamill to cease advocating the substitution of the title 'International System of Weights and Measures' for the 'metric system'. In his useful article (April 5, p. 460) Dr Hamill argues that because there is no simple metrological relationship—that is, no whole-number relationship—between the metre and the kilogram and litre these last two are no longer part of the metric system. But there is a historical relationship, and verbal precision is satisfied, for the title 'metric system' is an example of that much used figure of speech which grammarians call a metonymy.

For some rapid estimations in engineering if not in medicine, the relationship between the metre and the kilogram and litre is close enough to be of help. The difference of 28 parts in one million (I prefer the British Standards Institution figure to Dr Hamill's) is not great enough to destroy altogether the relationship originally intended.

I write feelingly because I advocate the standardization of the metric system in aviation. In March, 1946, I adopted the metric system as the primary system of weights and measures in my paper *Aeronautics*. The system has been making progress in aviation. The International Civil Aviation Organization (formerly P.I.C.A.O.) has adopted it for all its publications though it still gives the British Imperial equivalents. British airline companies use it as well as papers on aviation read before the learned societies. But the way of standardization is hard, especially in view of the idiot opposition of Government departments. It would be made even harder if in place of the familiar name which is historically and grammatically correct and is brief and definite, we were to try to impose an unfamiliar, indefinite and clumsy name—I am, etc.

London W C 2

OLIVER STEWART

Editor *Aeronautics*

Dirty Milk Bottles

SIR—Dr J. H. Wildman's comments on this subject (March 29 p. 425) ignore the fact that where there are no canteen and washing up facilities milk bottles cannot be washed at schools. The lack of facilities for hand washing and even more hand drying (one towel for 30–40 children changed twice weekly is a typical provision in my area) makes the teaching of hygiene a farce.

Doctors associated in any way with schools could greatly assist the efforts made by parents and teachers to remedy this situation if having informed themselves of the lavatory and hand washing facilities available whether these are a Church or education authority responsibility, they would refuse to accept our present shortages as a reason for all deficiencies. For more than twenty years this situation has frustrated teachers and distressed parents and children. The time has come for doctors to help in the struggle for an opportunity for children to acquire practical habits of hygiene—I am, etc.

Farnham Surrey

NORA M. JOHNS

24-hour Day

SIR—A simple plan for doctors to maintain a 24-hour telephone service in the absence of anyone to take the messages would be the installation of a small recording unit which could be switched on in place of the telephone when the house is left, and which only comes into operation when a call is attempted.

I suggest that these units could be made using the magnetized steel tape method which after the messages have been read could be rubbed out and used again. Thus anyone wishing to call the doctor when he is out would hear a preamble from an incorporated record such as 'Doctor — is out. You will have two minutes to deliver your message which will be recorded. Please start with the patient's name, age, and address'. The apparatus would soon repay its cost as a part-time secretary could just come in for an hour at stated times to put the messages into writing. For the use of callers a pad and pencil could be provided in the porch—I am, etc.

Winsley Sanatorium near Bath

E. S. SHORT

Obituary

S MONCKTON COPEMAN, M.D., F.R.S., F.R.C.P.

We regret to announce the death on April 11 of Dr S Monckton Copeman at the age of 85. Dr Copeman has his place in medical history on account of his introduction of glycerinated lymph in vaccination against smallpox. This lymph was officially adopted in 1898 and has been in general use since then in this and in other countries. Dr Copeman's Milroy lectures, in which he described his work under the title of

"The Natural History of Vaccinia," were published in the *British Medical Journal* of May 7, 14, and 21, 1898.

Sydney Arthur Monckton Copeman was the eldest son of the Rev Canon A C Copeman, and was born at Norwich on Feb 21, 1862. He was educated at King Edward VI School



in that city and at Corpus Christi College, Cambridge, where he was a scholar, exhibitor, and prizeman. After obtaining second class honours in the Natural Science Tripos in 1882, he received his medical training at St Thomas's Hospital. He proceeded to the M.D. Cambridge in 1890, and was elected F.R.C.P. in 1899. After qualification he was assistant lecturer on physiology and morbid histology at St Thomas's. In 1891 he became a medical officer to the Local Government Board, and in the same year was one of

the founders of the Medical Research Club. His papers on the relationship between variola and vaccinia were published in the *Proceedings of the Royal Society* and his reputation established by these and his work on glycerinated lymph led to his election as F.R.S. in 1903. He received the Buchanan gold medal of the Royal Society in 1902, and other distinctions that came his way in that period were Cameron Prizeman of the University of Edinburgh in 1899, and Fothergillian Gold Medalist of the Medical Society of London in the same year. Among his early papers was one on the specific gravity of the blood in disease and another on haematoporphyrin in urine. He was the author of many reports on public health matters and contributed to the *Encyclopaedia Britannica*.

Copeman had a long and distinguished career in the public health services in this country and visited many parts of the world in connexion with investigations carried out on behalf of Government departments. In the war of 1914-18 as lieutenant-colonel, Copeman was in charge of the Hygiene Department of the Royal Army Medical College. He played an active part in many medical societies and organizations. He was, for example, Research Scholar and Special Commissioner of the British Medical Association, a member of the Council of the Royal College of Physicians, a member of the Faculty of Medicine, and chairman of the Board of Studies in Hygiene of the University of London; examiner in public health and in forensic medicine and toxicology in the University of Bristol; examiner in public health, Royal College of Physicians and the University of Leeds. After he retired from the service of the Ministry of Health in 1925, Copeman began to play an active part in the affairs of local government. For many years he was a member of the London County Council. He was also a member of the Hampstead Borough Council and chairman of its Public Health Committee.

He joined the British Medical Association in 1888, and was secretary of the Section of Public Medicine in 1892. At the Annual Meeting of 1910 he was vice-president of the Section of State Medicine. He was at one time chairman of the Hampstead Division, and took part in the central work of the Association as a member of the Science Committee (1932 and 1936) and of the Library Subcommittee (1933).

Copeman was distinguished in appearance and unfailingly courteous in manner. His wide culture brought him into con-

tact with men and women in many walks of life. He married Ethel Margaret, youngest daughter of the late Sir William Board, Bt., and had a son and two daughters. His son is a consulting physician in London.

Sir Arthur MacNalty writes

The death of Monckton Copeman at the advanced age of 85 removes one of the few survivors of the medical staff of the Local Government Board, who accomplished great things in the organization of public health in the nineteenth century and early years of the present century. Copeman, after a distinguished career at Cambridge and St Thomas's Hospital, became a medical inspector of the Local Government Board in 1891 and all his active medical life was spent in the service of that department and, subsequently, as a medical officer of the Ministry of Health. His discovery of the value of glycerine in destroying pathogenic organisms associated with calf lymph, the use of glycerinated calf-lymph in vaccination, and his papers in the *Proceedings of the Royal Society* on the relationship of variola and vaccinia early established his scientific reputation and for this work he was made F.R.S. in 1903. The use of glycerinated lymph abolished arm-to-arm vaccination and made vaccination a much safer and simpler operation. For this also Copeman deserves to be remembered.

Although Copeman served on many departmental committees his real interest lay in scientific research, and his alert mind fertile in new ideas, was directed to various subjects of inquiry. During his latter years at the Ministry of Health he devoted special attention to the cancer problem, and his report with Prof. Major Greenwood on *Diet and Cancer* with special reference to the incidence of cancer upon members of certain religious orders opened a new field of inquiry. He was a member of the Ministry of Health's Departmental Committee on Cancer, where his advice and ripe experience proved of much value. He was also a pioneer in immunization against diphtheria in this country. Endowed with untiring energy and enthusiasm, he found time in a busy official life to develop Army hygiene during the war of 1914-18. Keenly interested in natural history, he was a member of the Council of the Zoological Society and did much to improve its work on scientific lines.

Copeman had a generous and kindly disposition. A man of many interests and of wide culture, he was a delightful companion and I learned much from him during the years that we shared a room together in the Ministry of Health. He wrote to me frequently in recent years, and his letters do not show how well he kept himself informed of modern progress in medical research.

The life of Monckton Copeman was devoted to the public service and to the prevention of disease, and he did much to maintain the high standard of English State Medicine.

EDWARD J M WATSON M.D., F.R.C.P.

Dr Edward John Macartney Watson died at his home in Dublin on March 22 at the age of 74 after only a few days' illness. A son of the late Sir William Watson, managing director of the City of Dublin Steam Packet Co., he was educated at Eton and before entering Trinity College, Dublin, in 1895 he studied engineering at Trinity College, Cambridge. There he gained his blue in athletics and was a member of the team which toured Canada and the U.S.A. In 1900 he graduated, and in 1906 he became a Fellow of the Royal College of Physicians in Ireland. Shortly after graduation he was appointed assistant physician and anaesthetist to Sir Patrick Dun's Hospital, where he had been a student, and in the same year he was put in charge of the x-ray department, a post which he held until his death. For some years he also held a similar appointment at the Richmond Hospital. In 1923 he became, in addition, physician in charge of the x-ray department at the Adelaide Hospital. During the first world war he served as radiologist to Dublin Castle, Red Cross Hospital and in France with the R.A.M.C. on the staff of the 83rd (Dublin) General Hospital. Subsequently he was appointed radiologist to the Ministry of Pensions Hospital at Blackrock, later on to Leopardstown, Co. Dublin, where he had attended as

four days before his death. Shortly after the war he married Maureen, only daughter of the late T O Read and Mrs Read of Roscrea.

Dr Watson was a vice president of the Radiological Society of Ireland, and throughout his professional career he practised general medicine in addition to radiology. Like many of his early fellow workers he suffered much from x-ray burns, necessitating several operations, but he bore his disabilities uncomplainingly. Edward Watson, though he never paraded them, was a man of deep religious convictions, and his charity was, like all his actions, unobtrusive. He was always interested in Church matters, and for many years, in addition to various parochial appointments, acted as medical referee to the Representative Body of the Church of Ireland. He served on the committees of several philanthropic institutions, in which he took a lively interest, and to the success of which he contributed in no small measure by a calm and logical outlook, characteristic of the man.

His non-professional interests lay to a large extent in the field of athletics, and for many years he had been an active force both in the Dublin University Central Athletic Association and the Rugby Football Club. As a Commissioner of Irish Lights since 1923, nothing short of incapacity was allowed to interfere with his attendance at the weekly meeting of that body, which is responsible for all navigational apparatus on the Irish coasts. One of his greatest pleasures was to take part in the annual cruise of inspection around Ireland. He was indefatigable in the discharge of the duties involved, which often entailed hazardous landings in heavy seas, and for which he was well qualified by his engineering training and family association with shipping. A skilled woodworker, in the early days he constructed many ingenious and beautifully finished articles of x-ray equipment.

Though one of the most retiring of individuals, Edward Watson had a wide circle of friends, and if any evidence of his popularity was needed, ample proof was forthcoming in the very large attendance at a memorial service held in Christ Church, Leeson Park, where he had worshipped since childhood.

ERNEST WATT OBE, MD FRCP Ed

Dr Ernest Watt, for many years a medical officer of the Department of Health for Scotland, died at his home in Edinburgh on March 26 at the age of 71. He had a most distinguished academic career at Glasgow University, graduating MB ChB in 1897, MD in 1901, BSc (Public Health) in 1912, and DSc in 1917; he took the DPH at Cambridge in 1905, became a member of the Royal College of Physicians of Edinburgh in 1916 and was elected to the fellowship in 1931. After service as house-physician and house surgeon at the Victoria Infirmary Glasgow he held resident posts at the City of Glasgow Fever Hospital and the Glasgow Royal Maternity Hospital. Next came a short spell in general practice, after which he returned to hospital work as resident physician and bacteriologist to the Ochil Hills Sanatorium and later, physician-superintendent of the Middle Ward of Lanarkshire Hospital. Successive appointments followed as senior assistant to the county medical officer of Lanarkshire, MOH of the Burgh of Partick and chief tuberculosis officer for the County of Durham. While working in Partick he acted as assistant to the professor of forensic medicine and public health Glasgow University. In 1913 he was appointed tuberculosis medical inspector to the Local Government Board for Scotland continuing the same duties as a medical officer in the Scottish Board of Health and later in the Department of Health for Scotland until he retired in May, 1941. In 1939 he was awarded the OBE.

Widely known in Scottish medical circles Ernest Watt's opinion was freely sought on all matters connected with tuberculosis a subject on which his knowledge was extensive and profound. He was no narrow specialist however and many of his professional associates profited from his mature experience in general public health. He had wide cultural and scientific interests and for many years he was a member of the Astronomical Society of Edinburgh of which for a year he was vice president. All his academic attainments, experience, and interests apart it is the man himself who will be best remembered. Unassuming, patient, and imperturbable at all

times, his gentle, kindly disposition made him intuitively seek the good points in his fellow men, though he was not unaware of the failings of those who fell short of his own high standards. He will be greatly missed by all who had the privilege to know him.

'F S' writes Dr Ernest Watt was one of a small band of medical officers of the former Scottish Board of Health under the inspiring leadership of the late Sir W Leslie Mackenzie. The domain in which, in addition to medicine, his knowledge was outstanding was science, pure as well as applied. Among many other evidences the high standard of his attainments there in was well illustrated in the treatise written by him in 1925 in collaboration with the late Dr Lewis D Cruickshank and entitled *An Interim Report on Artificial Light and X-Ray Therapy*. In the more strictly medical sphere tuberculosis was the subject in which he specialized, and in which he served so acceptably as an official consultant. As a churchman his interests and his influence were life long.

If he could be numbered among the most highly qualified and the most scientifically minded, certainly he could also be accounted as the most modestly unassuming of all the many medical men whom the writer has met and with whose friendship he has been privileged. Especially conspicuous in his character was candour. Anything of the nature of duplicity or of subterfuge was alien to him.

ENEAS K MACKENZIE, MD

Many members of the profession learnt with regret of the sudden death, at the age of 65, on March 27, of Dr Eneas Kenneth Mackenzie, of Tain. Educated at Inverness Royal Academy he studied medicine at Aberdeen University where he graduated MB ChB in 1906, proceeding MD in 1909. For over thirty years he practised in Tain. He was a man of great character and outstanding ability. He gave his patients of his best and was much beloved and greatly respected. Dr Mackenzie took a keen interest in the organization of the medical services in the North of Scotland and in the development of the Royal Northern Infirmary, Inverness. A Highlander with more than the usual amount of Highland pride he contributed in no small measure to the reputation which the Highlands and Islands Medical Service so richly deserves. He was particularly interested in obstetrics, in which he was widely recognized as an authority. He had an orderly mind and differed from the great majority of doctors in that he enjoyed keeping meticulous records of his work. He was intolerant of authority and when roused expressed himself with characteristic Celtic fervour. He had, too, oratorical gifts of a high order. Yet he was the most humble of men and inspired affection in a remarkable degree.

He was appointed a member of the Medical Advisory Committee to the Secretary of State for Scotland at its inception. For two years he was chairman of the Highlands and Islands Subcommittee of the Scottish Committee of the British Medical Association succeeding that other well known Highland practitioner Dr J B Simpson, late of Golspie. Eneas Mackenzie had held office as president of the Branch as chairman of the Panel Committee and as an examiner for the Central Midwives Board for Scotland. For eighteen years he was chairman of the Ross and Cromarty Insurance Committee. His capacity in other spheres was recognized by his appointment as an honorary sheriff substitute for the county.

For some years he had been in indifferent health and it was difficult for a man of his temperament to take things quietly. He died as he desired while still actively engaged in practice. Dr Mackenzie is survived by his wife and two sons. His elder son is a lieutenant colonel in the Indian Medical Service the younger a dental surgeon-lieutenant in the Royal Navy.

The British Legion Village is to establish a nurses' home in the centre of Colchester for nurses employed at Nayland the British Legion sanatorium for ex-Service women and dependants which lies nine miles outside the town. Nayland will be the first sanatorium in the country to provide such a facility for its staff. Transport will be provided to convey the nurses between the home and the sanatorium.

Universities and Colleges

UNIVERSITY OF OXFORD

Election of Two Members of the Board of the Faculty of Medicine by the General Medical Electorate

An election of two members of the Board of the Faculty of Medicine will be held on Wednesday, June 4. The members elected will come into office on the first day of Michaelmas Term 1947, and will hold office, the senior for two years and the junior for one year from that day. The General Medical Electorate consists of all Oxford graduates in medicine who are members of Convocation. The Board of the Faculty of Medicine includes two members elected by the General Medical Electorate who must be members of that body and of whom one at least must be a person engaged in teaching one or more of the clinical subjects of the Faculty. Nominations of duly qualified candidates for election will be received by the secretary of Faculties at the University Registry, Oxford, up to 10 a.m. on Wednesday, May 14. Each nomination must be signed by six members of the General Medical Electorate, and no candidate will be eligible whose nomination has not been received by that date.

The Electors have awarded the George Herbert Hunt Travelling Scholarship to Selwyn Francis Taylor, B.M., M.Ch., of Keble College.

UNIVERSITY OF CAMBRIDGE

Sir Howard Florey, M.D., F.R.S., professor of pathology in the University of Oxford, will deliver the British Association's Radford Mather Lecture in Regent House, on Friday, May 2, at 5 p.m. His subject is 'Penicillin and other Antibiotics'.

UNIVERSITY OF LONDON

A course of six public lectures on 'Cell Physiology and Pharmacology' will be given by Dr J. F. Danielli in the Department of Pharmacology of University College on Fridays at 5.15 p.m., from April 25 to May 30. Admission is free and without ticket.

University College Hospital Medical School

A revision course of three weeks' duration in preparation for the examination for the Diploma in Anaesthetics will be held at University College Hospital Medical School beginning on Monday, April 21. The course is comprehensive in scope, including anatomy, physiology, applied physics, and pharmacology and is limited to 25 members. The fee is £21 inclusive. Applications to join should be addressed to the secretary, University College Hospital Medical School, University Street, W.C.1.

UNIVERSITY OF SHEFFIELD

Profs C. P. Beattie and C. H. Stuart Harris have been appointed representatives of the University at the fourth International Congress of Microbiology to be held at Copenhagen from July 20 to 26.

UNIVERSITY OF DURHAM

Prof. G. Grey Turner, M.S., F.R.C.S., will give the first Rutherford Morrison Lecture in the Royal Victoria Infirmary, Newcastle upon Tyne, on Thursday, May 29, at 5.15 p.m. His subject is "Rutherford Morrison and his Achievement in Surgery".

ROYAL COLLEGE OF SURGEONS OF ENGLAND

Election of Professors and Lecturers

The Council of the College invites applications for election to the office of Hunterian Professor, Arris and Gale Lecturer, Arnott Demonstrator and Erasmus Wilson Demonstrator for the ensuing year. The twelve Hunterian Lectures are delivered by Fellows or Members of the College. The three Arris and Gale Lectures are on subjects relating to human anatomy and physiology, the six Arnott Demonstrations on the contents of the Museum, and the six Erasmus Wilson Demonstrations on the pathological contents of the Museum. Applications in writing must reach the assistant secretary of the College (Lincoln's Inn Fields, W.C.) by April 28. Candidates for the Hunterian Professorships and the Arris and Gale Lectureships are requested to submit with their applications twenty copies of a synopsis of approximately 500 words describing the subject matter of their proposed lecture. In the case of Hunterian Lectures the Council is prepared to consider applications for either a series of lectures or a single lecture. Lecturers will be appointed subject to the condition of giving the College first refusal of publishing their lectures in the *Annals of the Royal College of Surgeons*.

Practical demonstrations in anatomy applied physiology and pathology have been arranged by Profs F. Wood Jones, John Beattie, and R. A. Willis, beginning on Monday, July 7, and continuing until Tuesday, Sept. 30, from 10 a.m. to 1 p.m., and from 2 p.m. to 3.30 p.m. daily. The fee is £21, and the closing date for

applications is May 12. The demonstrations will be open to those attending the main course of lectures to be held in July and September and will be limited to 40 students, preference will be given to those unable to obtain practical instruction elsewhere and to ex-Servicemen. Applications, accompanied by a cheque for £21, should be sent to the assistant secretary, Royal College of Surgeons of England, Lincoln's Inn Fields, London, W.C.2.

Medico-Legal

REMUNERATION OF AGENCY NURSES

[FROM OUR MEDICO-LEGAL CORRESPONDENT]

The Nurses Act, 1943, made "nurses co-operations" subject to licensing and inspection by local authorities. Section 8 (2) provides that in licensing an agency for the supply of nurses a local authority may attach such conditions to the licence as they may think fit for securing the proper conduct of the agency. In renewing the licences in the London area this year, the London County Council attached a number of new conditions. These prohibited an agency from charging a client more than the rates laid down in schedules attached to the licence and also from removing a nurse from service without giving reasonable time to replace her.

Mr Lewis Miller the proprietor of the London and District Nursing Association, which supplies about 400 nurses a year, appealed to the Clerkenwell Petty Sessions on the ground that the new conditions were illegal. His counsel, Mr G. R. Blarico White K.C., pointed out in the course of his argument that if the salary limits were valid a trained nurse of fifteen years' experience would get £5 3s. 10d. a week against the £6 1s. earned by a bricklayer's labourer. Mr C. Erskine Simes K.C., for the Council, said that it was merely imposing a scale which had been agreed upon by the employees and representatives of various nursing bodies and by the Minister of Health, and which was a reasonable scale. Mr Bertram Reece the stipendiary magistrate, giving judgment on March 31, said that in his view "only a temporary view"—the conditions were *ultra vires* of the Act, unreasonable, and against the public interest. He allowed the appeal and awarded 125 guineas costs against the L.C.C.

The issues in this case affect about 20,000 nurses, half of them in London, and raise fundamental questions concerning the proper place of agencies in the system of staffing hospitals up and down the country. Comment would be out of place until the appeal has been finally settled by the High Court, the Court of Appeal, or the House of Lords, all of which are open to the parties at successive stages.

A DEATH FROM PETHIDINE

The Westminster coroner inquired on March 28 into a death due to an overdose of pethidine (the hydrochloride of the ester of 1-methyl-4-phenylpiperidine-4-carboxylic acid). A clerk of 44 was found unconscious in a Paddington hotel and died soon afterwards. Four bottles of 3/4 gr. (50 mg.) tablets from which 54 tablets were missing, were found in his room. Dr G. Roche Lynch said in evidence that this was the first fatal case of pethidine poisoning he had met. The drug has an action similar to that of morphine. As it was discovered to produce addiction in some cases it was placed under the Dangerous Drugs Act in February last.

The Services

Lieut. Col. W. H. Crichton, C.I.E., I.M.S., has been appointed a Commander of the Order of Orange Nassau (with swords) for services when Director of Public Health and Welfare with 21 Ar. Group, B.L.A.

NAVAL MEDICAL COMPASSIONATE FUND

A meeting of the subscribers to the Naval Medical Compassionate Fund will be held at the Medical Department of the Navy, St. James's Street, London, S.W.1, on Friday, April 25, at 3 p.m. to elect six directors of the fund.

No 13

EPIDEMIOLOGICAL NOTES

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended March 29

Figures of Principal Notifiable Diseases for the week, and those for the corresponding week last year for (a) England and Wales (London included) (b) London (administrative county) (c) Scotland (d) Eire (e) Northern Ireland
 Figures of Births and Deaths and of Deaths recorded under each infectious disease are for (a) The 126 great towns in England and Wales (including London) (b) London (administrative county) (c) The 16 principal towns in Scotland (d) The 13 principal towns in Eire (e) The 10 principal towns in Northern Ireland
 A dash — denotes no cases a blank space denotes disease not notifiable or no return available

Disease	1947					1946 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever Deaths	115	9	37	3	—	74	8	38	4	2
Diphtheria Deaths	254	28	46	16	18	478	36	115	51	17
Dysentery Deaths	85	6	13	—	—	356	36	56	2	—
Encephalitis lethargica acute Deaths	1	—	—	—	—	—	—	—	1	—
Erysipelas Deaths	—	—	41	6	7	—	1	41	7	—
Infective enteritis or diarrhoea under 2 years Deaths	74	10	14	33	1	66	10	4	40	1
Measles* Deaths	10 780	541	370	36	38	2 282	675	683	37	1
Ophthalmia neonatorum Deaths	83	3	16	—	—	67	9	19	—	—
Paratyphoid fever Deaths	3	—	—	—	—	4	—	1 (B)	—	—
Pneumonia influenzal Deaths (from influenza)†	1 025	65	16	15	2	1 079	69	31	14	5
Pneumonia primary Deaths	—	68	273	33	16	—	57	360	31	16
Poliomyelitis acute Deaths	—	—	—	—	—	—	—	—	—	—
Rotavirus acute Deaths	7	1	2	1	1	6	—	3	—	—
Sarperal fever Deaths	—	1	29	—	—	—	3	20	—	1
Sarperal pyrexia† Deaths	141	12	16	—	1	156	12	22	1	1
Scarlet fever Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever Deaths	1 317	96	220	26	57	1 393	88	201	18	28
Smallpox Deaths	1	1	—	—	—	2	—	—	—	—
Typhoid fever Deaths	5	1	—	14	—	8	3	3	2	—
Typhus fever Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough* Deaths	2 263	267	358	94	29	2 092	200	88	29	12
Infant mortality rate (per 1 000 live births)	549	69	69	—	21	408	61	64	47	24
Deaths (excluding still births) annual death rate (per 1 000 persons living)	6 063	945	802	177	5 524	878	758	263	160	—
Births annual rate per 1 000 persons living	10 678	1634	1355	313	8 392	1291	1017	511	268	—
Deaths per 1 000 total births (including stillborn)	286	38	43	—	232	22	41	—	—	—

Measles and whooping-cough are not notifiable in Scotland and the returns therefore are an approximation only
 * Includes primary form for England and Wales London (administrative county) and Northern Ireland
 † Includes puerperal fever for England and Wales and Eire
 ‡ Includes births and deaths for Eire for weeks ended March 8 15 22 and 29
 § Not available.

Outbreaks of Smallpox

Fifteen separate introductions of Asiatic smallpox occurred in England and Wales during 1946. Fortunately, on each occasion vaccination and surveillance of contacts brought the disease under control rapidly, and only 40 persons became infected during the year. In mid-February, 1947, after an interval of seven months, the disease again appeared, and since then 33 cases have been notified (15 at Grimsby, 2 at Stepney 7 at Scunthorpe, 1 at Doncaster, and 8 at Bilston). The disease was introduced from an unknown source into a common lodging house at Grimsby Lincs, when two old men sickened on Feb 13 and 16. Subsequently 13 further cases arose, all in the direct line of contact with the original two cases. One was a man who had spent the night of Feb 16 at the common lodging house, and subsequently developed smallpox at his home in Grimsby. Two members of the staff of the public health department (a sanitary inspector and a disinfecter) both of whom had been concerned with the disinfecting of the common lodging house, developed smallpox while living at home. With the exception of these three all the secondary cases occurred among contacts either at the common lodging house (4) or in the ward of the public assistance infirmary (6) into which the original patient was unfortunately admitted. The total number of cases in this outbreak was thus 15. There were 6 deaths, and the high mortality was associated with the advanced age of the persons affected and previous debilitating disease in 4 of them. The last case at Grimsby was removed on March 9, and the town is now believed to be free from infection.

It is probable that an unidentified contact from Grimsby infected an attendant at a hostel for seamen at Stepney. Fortunately this man was admitted to a general hospital early in the disease and there infected only one patient. Since the removal of this secondary case on March 21 no further cases have been notified in the London area.

The disease next appeared at Scunthorpe, 28 miles from Grimsby. The first patient resided in a common lodging house where two contacts who had absconded from surveillance at Grimsby were staying. Initially, this man was diagnosed as a case of varicella and admitted to an infectious diseases hospital. In the second generation 6 cases have been notified, the first developing the rash on April 4. They include a doctor vaccinated in infancy only and an unvaccinated nurse, both of whom were attending the patient, the others were residents at the common lodging house. Five contacts have absconded from this lodging house while under surveillance. Their whereabouts is unknown, and they may be incubating, or suffering from smallpox.

There is no further information concerning the source of infection at Doncaster. The disease there in a schoolmaster was detected early, and prompt vaccination appears to have prevented further spread. Surveillance of contacts has now ceased.

All these cases appear to be infected with Asiatic smallpox of moderate severity. In contrast, the disease at Bilston in Staffordshire, is said to be variola minor, although it originated in India or Cairo, more probably the former. The third generation of cases (with onset April 3 to 9 rashes April 5 to 10) numbers 5 one of whom, a woman aged 79 died during the prodromal period. The initial case and the second generation (2) although confidently diagnosed chickenpox until variola virus was isolated in the laboratory remained confined to their beds from the onset and the infection is believed to be limited to a circle of relatives and friends in three households. The clinical picture has been misleading. In two of the patients there were less than half a dozen lesions and the illness is described as being like 'influenza with a few spots'.

Because of the difficulties in diagnosis and, more important, because ambulant cases of variola minor are sometimes relatively numerous and if missed may bring about a wide dispersal of infection the reappearance of mild smallpox in the country should be viewed with apprehension and every effort made to detect new foci promptly. A medical officer of health should be consulted whenever there is the slightest suspicion.

At the time of going to press a further patient is under observation awaiting diagnosis at Rubery, near Birmingham.

Information received from Paris is to the effect that there were 32 cases of smallpox with 2 deaths between Feb 10 and April 2.

Food poisoning

There was recently an outbreak of food poisoning at the County Mental Hospital, Winwick Warrington. All the cases occurred

within twelve hours of one another, and the main feature was a mild diarrhoea which cleared up rapidly. No patient had a temperature above 98.8° F (37.1° C). Only four were considered ill enough for the relatives to be informed but there were two women, aged 63 and 64 who collapsed and died a few hours after the onset. The number of patients affected was 25 out of a total of 150 in a ward which is an outlying block with a kitchen of its own. This ward is not connected with the main building in which some 1,800 other patients live.

Post-mortem examination of the two fatal cases showed a remarkable degree of enteritis and the presence of an intestinal obstruction, due in one case to diverticulitis and faecal impaction and in the other to a carcinoma of the bowel. Evidently the enteritis had caused a partial obstruction to become complete with extreme inflammation above the obstruction but little abnormality below it. The cause of death was returned at the inquest in accordance with the medical evidence, as intestinal obstruction with non-specific enteritis as a contributory cause.

The fact that there was no outbreak of diarrhoea in the main building strongly suggested that the food (meat or fish, probably) was not likely to have been received in an infected condition. This was further confirmed by laboratory tests done on samples of the food still in stock from the same delivery. The infection must therefore have occurred in the ward itself and there must have been a sufficient lapse of time between the infection and the consumption of the food for enterotoxins to have been produced to a degree sufficient to account for the sudden and explosive outbreak. In any case, any organisms of the typhoid, dysentery, and *Salmonella* groups were ruled out by the negative results obtained from the examination of the stools of all affected cases. The only food to which this interval between infection and consumption could have applied was some mutton. This had been steamed the day before consumption and left overnight. A sample of this meat was retrieved from the swill and bacteriological examination showed the presence of a few unimportant organisms with a heavy infection by *Staphylococcus aureus*. The same organism was found in the bowel of the two patients who died. No septic cases were known to be under treatment at the time in the ward (they were all chronic mental cases who were up and about), and on searching for a possible source of infection it was found that a cat in the building had a post-lactational mastitis. Examinations were made and an almost pure culture of *Staphylococcus aureus* obtained. Further investigations are being made and presumably phage typing will indicate whether the staphylococci recovered from the mutton, the fatal cases, and the cat are, or are not, identical.

Discussion of Table

In *England and Wales* an increase was recorded in the notifications of diphtheria 42 and dysentery 37 and a decrease was reported for measles 515 and scarlet fever 45.

The largest decreases in the incidence of measles were Yorkshire West Riding 132, Essex 128, and Middlesex 96. No large local variations occurred in the notifications of scarlet fever.

The only change of any size in the trends of whooping cough was a decrease of 44 in Yorkshire West Riding. There was a small general rise in the incidence of diphtheria, Lancashire had 11 more cases. Dysentery was slightly more prevalent in most areas, and there was an increase of 15 in Middlesex due to the outbreak at Southall M.B., where 17 cases were recorded during the week.

In *Scotland* the only changes of any size in the trends of infectious diseases were increases in the notifications of measles 142 and scarlet fever 42.

In *Aberdeen* 89 babies have died of gastro enteritis during the past three months. The babies were nearly all bottle-fed and their symptoms were similar to those recorded in similar outbreaks in England.

In *Eire* 14 cases of typhoid were notified involving five different areas. Scarlet fever whooping cough, and measles were slightly more prevalent in Dublin C.B.

In *Northern Ireland* the notifications of diphtheria increased by 15. Notifications of whooping cough in Belfast C.B. rose by 17.

Week Ending April 5

The notifications of infectious diseases in England and Wales during the week included scarlet fever 995 whooping-cough 1,775, diphtheria 184, measles 8,343 acute pneumonia 730 cerebrospinal fever 86, dysentery 44 smallpox 2, paratyphoid 6, typhoid 8.

Medical News

Sir Alexander Fleming, F.R.S., leaves to-day (April 19) to lecture in Vienna on penicillin at the invitation of the Society of the Austrian Medical Profession and under the auspices of the British Council.

A meeting of the Tuberculosis Association will be held at King George V Sanatorium, Godalming, to-day (Saturday, April 19) at 11 a.m. At 2 p.m. there will be a discussion on "Some Complications following Adhesion Section," to be opened by Dr James Watt, Mr J. E. H. Roberts (Natural History and Treatment of Post-Operative Effusions), and Dr W. E. D. Moore (Haemothorax), at 3.45 p.m. Miss M. Sheehan will read a paper on "Employment of Tuberculous Staff."

Meetings of the Biological Methods Group of the Society of Public Analysts and Other Analytical Chemists will be held at the Royal Society of Medicine (1, Wimpole Street, W.) on Monday, April 21, and Monday, May 12, at 6 p.m. The meetings for Parts 2 and 3 of a symposium on "The Production and Care of Laboratory Animals, Part 1 of which took place on March 17. The papers to be read are as follows: April 21, Dr H. J. Parish, "Common Diseases," Mr N. T. Gridgeman, "Records," May 12, Drs J. I. M. Jones and Eric C. Wood, "Housing." A general discussion on subjects covered by the papers read at all three meetings will follow. The meetings are open to the medical profession, members of which are invited to take part in the discussion.

The annual general meeting of the Food Group of the Society of Chemical Industry will be held at the Chemical Society's rooms (Burlington House, Piccadilly, W.) on Wednesday, April 23, at 6.30 p.m., when the chairman of the group will give an address on "Some Problems of Trade Effluent Disposal."

A meeting of the Medico Legal Society will be held at 26, Portland Place, W., on Thursday, April 24, at 8.15 p.m., when a paper by Dr David R. Mace on Marriage Breakdown and Divorce (Some Aspects of the Denning Report) will be read.

The annual general meeting of the Birmingham Local Section of the Institute of Metals will be held at the James Watt Memorial Institute, Great Charles Street, Birmingham, on Thursday, April 24, at 6.15 p.m. At 7 p.m. an address will be given by Dr Neil G. Marr, on "Medical Services in the Non-ferrous Metals Industry." A discussion will follow.

The spring meeting of the British Orthopaedic Association will be held at Exeter on Friday and Saturday, April 25 and 26. At University College, Exeter, on April 25, at 9.30 a.m., there will be a symposium on "The Surgical Treatment of Tuberculosis of Bones and Joints," to which Mr G. R. Girdlestone, Mr Norman Capener, Mr M. C. Wilkenson, Mr J. P. Campbell, Mr B. L. McFarland and Mr J. A. Cholmeley will contribute. At 2.15 p.m. there will be a clinical meeting at the Princess Elizabeth Orthopaedic Hospital, when a review of Devonian orthopaedic practice by the staffs of the hospital and of the Mount Gold Orthopaedic Hospital, Plymouth, will be presented. On April 26, at 9 a.m., there will be a business meeting at the Royal Devon and Exeter Hospital and from 10 a.m. to 1 p.m. various papers will be read.

A sessional meeting of the Royal Sanitary Institute will be held at Carlisle Town Hall on Friday, April 25, at 10.30 a.m., when Dr F. H. Day will read a paper on "Dust in Domestic and Public Buildings: Its Nature and Properties."

A meeting of the Scottish Group of the Nutrition Society will be held at University College, Dundee, on Saturday, April 26, when there will be a discussion on "The Preservation Colouring and Flavouring of Foods." Members of the Food Group are invited to attend the meeting.

The first general meeting of the Kent Paediatric Society will be held at Farnborough County Hospital on Saturday, April 26, at 2 p.m., when Dr Duncan Leys will give an address on "A Co-Paediatric Service." Membership of the society is open to registered medical practitioners engaged wholly or partly in preventive or curative work among children, whether resident in county or not, including general practitioners. Applications for membership should be addressed to the honorary secretary, Dr P. Swift Paediatric Unit, Farnborough Hospital, Kent. The subscription is 10s.

The British Council for Rehabilitation (32, Shaftesbury Avenue, London W.1) is arranging a short course on rehabilitation to be held at Nottingham from April 29 to May 1. The fee of £5 includes lunch and tea each day and transport from Nottingham to the places visited. The course will include addresses on "Physical Rehabilitation," "Rehabilitation of Miners" and "Rehabilitation in an Engineering Works." Vacancies are limited and applications should be sent not later than April 19.

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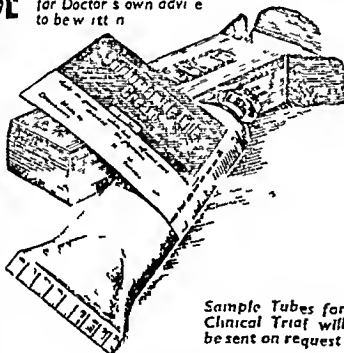
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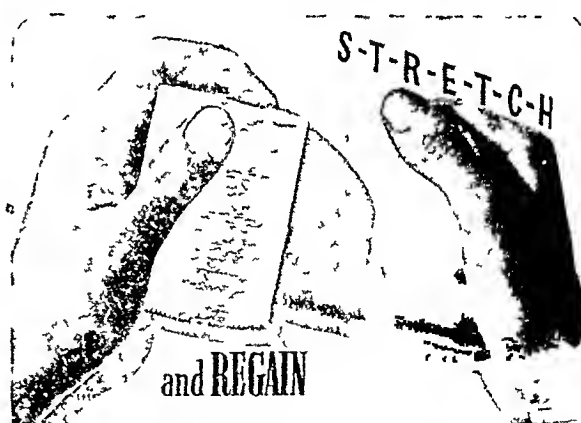
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Any Questions ?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Penicillin and Sulphonamides

Q—A patient with infected burns developed on the face a rash which subsided in a few days. Did the fact that she was undergoing a course of penicillin treatment automatically exclude erysipelas? Is there any clinical condition which having failed to respond to adequate penicillin therapy may respond to one of the sulphonamides? Has sulphamezathine any advantages over sulphathiazole or sulphadiazine? Is it correct that a twice weekly intramuscular injection of 100 000 units of penicillin is less effective than 20 000 units three hourly and that 200 000 units twice daily is as efficient as the three-hourly courses?

A—True erysipelas, due to a haemolytic streptococcus, could not develop during a course of injections with penicillin in adequate doses. There are many conditions more or less susceptible to treatment with sulphonamides on which penicillin has no effect. They include bacillary dysentery, non-coliform infections of the urinary tract, similar infection (for example, due to *Ps. pyocyanea*) elsewhere, including the meninges, any condition, whether sinusitis or pneumonia, due to Friedlander's bacillus, and undulant fever. The chief advantage of sulphamezathine is its slow excretion, moderate and infrequent doses thus maintain a continuous effect. It is also sufficiently soluble in urine to render the risk of obstruction remote—an advantage over sulphadiazine.

The last part of the question has recently been discussed in this column (Jan 25, p 167, Feb 1, p 207). It is impossible to answer the precise question asked here. A dose of 200,000 units produces an adequate blood level for no more than four or five hours, whether the very high level attained at the beginning of this period, with its resulting diffusion into the tissues, compensates for the succeeding period of seven hours during which the blood contains little or no penicillin can be decided only by observation in different types of case. One would certainly hesitate to rely on twelve-hourly administration if a patient's life were in danger. (See also in this issue an article at page 530 and an annotation at page 536.)

Fatal Dosage of Arsenic and Antimony Tartrate

Q—A woman of 42 took a horse 'worm powder' in mistake for a headache powder and shortly afterwards collapsed. The powder contained 4 gr (0.25 g) of arsenic and 51 gr (3.4 g) of antimony tartrate. The stomach was washed out with tannic acid solution and she made an uninterrupted recovery. What are the usual fatal doses of arsenic and of antimony tartrate?

A—Two grains (0.13 g) is commonly considered as a possible fatal dose of white arsenic, but different subjects vary greatly in susceptibility. Four grains (0.25 g) might reasonably be regarded as fatal. So far as antimony tartrate is concerned, the amount received by the patient was nearly three times the fatal dose which lies between 0.01 and 0.02 g per kilo of body weight or about 18 gr (1.2 g) for an adult. Evidently the treatment given was most effective and saved the patient's life.

Summer Prurigo

Q—A young man suffering from prurigo aestivalis develops a papular eruption on the forearms, hands and face on exposure to sunlight. Itching is severe at times. What is an effective treatment?

A—Treatment of summer prurigo is disappointing. The condition is dependent on specific sensitization to certain kinds of light or to ultraviolet rays. A general overhaul is needed with special reference to focal sepsis, gastro-intestinal function, and nutritional deficiencies. Desensitization—by graduated exposure of the whole body to natural or artificial sources of light—is sometimes partially successful. X-ray therapy, if

assisted by protective measures, gives temporary relief. Occasionally gold therapy, injection of vitamin A concentrates, or nicotinamide by mouth or injection seems to protect, without obvious reason. Applications to prevent the rays penetrating to the exposed skin are generally necessary during daylight. The most effective are petroleum jelly and a titanium dioxide preparation (after its application any excess can be removed with damp cotton-wool). A lotion containing equal parts of calamine, glycerin, and water is of use in mild cases. An ichthyol powder may subsequently be applied. These measures can also be employed in the form of 'barrier creams'. Alternatively petroleum jelly may be used with an emulsified base or ung. aquosum B.P. in equal parts. "Benadryl" has been reported as controlling urticaria due to light-sensitiveness. It would be worth trying in light prurigo.

Treatment of Heart-block

Q—A male patient aged 58 who has a resting pulse rate of 20 suffers from nocturnal feelings of suffocation. Can you suggest any effective treatment?

A—A pulse rate of 20, if it is accompanied by a correspondingly slow heart rate, is an almost certain indication of complete heart-block, probably associated in this case with a severe degree of myocardial degeneration which would be likely to cause nocturnal feelings of suffocation. Injections of adrenaline or the oral administration of ephedrine are both of value in certain cases of heart-block, but should not be employed without thorough investigation and consideration of each individual patient.

Effort Syndrome

Q—A patient with a history of several years' mental and emotional and sometimes physical strain presents the following picture: lack of mental ability, failure of memory, concentration, interest, lack of energy—extreme fatigue induced by slight physical or mental effort with palpitations. Routine physical examination reveals nothing abnormal. What are the diagnosis and treatment?

A—This appears to be a typical case of Da Costa's or "effort" syndrome, investigations concerning which were made in the 1914-18 war by Lewis, and at Mill Hill Hospital and elsewhere during the recent war. The conclusions seem to be that the condition is essentially psychological, or at least emotional. Reference should be made to contributions in this *Journal* (May 24, 31, and June 7 1941), and in the *Proceedings of the Royal Society of Medicine* (1941 34 541). Constitutional factors as in many psychosomatic disorders, may play at least some part. In any case the treatment is more difficult than that of other psychoneuroses, and apart from radical analytical treatment little can be done except by gradual rehabilitation.

Suspected Pituitary Deficiency

Q—A man of 29 developed normally until about 14 years of age since when growth has been arrested. His height is now 5 ft 3 in (160 cm); he is thin, pale, with little energy and has no facial axillary or pubic hair, the genitalia are infantile in type. He has a normal male voice and his intelligence is not affected. He has frequent erections but no nocturnal emissions. Recently after injections of testosterone he felt fitter and more energetic and his testicles doubled in size. He then took testosterone tablets with no effect and his testicles returned to their original size. He is distressed about his condition as he wishes to marry. Is this advisable?

A—There is insufficient evidence to make a definite diagnosis in this interesting case. A response to gonadotrophic hormone would have confirmed the clinical impression of primary pituitary deficiency. Radiography of the pituitary fossa might indicate a pituitary or parapituitary neoplasm. Examination of the fundi and visual fields might prove of interest. Deficient height at the age of 29 favours the clinical diagnosis of pituitary deficiency. It is worth trying gonadotrophic hormone but the effect both of this and of testosterone is likely to endure only while treatment is continued. Secondary sexual characteristics and potency but not fertility will be enhanced by testosterone. The enlargement of the testicles after testosterone is interesting, they usually remain the same size, as testosterone has no direct

action on them. Marriage is inadvisable unless the condition is fully explained to the contemplated bride and a responsible relative.

Effect of Amphetamine

Q—*Amphetamine taken before meals seems to reduce the appetite. This might be of benefit in obesity but would it predispose to gastric ulcer? Is the initial stimulation of the brain followed by depression? Any other pharmacological points would be welcomed.*

A—Amphetamine has been shown to reduce the appetite of rats. It affects the normal human stomach by first stimulating it so that emptying is hastened and later inhibiting its action so that emptying is delayed. There is increased pyloric tone, though in spastic states there may be the opposite effect—a relaxation of spasm. Gastric acidity is not appreciably affected by amphetamine. The stimulation of the brain produced by the drug leads to prolonged wakefulness at a time when the subject would normally be recruiting his strength by sleep; thus reserves are exhausted and collapse is common. While some can take the drug for long periods without collapse occurring others are adversely affected much earlier. Patients receiving amphetamine may complain of flatulence, anorexia, nausea, abdominal pains and an increase or a decrease in bowel movements.

Phenylmercuric Nitrate and Chloride

Q—*I would like information about phenylmercuric nitrate and phenylmercuric chloride. What are their possible therapeutic uses?*

A—Phenylmercuric nitrate and phenylmercuric chloride are powerful fungicides and germicides and when taken by mouth they exert a strong bacteriostatic and bactericidal effect in the blood, the cerebrospinal fluid, the bile, the urine, and the faeces. They have a low toxicity, for rabbits the minimum lethal dose of the nitrate is 0.01 g per kilo when given intravenously and 0.03 g per kilo by mouth. When 250 ml of 1 in 1,250 solution (0.2 g) was taken orally by a human subject the only effect was a rise of pulse rate by 20 though it caused a feeling of astringency in the mucous membrane of the mouth. These substances have no toxicity when applied to the skin, on which phenylmercuric nitrate is used in a strength of 1 in 3,000. This substance is stated to be 78 times as potent against Gram positive cocci as mercuric chloride. It is useful in ringworm and epidermophytosis (Levine, *J Amer med Ass* 1933, 2, 2108).

Insect Repellents

Q—*Can you recommend any new insect repellents for topical application for a patient residing in Calcutta who is particularly susceptible to insect bites and stings?*

A—Dimethyl or dibutyl phthalate rubbed on the skin gives satisfactory protection for several hours against most insect bites. These substances may cause smarting on abraded skin or in the eyes but are otherwise innocuous. They are solvents of many synthetic plastics and consequently contact with plastic watch-glasses, spectacle frames, etc. should be avoided. They may be used alone or incorporated into lotions or creams. They are not repellent but are lethal to mites, and rubbed into clothing are a most valuable protection against scrub typhus.

INCOME TAX

All inquiries will receive an authoritative reply but only a selection can be published.

Assistantship Expenses

T started as an assistant in general practice on Jan 1, 1947, he asks what are the usual expenses which can be claimed.

****** A salary as an assistant is assessable under Schedule E, and the statutory rule is that only those expenses which are incurred wholly, exclusively and necessarily in the performance of the duties of the office can be deducted. The main allowable expense is the cost of maintaining and running a car. T can claim an initial allowance (20% of £295=£59) and wear and tear allowance (¼ of 25% of £295=£37) as deductions from his earnings for the quarter from Jan 1. Any other expenses which he is required by the terms of his engagement to bear can also be deducted—the cost of professional use of telephone. He should get in touch with the local tax office and obtain an adjustment of his present coding.

Letters and Notes

Sir William Macewen

Mr J MENZIES CAMPBELL (Glasgow) writes. I recently read a considerable pleasure and profit, Dr Harley Williams's book, *Doctors Differ*. Although no one can controvert the austere and autocratic manner of Sir William Macewen, nevertheless I feel that another aspect of his nature should not pass unnoticed. The following incident occurred in the year of Sir William's presidency of the British Medical Association. A friend of mine (an dentist in New York) was spending a golfing holiday at Turnberry. Unfortunately an abrasion in his hand became septic. He at once to Glasgow and telephoned that afternoon asking me to arrange an appointment for him with the best surgeon. I straightway telephoned Sir William Macewen who personally answered the call. I explained the circumstances, and no one could have been more sympathetic and co-operative. He mentioned that he was the moment overwhelmed with business relating to a B.M.A. meeting which he was to attend in London next day and for he was leaving within a few hours. He asked me to request a friend to take a taxi to his house and he would meet him. After leaving Sir William the American called to me of the great kindness which he had received. Sir William personally incised the finger and dressed and bandaged the wound. He met the inquiry about a fee with the response, 'There is no fee—we were pleased to be of any service to you.'

Half Cost, Double Value

Dr JOSIAH OLDFIELD (London W1) writes. Medical men are of great service at this particular juncture, when fuel is so scarce by teaching in every house they visit that in order to obtain a hot bath in perfection the ordinary bath should be covered in so as to turn it into a miniature Turkish bath. All that is needed is either to put a small clothes horse across the bath or even a frame of boards or battens, and to lay over this frame either an old blanket or rug or even a few sheets of brown paper. Space should be left at the head end to slip into the bath, and the quantity of water will give a more perfect bath by using the steam which lies above the water in place of filling the bath up to the usual full capacity.

Marriage Guidance

Dr PHILIP M BLOOM (London, W1) writes. The discussion of the House of Lords last week following the Denning Report is most interesting and certainly a most important peak in educational history. The proposals of the Government to welfare officers and to give material aid to the various clinics dealing with the divorce problem are most encouraging to those of us who are interested. I feel, however, that too much emphasis has been laid on solving and trying to adjust unhappy marriages rather than preventing them. I desire to put in a strong claim for more pre-marital guidance and instruction. The marriage guidance and some clinics deal, *inter alia* with this latter subject, but the importance of it has not been sufficiently stressed. A few young couples are already seeking help and my experience is that they are eager for information. I have no doubt that with encouragement many more young people would seek guidance. Pre-marital education and instruction along comprehensive lines go a long way towards preventing the development of incompatibilities and unhappiness in marriage.

Co-opted Members on Negotiating Committee: Correction

Dr D H STUART BOYD writes. The letter from myself (April 11, p 469) contains an error which I unfortunately overlooked when signing. The phrase "bestowed on the negotiation and election of the Negotiating Committee" should of course have been "bestowed on the nomination and election of the Negotiating Committee."

Correction

A typist's slip caused Dr A M Nussey's name to be in our report of the meeting of the Section of Endocrinology of the Royal Society of Medicine in the *Journal* of April 12 at p 491.

All communications with regard to editorial business should be addressed to EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: A1 WESTCENT LONDON. ORIGINAL ARTICLES AND LETTERS for publication are understood to be offered to the *British Medical Journal*, unless the contrary be stated. Authors desiring REPRINTS should communicate with the P.R. Manager, B.M.A. House, Tavistock Square, W.C.1, on receipt of which Authors overseas should indicate on MSS if reprints are required as are not sent abroad. ADVERTISEMENTS should be addressed to the Advertisement Manager, B.M.A. House, Tavistock Square, London, W.C.1 (hours 9 a.m. to 5 p.m.). TELEPHONE: EUSTON 2111. TELEGRAMS: BRITMEDADS WESTCENT LONDON. MEMBERS' SUBSCRIPTIONS should be sent to the SECRETARY, BRITISH MEDICAL ASSOCIATION, TELEPHONE: EUSTON 2111. TELEGRAMS: MEDISCEA W LONDON. B.M.A. SCOTTISH OFFICE: 7 Drumsheugh Gardens, Edinburgh.

LONDON SATURDAY APRIL 26 1947

VITAMIN A IN INFECTIVE HEPATITIS

BY

A. D. HARRIS, M.R.C.S., L.R.C.P.

(Late House-Physician M.R.C. Jaundice Research Team)

AND

T. MOORE, D.Sc., Ph.D.

(Dunn Nutritional Laboratory University of Cambridge and Medical Research Council)

Addendum on Dark-Adaptation by the late K. J. W. Craik, M.A., Ph.D., and S. J. Macpherson, B.Sc. (M.R.C. Applied Psychology Unit), and A. D. Harris, M.R.C.S., L.R.C.P.

is the main storage place in the body for Liver diseases of various types may therefore do to interfere in one way or another with the and physiological activity of vitamin A various forms, reduced vitamin A levels in the blood plasma, and defective dark-adaptation been reported to result from deficiency of secondary to damage to the liver

The early literature on the occurrence of xerosis case has been reviewed fully by Altschule (1935) than 50 years ago, before the discovery of vitamin A, (1894) described the development of keratomalacia his old infant suffering from jaundice. Later Bloch ved xerosis and arrested growth in a jaundiced child on persisted even when cod-liver oil was administered up when bile appeared in the faeces

Levels—Chemical estimations of vitamin A were to subjects who had died of cirrhosis of the liver, investigators agreed that the vitamin A reserves were usually low and often undetectable (Wolff, and Scalabrino, 1934; Moore 1937). In acute cases, however, the hepatic reserves may not be although the level in the blood plasma is often low (Gmamn, and Zevin, 1943)

Adaptation—With defective dark-adaptation as a not workers have found that the vitamin A status is though opinions differ as to the value of vitamin in correcting this abnormality (Jeghers 1937, Haig, Patek 1938, Patek and Haig 1939, Ezickson, 1939, Feldman, 1940, 1941)

ent paper deals with abnormalities in vitamin A in infective hepatitis only. In preliminary (described below in an Addendum) defective tion was used as an indication of vitamin A. It was found that the mean final rod n patients tested soon after admission to hospital nificantly from the mean value for the same r recovery, and also from that of normal young r our main investigation, however, chemical re exclusively used. Vitamin A and carotenoids a were estimated in the early stages of the dis- ang convalescence. Parallel examinations were ne cases of the serum bilirubin, plasma prod- hippuric acid synthesis. Other patients were e doses of vitamin A, with a view to studying v of its absorption from the intestines and of

its transfer to the blood plasma. The vitamin A reserves of the liver were estimated in three fatal cases of hepatitis

Material and Methods

The main investigation was made on 32 military patients admitted to an E.M.S. hospital under the M.R.C. Jaundice Research Team. 30 suffered from infective hepatitis and two from arsenotherapy jaundice, which presents a similar biochemical picture. None had a history of transfusion. The ages ranged from 18 to 41 (average 25). The patients received a normal diet, without restriction of fat and without extra protein or vitamins. A few cases were included in a clinical trial with methionine, but this substance did not appear to be beneficial (Wilson, Pollock, and Harris, 1945) or to affect the vitamin A status.

The technique used to estimate vitamin A and carotene was essentially that of Kimble (1939), as modified by Yudkin (1941) and by ourselves. The plasma was shaken with alcohol and petrol ether. Carotenoids were estimated in the extract by their yellow colour. The extract was then evaporated and the vitamin A estimated by the blue colour produced on treatment with antimony trichloride, an allowance being made for the colour contributed by carotenoids to this reaction. Both yellow and blue colours were measured in a photoelectric absorptiometer provided with filters. In calibrating this instrument against vitamin A acetate a conversion factor of 1600 between $E_{1\%}^{1\text{cm}}$ at 328 m μ and i.u. of vitamin A per g was assumed. The calibration for carotenoids was against the International Standard solution of β carotene, and for convenience results have been expressed as though all the carotenoids of the plasma were β carotene. Because of the presence of xanthophyll, α carotene, etc., the actual biological value of the carotenoid fractions was presumably somewhat less than the figures given. Values for both vitamin A and carotene are expressed in terms of i.u. per 100 ml of plasma.

Serum bilirubin was estimated by the method of Mallory and Evelyn (1937). The prothrombin indices were determined by a method similar to that described by Harris (1943) using viper venom. Quick's (1939) modification of the hippuric acid synthesis test was employed, the results being expressed as grammes of sodium benzoate detoxicated in the first hour after administration.

Plasma Vitamin A and Carotene in Infective Hepatitis

Infection and Recovery—Observations of plasma vitamin A and carotene at various stages of the disease

ere made in 32 patients (Figs 1 and 2) and the mean values are shown in Table I, grouped in five-day periods from the date of admission. The earliest group (0-4 days after admission) show a mean value of 54.6 i.u. per 100 ml, which may be compared with a mean value of 118 i.u. for a group of 41 healthy adults (Leitner and Moore, 1946)

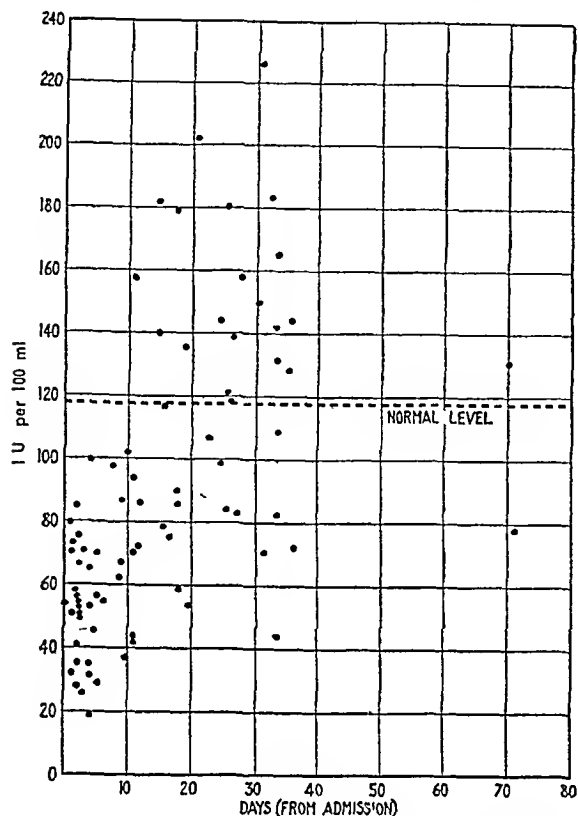


FIG 1—Plasma vitamin A in 32 cases of infective hepatitis

Successive estimations show a continuous rise until a mean value of 114.3 i.u. is reached for the group at 15-19 days after admission. Subsequently the observations are too few to be relied upon, and the readings from 20 to 29 days were combined, as were those for over 30 days from admission. There was, however, a suggestion in individual

TABLE I—Plasma Vitamin A and Carotene in 32 Cases of Infective Hepatitis

Days after Admission	Vitamin A			Carotene		
	No of Observations	Mean Plasma Vitamin A I U per 100 ml	Standard Error	No of Observations	Mean Plasma Carotene I U per 100 ml	Standard Error
0-4	27	54.6	± 3.7	27	67.2	± 6.1
5-9	10	64.8	± 6.0	10	51.3	± 9.0
10-14	9	80.4	± 12.0	10	78.9	± 10.3
15-19	10	114.3	± 13.2	10	84.8	± 7.4
20-29	12	124.3	± 11.9	11	118.2	± 17.3
Over 30	15	123.9	± 12.2	15	114.8	± 9.8

The number of observations for vitamin A and carotene does not tally in every age group because on two occasions a reading was obtained for one without a corresponding reading for the other.

patients that the plasma vitamin A may be unusually high during convalescence. This phenomenon has been noticed by Josephs (1943) in young children recovering from pneumonia. Plasma carotene values were also low in the early stages of the disease, the mean for the first period of five days being 67.2 i.u., as compared with 161 i.u. for healthy adults. During recovery the mean rose to 118.2 i.u. for 20-29 days after admission, but few cases reached the

normal mean even 30 days or more after admission. The correlation between corresponding readings for vitamin A and carotene was low ($r=0.2143$ for ungrouped data, $N=81$) and was barely significant.

Effect of Age, Fever, and Anorexia.—The effects of these factors were examined in 25 patients in whom blood

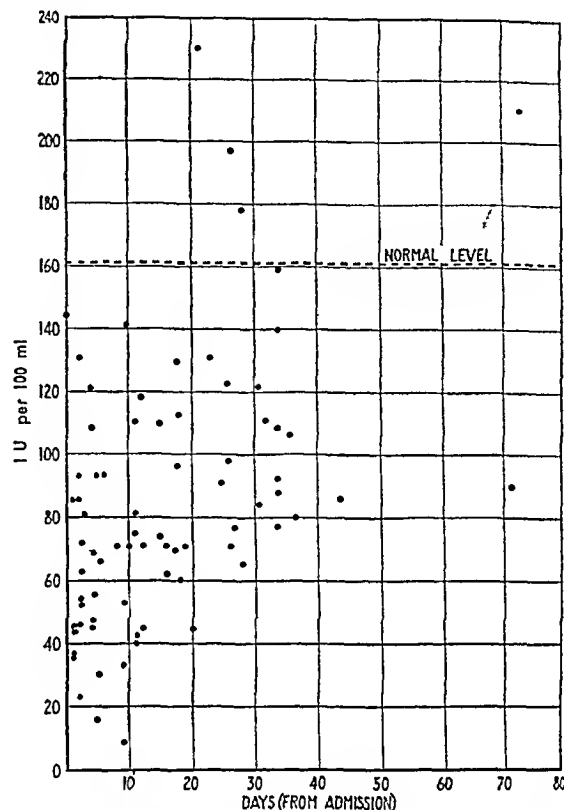


FIG 2—Plasma carotene in 32 cases of infective hepatitis

vitamin A had been estimated within four days of admission to hospital. If there was more than one such reading the earlier value was used. In Table II these readings are grouped according to the age of the patient, the highest temperature recorded, and the duration of anorexia, the significance of the results is also estimated. The duration

TABLE II—Relation of Plasma Vitamin A to Age, Fever, and Anorexia. 25 Cases With Values Obtained Within Four Days of Admission

	No of Cases	Mean Plasma Vitamin A I U per 100 ml	t*
Age in years			
18-24	13	59.1	2.070
25-34	9	47.1	
Over 35	3	38.7	
Maximum temperature			
Under 99°	10	61.3	2.169
99-100°	12	45.5	
100°-101°	3	51.0	
Anorexia			
Nil	6	52.0	0.103
1-5 days	4	58.0	
6-10	12	53.2	
Over 10 days	3	43.0	
Total	25	52.3	

* With 23° of freedom t must equal or exceed 2.069 to give $p=0.05$

of anorexia did not appear to influence the plasma vitamin A. Higher mean values, however, were found for those under 25 years of age than for those over, and for those who showed no significant fever—under 99° F

(37.2° C)—than for those who did both these differences were shown by the *t* test to be significant. It cannot be excluded that the effect of age was due to greater severity of the disease in the older men and to a higher incidence of fever in the more severe cases, and not to a direct relation between age or fever and plasma vitamin A. In fever other investigations have shown that there is a direct lowering of the plasma vitamin A, since this action is found in artificial pyrexia as well as infectious fevers (Clausen and McCoord, 1938). In any case this mechanism can only be of subsidiary importance, since instances of abnormally low plasma levels were found in the younger age groups and in the group without fever.

Relation to Bilirubinaemia and Liver Function Tests—In nine cases in which serial estimations of plasma vitamin A were made, serial readings were also obtained of serum bilirubin, plasma prothrombin, and hippuric acid synthesis. The mean values for five-day groups are shown in Table III. No observations are available on the pre-

TABLE III—Relation of Plasma Vitamin A and Carotene to Serum Bilirubin, Prothrombin Index and Hippuric Acid Synthesis. 9 Cases with 4 or more Serial Observations of Vitamin A and Carotene

Days	Plasma Vitamin A IU per 100 ml		Plasma Carotene IU per 100 ml		Serum Bilirubin mg per 100 ml		Prothrombin Index		IV Hippuric Acid Synthesis	
	No of Obs	Mean	No of Obs	Mean	No of Obs	Mean	No of Obs	Mean %	No of Obs	Mean
0-4	11	53.1	11	57.7	13	6.97	11	75.7	7	0.56
5-9	9	65.9	9	46.7	12	8.66	5	72.0	7	0.60
10-14	5	91.0	6	80.5	7	7.56	5	90.3	3	0.92
15-19	7	113.7	7	84.9	6	2.37	4	94.2		
20-29	9	139.6	9	132.3	10	1.54	6	98.5	8	0.88
Over 30	6	147.0	6	126.0	13	1.11	4	98.0		

icteric stage of the disease, since the diagnosis of infective hepatitis is seldom made before the appearance of jaundice. However, most patients were admitted with a rising serum bilirubin, and the highest value was found in the 5-9-day group. It is notable that the plasma vitamin A was increasing from the time that the patients were first seen, and this improvement may be compared with the results of hippuric acid synthesis tests, which were also improving or stationary at a time when the serum bilirubin was still rising. Pollock (1945) has dealt with the improvement in hippuric acid synthesis in infective hepatitis and concludes that maximum liver damage in this disease occurs in the pre-icteric stage. In our investigation the parallelism between plasma vitamin A and hippuric acid synthesis was fairly close in individual cases. Curves for two illustrative cases are shown in Fig 3.

Relation to Prothrombin Index—Prothrombin values were low in the early stages of the disease, though spontaneous haemorrhages were not observed. During recovery the plasma prothrombin returned to normal in general parallelism with the plasma vitamin A. Examination of individual case records, however, revealed no close or regular relationship. The prothrombin values exhibited a wider day-to-day variation, and tended to return to normal at about the same time or later than the plasma vitamin A. Plasma was also examined from five patients not included in this series who persistently had very low prothrombin values. The plasma vitamin A in these cases was not unusually depressed, and when the prothrombin index rose in response to parenteral administration of vitamin K analogues there was no parallel alteration of the plasma vitamin A. In four of the five patients, however, a rise in plasma vitamin A occurred some time after the prothrombin index had returned to normal.

Absorption of Massive Doses of Vitamin A

Several workers (Breese and McCoord, 1940, Ralli, Bauman, and Roberts, 1941, Breese, Watkins, and McCoord, 1942, Spector, McKhann, and Meserve, 1943, Popper, Steigmann, and Zevin, 1943, Steigmann and Popper, 1944, Aldersberg and Sobotka, 1944) have measured the plasma vitamin A at intervals after giving massive doses of the vitamin*. In normal subjects the

plasma level increases rapidly after dosing to a maximum in about five hours, and usually subsides to the original value within 24 hours. We have confirmed the finding that in infective hepatitis the plasma vitamin A sometimes fails to respond to dosing although our results for a series of cases have been erratic. Thus in preliminary tests two patients in the early stages of the disease were given 96,000 i.u. of vitamin A in the form of four "prepalin" capsules. Subject C, whose resting plasma vitamin A of 84 i.u. per 100 ml was but little below the normal mean, had a value of 77 i.u. after dosing. Even after four further doses there was still no significant increase in the plasma vitamin A. In contrast patient D when first tested had a plasma vitamin A of only 50 i.u. Greater derangement of vitamin A metabolism than the

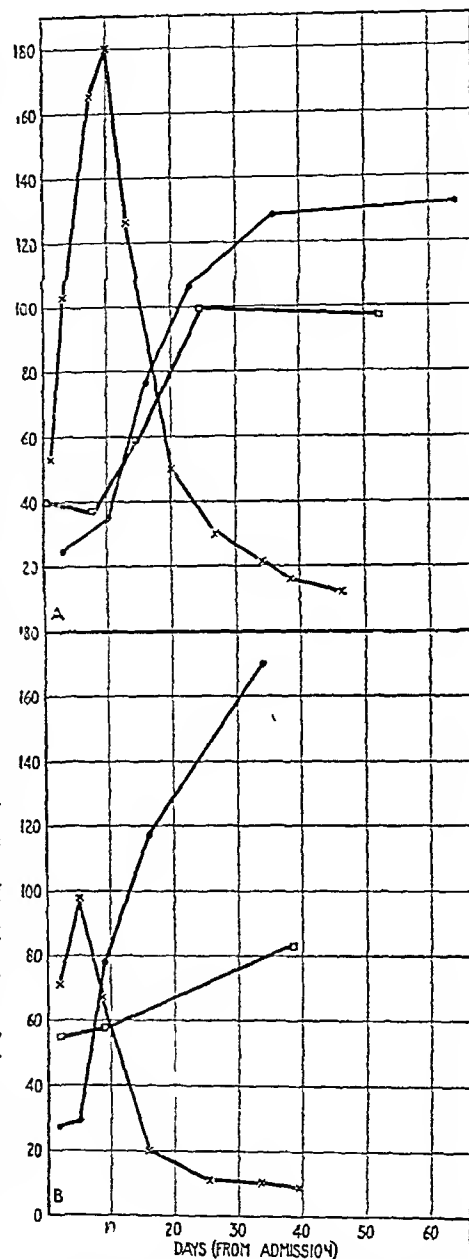


FIG 3—Relation of plasma vitamin A to serum bilirubin and hippuric acid synthesis. A: arsenotherapy jaundice. B: infective hepatitis. ● = Plasma vitamin A (i.u. per 100 ml). × = Serum bilirubin (mg % × 10). □ = Intravenous hippuric acid synthesis (g sodium benzoate detoxicated in 1st hour × 100).

* Experiments by this procedure are called 'tolerance tests' by some workers. The subject's resistance to toxic excess of vitamin A (Moore and Wang, 1945) is not, however, under consideration and mention of 'tolerance' is perhaps misleading. 'Absorption tests' seems a better description.

subject might therefore have been expected. Nevertheless, after dosing, the plasma vitamin A responded with a rise to 299 iu, which can be considered normal.

Reaction to Isolated Doses of Vitamin A—In further experiments (Table IV) five patients were given single doses of 96,000

penultimate dose had been given a period of 36 hours was allowed to elapse so that the plasma vitamin A might reach a resting level before giving the final dose. A specimen of blood was then taken again five hours after the last dose. It will be seen from Table V that in both cases the increase in the

TABLE V—Effect of the Frequent Massive Doses (96 000 I U) of Vitamin A on the Plasma Vitamin A

Case	Days after Admin	Plasma Vitamin A			
		No. of Doses Received	Before Dosing (I U)	After Dosing	Difference
M	1 32	1 31	80 227	108 473	28 246
N	1 32	1 31	70 150	68 406	—2 256

plasma vitamin A was much greater after the last dose than after the first. These results, taken in conjunction with those for subjects F and H (Table IV) agree with the conclusion of Breese and McCoord (1940) that in those subjects in which defective absorption is found in the early stages of the disease improved absorption may be expected during recovery.

The Liver Reserves of Vitamin A in Infective Hepatitis

There were no fatal cases in the present series, but necropsy material was obtained from other sources. Specimens of liver from two cases of acute yellow atrophy following infective hepatitis, or homologous serum jaundice, were kindly supplied by Capt J A R Miles, R A M C. Values of 225 and 500 iu per g were found. Another specimen was kindly supplied by Dr J F Gaskell, of Addenbrooke's Hospital, and in this instance the evidence showed that the low blood vitamin A in infective hepatitis is not necessarily associated with a depleted liver reserve. Although shortly before death the plasma vitamin A was only 19 iu per 100 ml, with carotene 68 iu, the liver contained 900 iu per g. None of the above patients had been specially dosed with vitamin A.

In a recent survey of the vitamin A reserves of the population of this country in cases of accidental death (Moore, T, unpublished data) a wide range of values was found, with a median of about 300 iu per g of liver. So far as can be judged from the small number of subjects, therefore, there is in acute liver disease no severe depletion of the pre-existing vitamin reserves such as commonly occurs, for example, in cirrhosis of the liver or in chronic nephritis, for which diseases median liver reserves of 6 and 25 iu per g respectively have been reported (Moore, 1937).

Discussion

Both acute febrile illnesses and diseases of the liver affect the metabolism of vitamin A. Since infective hepatitis presents a combination of these lesions the disturbances in vitamin A metabolism will obviously be complex. In the present investigation we have observed in the acute stage of the disease (1) reduced plasma vitamin A and carotene, (2) failure of the plasma vitamin A to respond to massive dosing with vitamin A, and (3) the excretion of large amounts of vitamin A in the faeces after massive dosing, with traces also in the urine.

In experiments at Sheffield with human volunteers the plasma vitamin A decreased only slightly after restriction for some months to a diet virtually devoid of carotene and vitamin A (Med Res Cncl Vitamin A Subcommittee, 1945). Levels of the order of 30 iu per 100 ml of plasma, at which defective dark adaptation was observed, occurred only in subjects deprived of the vitamin for over a year. Since in our experiments equally low values were often found in patients with infective hepatitis in the first few days of their illness, the brief initial period of anorexia clearly cannot in itself account for the decrease in plasma

TABLE IV—Effect of Isolated Massive Doses (96 000 I U) of Vitamin A on the Vitamin A Content of the Blood Plasma, Faeces and Urine

Case	Days after Admin	Plasma Vitamin A (I U per 100 ml)			Vitamin A Excretion Total Daily I U	
		Before Dose	After Dose	Difference	Faeces	Urin.
<i>Infective Hepatitis</i>						
E	2	75	354	279	—	45
	34	109	258	149	—	45
F	2	67	130	63	—	0
	34	44	251	207	—	0
G	1	32	444	412	39 000	0
	34	82	171	89	0	0
H	4	35	67	32	58 000	56
	37	72	107	35	0	0
	73	78	242	164	0	0
I	2	33	186	133	1 000	0
	25	99	162	63	0	0
				(Mean 148)		
<i>Normal Subjects</i>						
J	—	103	309	206	0	0
K	—	128	932	804	0	0
L	—	179	403	224	0	0

iu of vitamin A at an early stage of the disease, and again on one or more occasions during the later stages. Estimations were made not only of plasma vitamin A but of the excretion of the vitamin in the urine, and in three cases in the faeces. For comparison the same procedure was followed in three normal subjects.

Plasma—In the normal subjects the smallest increase in the plasma vitamin A after dosing was 206 iu. In infective hepatitis the smallest increase was only 32 iu and the mean increase for all tests in the whole group was 148 iu. It is worthy of remark that no consistent difference in the extent of the response after dosing was found between the early and late stages of the disease.

Faeces—In normal subjects vitamin A is found in the faeces only after very heavy dosing. Even the massive doses given in the present experiments were not sufficient to cause faecal excretion of the vitamin in our control subjects. In contrast large quantities of vitamin A, amounting in one instance to more than half the dose given, were excreted in the early stages of the disease by all three patients with hepatitis whose faeces were examined. Even in the subject who excreted only 1,000 iu the presence of the vitamin was confirmed by the presence of an absorption band at 620 m μ in the SbCl₃ test. No vitamin A was found in the faeces of the same subjects during later stages of their illness.

Urine—After dosing, traces of vitamin A were present in the urine of two patients with hepatitis. Although the urinary loss was quantitatively insignificant it must be emphasized that in health the urine contains no vitamin A even after heavy dosing. Vitamin A is, however, excreted in the urine in certain diseases, and its appearance always has pathological significance (Lawrie, Moore, and Rajagopal, 1941).

An interesting abnormality was shown by subject H. For about a week after the first dose of vitamin A had been given the colour produced by the plasma extract with the SbCl₃ reagent was a faint orange in place of the usual blue. We were unable to ascertain whether vitamin A, or its oxidation products, played any part in producing this abnormal colour.

Frequent Dosing with Vitamin A—Two subjects were given massive doses of vitamin A frequently over a period of about four weeks. The total amount received was nearly 3,000,000 iu, which may be compared with the median total liver reserve of 500,000 iu (Moore, T, unpublished data). The course of dosing was therefore expected to alter the liver reserves substantially. The effect of the first dose on the plasma vitamin A was examined five hours after its administration. After the

vitamin A. Neither can a full explanation be found in the defective intestinal absorption of vitamin A and other fatty substances which is characteristic of hepatitis. In fatal cases the liver was found to contain adequate reserves of vitamin A, which in healthy subjects would have ensured a normal plasma level even if dietary supplies of the vitamin had been completely withdrawn. Failure in the mechanism for the release of vitamin A from the liver to the plasma must therefore be strongly suspected. One possibility, suggested by the recent experiments of Glover, Goodwin, and Morton (1946), is that there may be interference in the hydrolysis of vitamin A esters stored in the liver to liberate free vitamin A alcohol for mobilization into the blood stream. Any deficiency of the liver in this direction, however, may be intensified during fever by an increased expenditure of vitamin A in the plasma and tissues.

The position in regard to the carotenoid level is different. In the Sheffield experiment the plasma carotenoids, in contrast to vitamin A, fell to a low level soon after restriction to the deficient diet. The effect of anorexia in hepatitis cannot therefore be discounted. The stores of carotenoids from which the plasma may be replenished are, moreover, much smaller than those of vitamin A. The decrease in plasma carotenoids may be due to defective absorption and a decreased dietary intake, combined possibly with an increased rate of degradation during fever.

The complexity of the lesions in infective hepatitis, however, becomes most apparent when we consider the reaction to massive doses of vitamin A. We have seen that during the early stages of the disease the plasma vitamin A often fails to respond to dosing, and, moreover, that vitamin A is excreted in the faeces and sometimes in the urine. It might be expected that in individual cases these abnormalities would be interrelated and would all occur with about equal severity. Thus the loss of vitamin A in the faeces would at first sight afford a ready explanation of its failure to increase in the blood plasma. In our experiments, however, we have found no consistent correlation between the various disabilities involved in each case. For example when patient G was given his first massive dose of vitamin A about 40% was excreted in the faeces the plasma vitamin A, nevertheless, increased by 412 i.u. per 100 ml. In contrast when the same patient was later given a second dose there was no faecal excretion, but the plasma level was increased by only 89 i.u. In patient E abnormality in vitamin A metabolism was clearly indicated by urinary excretion, but after the first massive dose the plasma level increased by 279 i.u. We have already referred to the superiority of the response to massive dosing shown by patient D as compared with patient C, whose plasma had a higher resting level of vitamin A.

The most plausible explanation of these apparent anomalies is that the various mechanisms concerned with the metabolism of vitamin A are not always equally affected. Thus the absorption of vitamin A from the intestines, its deposition in the liver, its release from the liver to the plasma, and possibly its stability when present in the plasma may suffer to varying extents in different individuals. On the basis of this assumption patient C may have been unable to absorb vitamin A from his intestines but capable of mobilizing reserves from his liver into his blood stream. Patient G, on the evidence of faecal excretion in the early stage of his illness, could obviously absorb only part of his dose of vitamin A but possibly this abnormality was complicated by an even more severe disability in the liver's power to remove excess of vitamin from the blood stream. In that event the plasma vitamin A, denied its usual outlet, would "pile up" to a high level, and would thus convey a false impression of the efficiency of intestinal absorption.

The possibility of differences in the degree of impairment in the functions of the liver and the intestines, and of complications arising from pyrexia *per se*, must raise doubts as to the value of "vitamin A absorption tests" as a measure of the injury sustained by the liver. Repeated failure of the plasma vitamin A to respond to dosing even after pyrexia has subsided must strongly suggest damage to the liver, a good response to dosing, however, may not necessarily imply that liver function is normal. Moreover while we have found that the increase in plasma vitamin A during convalescence moves parallel with the improved values in prothrombin and liver function tests, and conversely to the plasma bilirubin, the interrelationships between these four criteria are not consistent enough to allow inferences as to the general condition of the patient to be drawn from estimation of the plasma vitamin A alone.

Summary

In the early stages of infective hepatitis the vitamin A content of the plasma was often very low. In estimations by the antimony trichloride method values of 30 i.u. per 100 ml or less were sometimes observed, as compared with an average of 118 i.u. previously found for normal subjects. The low plasma vitamin A seems an adequate cause of the impairment of dark-adaptation in this disease.

The age of the patient and the degree of pyrexia appeared to influence the extent of the fall in plasma vitamin A, but no correlation was found with the duration of anorexia.

During convalescence the plasma vitamin A increased until the mean for all cases equalled or exceeded the mean for normal subjects. There was no evidence that the vitamin A reserves of the liver were seriously reduced.

Variations in the carotenoid content of the plasma were similar to those found for vitamin A, but the return to normal was less rapid.

The changes in plasma vitamin A and carotenoids went roughly parallel with the prothrombin value and with hippuric acid tolerance, and moved in an opposite direction to the plasma bilirubin. There was perhaps a tendency for the recovery in vitamin A to begin slightly before bilirubin had started to decline.

In "absorption tests" with massive doses of vitamin A it was found that in the early stages of infective hepatitis substantial amounts of vitamin A were excreted in the faeces and sometimes there were traces in the urine. Excretion was not found in normal subjects given the same doses or in the same patients when dosed during convalescence.

In some cases the plasma vitamin A failed to show the usual rapid increase after massive dosing. No consistent correlation was found, however, between this defect and either faecal excretion of the vitamin or a low resting value in the plasma.

It appears that in infective hepatitis the mechanisms responsible for the absorption of vitamin A from the intestines for its deposition in the liver, and for its release into the blood stream are not always affected to the same degree. The interpretation of the results of "absorption tests" as a measure of the degree of injury to the liver therefore seems uncertain.

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ADDENDUM ON DARK-ADAPTATION

In these experiments, which preceded and prompted the biochemical investigations described above, the course of dark-adaptation was determined by means of the Craik adaptometer in a group of 37 Service men with infective hepatitis. They were all tested within one week of admission, and serial tests were performed on a few patients throughout their stay in hospital, at intervals varying from a day to a week. An attempt was made to test all patients again one month after discharge, on their return visit from the convalescent depot, for administrative reasons this was possible in only 14 cases.

Apparatus and Method—A pea-lamp run at 2360 K illuminates a flashed opal screen subtending 7° at the subject's eye—at a distance of 2 ft 6 in (0.76 m)—through an opal window and a neutral wedge, which the subject moves by a long shaft. The position of the wedge is recorded automatically by a pencil on a rotating drum, plotting the logarithm of the threshold brightness against time. A celluloid disk with a 'V' can also be placed in front of the screen to test form perception, and a red fixation point of variable brightness is provided. Vision is binocular with natural pupils. The brightness range of the instrument is from 0.0000001 to 0.01 equivalent foot-candles. Tests are carried out in a dark room. The subject is first bright-adapted for five minutes by looking at a surface of 750 equivalent foot candles brightness. The light is then turned off, and he is instructed to turn to the adaptometer and to keep the test light just visible by moving the neutral wedge, looking in the general direction of the fixation spot but not staring rigidly at it, as this causes local fatigue of the retina. In this way a continuous record is obtained in the form in which such results are usually plotted—namely logarithm of threshold against linear time. Thresholds of light perception are expressed as the negative logarithms of the brightness in equivalent foot candles. A rise in the logarithm implies that a dimmer light can be perceived and that the efficiency of dark-adaptation has therefore increased. The final rod threshold is reached when the logarithm has reached a steady value consistent with maximum dark adaptation.

Defective Dark-Adaptation in Infective Hepatitis—The results of testing an unselected group of 37 patients with hepatitis and 20 normal men of comparable age are shown in Table VI. The final rod threshold was impaired in the hepatitis

TABLE VI—Final Rod Threshold in 37 Subjects With Infective Hepatitis and 20 Controls Mean Values

Days after Admission	No. of Observations	Final Rod Threshold
0-4	30	5.315
5-9	10	5.350
10-19	10	5.315
20-39	7	5.686
40-59	6	5.642
Over 60	5	5.710
Under 20	50	5.332
Over 20	18	5.678
Controls	20	5.758

patients, and no improvement in mean value was shown until 20 days after admission. The t test of significance was applied to the difference between the means in the following paired groups:

A Under 20 days from admission	5.332 log units
Over 20 days , ,	5.678 " "
B Under 20 days , ,	5.332 " "
Controls	5.758 " "
C Over 20 days from admission	5.678 " "
Controls	5.758 " "

The comparisons A and B showed significant differences ($t = 2.695$ with $n = 66$ and $t = 5.926$ with $n = 68$ respectively, both giving $P = 0.05$). In the comparison C the difference is insignificant ($t = 0.920$ with $n = 36$).

The Improvement in Dark-Adaptation during Convalescence—The same conclusion may be reached from Table VII, where

TABLE VII—Final Rod Threshold in 14 Subjects With Infective Hepatitis Retested in Convalescence

Case	First Test	Days after Admission	Second Test	Days after Admission
1	5.30	2	5.45	27
2	4.95	4	5.60	53
3	5.10	5	5.45	47
4	5.50	8	5.80	82
5	5.15	1	5.60	71
6	5.20	9	5.65	51
7	5.30	3	5.95	66
8	5.00	10	5.30	101
9	5.80	2	5.60	58
10	5.50	3	6.00	52
11	5.20	1	5.90	69
12	5.40	4	6.00	27
13	5.40	2	5.75	35
14	5.35	7	5.80	35
Mean	5.297		5.704	

the results for the 14 men who were retested during convalescence are shown independently. The mean values for final threshold were 5.297 during the active stage of the disease and 5.704 during convalescence, and again the difference is significant ($t = 4.892$ With 26 of freedom t need equal only 2.056 to give $P = 0.05$). The individual readings all improved except for one man whose threshold was initially within normal limits. An examination of the superimposed tracings of the curves provided by these 14 patients showed slight shortening of the rod-cone transition time with convalescence. Although the earlier curves lay within the normal range the shortening in transition time during convalescence occurred in 11 out of 14, which suggests that the earlier times were in fact abnormally long for these individuals. The range of the observed alterations was from 1 to 4½ minutes with a mean of 2½ minutes. No alteration in cone threshold was found.

Dosing with Vitamin A—Large doses of vitamin A (96,000 units) daily by mouth were given to four subjects, not included in the above tables, to see whether the final rod threshold could be restored to normal. The results shown in Table VIII are

TABLE VIII—Effects of Repeated Doses of Vitamin A (96,000 Units Daily) On Final Rod Threshold in Patients With Infective Hepatitis

Test Subjects				Controls		
Case	Days after Admission	Total Vitamin A Received	Final Rod Threshold	Case	Days after Admission	Final Rod Threshold
A	1	0	5.40	1	4	5.40
	2	96 000	5.70		13	5.60
	5	384 000	5.80		20	5.50
	8	672 000	5.90		27	6.00
B	1	0	5.20	2	2	5.40
	3	192 000	5.50		9	5.50
	6	480 000	5.50		16	5.65
	9	768 000	5.60		23	5.85
C	1	0	5.10	3	36	5.75
	3	192 000	5.55		2	5.50
	5	384 000	5.75		11	5.35
	8	672 000	5.90		15	5.45
D	1	0	5.40		27	5.45
	2	96 000	5.60			
	5	384 000	5.95			
	8	672 000	6.00			

suggestive but not conclusive. Three patients returned to normal after eight days and the fourth improved considerably

This may be contrasted with the slow recovery in the other patients in the series and in the three controls shown in the table. There are two reasons, however, for caution in interpreting these results. (1) Final rod threshold is not a very satisfactory measurement to apply to small groups because of the range of individual variation, though it is believed that the differences shown here are too great to appear by chance. Again it cannot be excluded that as a result of the greater frequency of testing in these men facilitation of response may have contributed to the improvement. (2) The plasma vitamin A was estimated chemically in three subjects, and in two of them the rise produced by 96,000 units of vitamin A was so slight that it is difficult to see how it could have improved their dark adaptation.

Discussion

Vitamin A abnormality in infective hepatitis is associated with a rise of the final rod threshold and only slight alteration in the rod-cone transition time. This is the type of change that has been found in most experiments on simple acute dietary avitaminosis A. In contrast Haig, Hecht, and Patek (1938) found that in chronic liver disease the lengthening of the rod-cone transition time was as marked as the impairment of the final rod threshold. Similarly in the recent Sheffield experiments (Med Res Cncl, 1945) in which volunteers were kept on a vitamin-A-free diet for long periods the rod-cone transition time was affected as well as the final rod threshold. These differences may be explained by the suggestion made by Hecht and Mandelbaum (1939) that it may well be that this difference in behaviour of the rod-cone break is purely a matter of short-period avitaminosis versus prolonged deprivation.

It has previously been pointed out that dark-adaptation is less satisfactory as a measure of vitamin A abnormality than chemical estimation. In this trial, for instance, there was no diagnostic impairment in individual patients and statistical analysis was necessary to show the effect whereas using chemical estimation of the plasma vitamin A as an index a definitely abnormal result was obtained in most patients. The insensitivity in measurement of dark adaptation arises from two factors: the range of normal variation from individual to individual and the wide margin of error in the same individual found by repeated testing on the same day.

A second disadvantage is that dark-adaptation may be affected by other factors than vitamin A lack. Malingering can generally be detected with the Craik adaptometer, since a self-inconsistent record is produced but some psychoneurosis can cause poor dark adaptation (Wittkower, Rodger, Scott and Semeonoff, 1941). Pyrexia is a cause which can be disregarded in the present series, since most of the cases had no significant fever. It has been suggested that raised blood bile salts might play a part, as bile salt is a solvent for visual purple *in vitro*. No evidence was obtained for this when one of us (K J W C) after dark-adaptation was complete, was given an intravenous injection of bile salts. The injection was given by a dim light while the subject wore dark goggles and the record continued immediately. No alteration in threshold resulted either from bile salts or from the control injection of sterile water.

Summary

The course of dark-adaptation was investigated by means of the Craik adaptometer in patients with infective hepatitis.

The mean final rod threshold for 37 men tested within one week of admission to hospital was significantly impaired in comparison with that of 20 normal adults of comparable age.

In 14 men retested after an interval of one month or more the mean final rod threshold was significantly improved.

No alteration was apparent in cone threshold and the rod-cone transition time was only slightly prolonged.

Dark adaptation under the conditions of this experiment was a less sensitive measure of vitamin abnormality than chemical estimation of plasma vitamin A.

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TUBERCULOUS PERICARDITIS

BY

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Pericardial effusion caused by tuberculosis has always been considered a rare condition, carrying with it a high mortality. Of recent years, however, more cases have been diagnosed as being due to tuberculosis, and doubt has been cast upon other cases which had previously been labelled rheumatic. Some of the many cases published have been proved to be tuberculous either during life or at necropsy, but in many a diagnosis has been presumed only by the presence of other tuberculous manifestations or by the absence of signs which have been taken to be rheumatic in origin. Thus in Harvey and Whitehill's (1937) collection of 95 cases taken from 45 years of records of the Johns Hopkins Hospital there are 37 proved cases, 34 unproved, and 24 proved in which the pericardial lesion was of no clinical importance. The mortality varied greatly in this series, in proved cases it was 83%, whereas in the unproved cases it was only 6%. There was little difference in the characteristic signs and symptoms in the unproved group from those in the proved group, and it was on these signs that the clinical diagnosis was achieved. These groups were further subdivided into those with large pericardial effusion and those without effusion, and while in the proved group of 37 cases 20 had effusion, in the unproved group 31 of the 34 cases had large effusions. In Ellman's (1945) excellent paper on this subject he quotes six cases, and, again, although the clinical picture and progress are strongly suggestive of tuberculous pericarditis, in three cases the diagnosis was not proved.

In all these series of cases in which the diagnosis has been tuberculous pericarditis with effusion the following features have been taken to be characteristic of the clinical picture: (1) no enlargement of the heart, (2) no gross murmurs or murmurs indicative of valvular involvement, (3) no rheumatic manifestation, and (4) no past or family history of rheumatism. In addition, there was no marked anaemia, an insidious onset, no leucocytosis, and, although the effusion might be large, the symptoms, especially precordial pain, were not marked.

Massie and Levine (1939) investigated 135 cases of rheumatic pericardial disease diagnosed by the presence of pericardial rub or pericardial effusion. They found that 110 cases had definite arthritis or arthralgia, one case had chorea, and 17 of the others had a past history of one or more attacks of rheumatic fever, sore throat, or a family history of rheumatism. On the other hand, of the 82 cases followed up for a period of seven years one-third had no evidence of any organic heart disease. Although Sheldon (1946) has recently published six cases demonstrating tuberculous arthralgia, acute rheumatism with serositis, and chronic rheumatism, this should not confuse the diagnosis with that of rheumatism if the criteria of the small heart, etc. are taken into consideration. While dealing with the differential diagnosis of tuberculous and rheumatic pericardial effusion it is also of interest to note that in Harvey and Whitehill's (1937) series several cases developed auricular fibrillation when the effusion was maximal, and that there was no evidence of myocardial involvement clinically or in those cases which came to post-mortem examination. In addition, these cases appeared particularly susceptible to digitalis, heart-block occurring with relatively small doses.

Pathology

Primary tuberculous pericarditis in the strictly pathological sense of the word is a very rare condition, and in the previously quoted series only one case at necropsy appeared to have the pericardium as the sole site of infection. On the other hand a pericardial effusion as a first clinical manifestation of active tuberculosis is not so uncommon. Although Blatt and Greengard (1928), after an extensive search of the literature, claimed their case of a child of 9 years as the youngest in which this condition had been diagnosed during life, one of the cases described below occurred in an infant of only 18 months.

Reisman (1901) described four means by which the pericardium might be affected: it may form part of a general miliary process, or part of a serous membrane tuberculosis, or be an extension from neighbouring structures, or, finally, develop independently. It seems generally agreed that the pericardial sac is relatively immune in a general miliary spread, and it appears that if miliary spread is present it is probably subsequent to the pericardial lesion. In most cases of tuberculous pericarditis involvement of the mediastinal glands has been demonstrated and it is probable that the pericardial lesion followed as a result of lymphatic spread. In one case described by Selgman and Lederer (1940) the pericardium was involved as a result of rupture of a caseous lymph node draining a Ghon lesion. This must, however, be as uncommon as pericardial involvement from the lung or the pleura.

Once the pericardium becomes infected the subsequent progress may follow the course taken by a case described by Barrett and Cole (1944). In this case there was increasing effusion with cardiac embarrassment lasting four months, followed by a phase of decreasing effusion with temporary recovery lasting three months, and, finally, increasing thickening and fibrosis of pericardium leading to congestive failure and death in three months. Although this may be the usual course in fatal cases, those that recover may have an effusion which is far more transient and which, with absorption of the fluid, gives rise to no residual signs or symptoms of pericardial involvement. It is in this type of case that the diagnosis is so difficult to prove, and most of the described cases have not been completely proved. In Barrett and Cole's case a guinea-pig inoculated with pericardial fluid lived from April 28 until Oct 8 (over five months) and appeared ill only a short time before death.

The age incidence of tuberculous pericarditis varies in the many cases reported. In Ellman's (1945) cases with effusion the ages ranged mainly between 20 and 35 years. In Heimann and Binder's (1940) 31 cases among Bantu patients the ages of those with large pericardial effusions ranged between 20 and 40 years. Another series, however, collected as primary tuberculosis of the pericardium, as judged by post-mortem examination, with the pericardium having the main or oldest tuberculous lesion (Thompson, 1933), the average age was 69.5 years (the range was 49 to 84) in the 28 cases described. These cases showed a pathological picture of adhesive caseous tuberculosis and a clinical picture of an insidious onset, cardiac enlargement, accompanied by a rapidly progressive and unexplained condition of cardiac insufficiency, together with pyrexia and wasting.

In the four cases described below only one is proved to be tuberculous, in two there is strong circumstantial evidence which makes the diagnosis probable, while in the fourth case there is a clinical picture which strongly suggests a tuberculous aetiology.

Case 1

A male child aged 18 months was admitted to hospital into an adult female ward on Aug 25 1945, with an impetiginous

rash over most of his body and two abscesses on his skull. Apart from a haemangioma the size of a shilling on the right side of the forehead nothing abnormal was found on clinical examination. The impetigo was treated with penicillin cream, the abscess was incised, and a penicillin sensitive haemolytic streptococcus was grown. Sulphamezathine—in all 11 g—was given. Under this treatment the condition soon subsided, and he became a great favourite in the ward. This unfortunate child, who had been in a very neglected and dirty condition on admission, was not wanted by his parents and with their consent, arrangements were made for his admission to a suitable home. As is usual in these affairs coupled with the fact that he had become a great favourite with the patients and the nursing and medical staff, the matter was not treated urgently and some weeks passed before the necessary arrangements were completed. By the first week of November 1945 some 11 weeks after admission, he began to get irritable, the temperature ranging between 99° and 100° F (37.2° and 37.8° C), with a pulse of 110–120. Finally, on Nov 10, 1945 his temperature rose to 104° F (40° C) and his pulse to 140–150.

On examination both drums were injected, especially the right, which showed some bulging, and myringotomy was performed. A course of sulphathiazole was started. Next day the patient looked much better, but subsequently he continued to run a swinging temperature of 100°–101° F (37.8°–38.3° C) and a tachycardia of 150–160, there was no evidence of bronchopneumonia, and his drum now showed a dry perforation. On Nov 15 his condition was unchanged, but during the day there was a steady rise in the respiration rate to 50 and examination showed an area of dullness over the front of the chest. The liver was enlarged and tender, and the tip of the spleen was palpable. The heart sounds were somewhat diminished in intensity. A radiograph of the chest confirmed the presence of a large pericardial effusion. Full doses of parenteral penicillin were started, it was thought that this was an infective condition secondary to that of his ears.

Pericardial paracentesis was performed under paraldehyde and local anaesthesia, the needle being inserted between the apex beat which was normal in position, and the outer border of the area of cardiac dullness. With some ease 130 ml of fluid were withdrawn and a little air replaced. The fluid was clear and pale amber green. Examination showed practically 100% small lymphocytes, no organisms were seen on direct smear and ordinary culture was negative. A guinea pig was inoculated with the fluid on Nov 20. After aspiration there was a dramatic improvement in his general condition, his pulse dropped to 120 and his respirations from 60 to 35. This was not maintained, there was a gradual deterioration in his condition and aspiration was repeated on Nov 22. This time 160 ml of fluid were removed and 10 000 units of penicillin instilled. There was little improvement after this and his condition remained unchanged except that both clinically and radiographically the effusion appeared to be getting smaller. Penicillin therapy was discontinued on Nov 26. His condition deteriorated further, and on Nov 30 pericardial aspiration was again attempted. This time it was obvious that the effusion was much smaller and that the pericardium was much more resistant to penetration, and it was only with difficulty that 60 ml of blood stained fluid were aspirated. In both these pericardial fluids no organisms were found and the cells were practically 100% lymphocytes. The white blood cell counts were as follows:

Date	White Cells	Polymorphs	Lymphocytes	Mononuclears
Nov 12	13 200	49%	40%	6%
21	22 400	41%	56%	3%
29	45 280	53%	38%	7%

The haemoglobin was 55%, the red cells numbered 4,940,000 per cmm and the colour index was 0.56. On Nov 24 the Mantoux test (1:100 000) was negative, and on Nov 29 it was doubtful positive (1:10 000).

The patient's condition remained unchanged, the pulse was still around 130 respirations 40, and temperature normal. By Dec 18 there was considerable oedema of the face and puffiness of the legs, which did not pit on pressure. There was also some distension of the abdomen. By Dec 23

this oedema had improved and a radiograph of the chest on Dec 27 showed a bilateral pleural effusion with a marked diminution in the pericardial effusion. His condition remained unchanged and oedema recurred. He became much worse on Jan 2, 1946, and died the next day.

Post-mortem examination showed a grossly thickened pericardium loosely adherent to a normal-sized heart. The pericardium was 1 cm thick and appeared fibrous. Sections showed tubercles in this tissue. There was an area the size of a shilling of a breaking down caseous lesion in the lingula of the left lung and caseation of the mediastinal glands immediately adjacent to the pericardium. There was a recent miliary spread in the lungs, liver, and spleen.

The guinea-pig was killed on Feb 5. It had appeared relatively well until this time, but there was evidence of tuberculous infection when it was examined post mortem.

Case 2

A soldier in the Royal Pioneer Corps aged 20 was admitted to hospital on March 6, 1945, complaining of breathlessness, pain in the chest, and cough. These symptoms gradually developed during the past four weeks while undergoing training in the Army. During the past two weeks he noticed that he was becoming increasingly breathless and that he had a pain below the right nipple which was worse at night and on coughing. He had also had a cough for some three weeks which was non-productive. He had no pain in any limb, but had an ache across the left shoulder for the last two or three days, which was worse on movement. There was no history of rheumatic disease.

On examination the temperature was normal, pulse 115, and respirations 25. He was sweating with no obvious joint involvement, and the left shoulder movements were full. *Cardio-vascular system*: Pulse was of poor volume, blood pressure 110/85. The apex beat was not palpable, it was 2 in (10 cm) from the midline in the fifth intercostal space. The area of cardiac dullness was greatly increased and extended to the right two fingerbreadths from the edge of the sternum and approximately 5 in (12.5 cm) from the midline, although the left border was difficult to determine owing to dullness on percussion at the base of the left lung. The heart sounds were very distant and best heard just within the nipple line, where they were accompanied by a soft systolic murmur. Pericardial friction rub was audible over most of the praecordium with maximum intensity around the left fourth costal cartilage. *Chest*: There was dullness to percussion below the sixth rib on both sides, with marked diminution of air entry; some rales were present. *Abdomen*: The liver was enlarged three fingerbreadths below the costal margin. The spleen was not palpable. There was no ascites or oedema. After resting in bed for some hours the pulse improved in volume and marked pulsus paradoxus became apparent.

Progress—The pulse became irregular and the pericardial rub disappeared but returned again on March 12. On March 14 the blood sedimentation rate was 27 mm in 1 hour, cell volume 45% corrected to 27 mm. The Mantoux reaction was negative 1:10,000. The patient continued to improve but had some dysuria and on March 25 the temperature rose to 102.8° F (39.3° C). A radiograph of the chest showed collapse of the left base as well as a large pericardial effusion. On April 6 the Mantoux reaction was positive 1:10,000. On April 20 pleural friction rub appeared in the right axilla and lasted five days. His condition remained unaltered; he still showed pulsus paradoxus and appeared very depressed mentally. During this time he had occasional pain in the chest but by May 23 this had disappeared and he was then feeling much better. On May 29 a radiograph of the chest showed the pericardial shadow to be much smaller and there was marked improvement in his pulse rate and general condition. The improvement continued until June 13 when he again did not feel so well; the pulse volume was poor and pulsus paradoxus recurred. A radiograph showed that the pericardial shadow was much larger. The blood pressure was 100/70. His condition continued unchanged until July 1 when there was obvious absorption of the pericardial effusion. He improved until July 25 when he was discharged to a convalescent home with only a very small pericardial effusion. He finally made a complete and uninterrupted recovery with no residual pericardial lesion.

Case 3

An unmarried woman aged 39 attended hospital on Aug 8, 1945, complaining of pain in the left shoulder and right chest for three weeks. There was no cough but some dyspnoea on exertion. She had had a hysterectomy in 1944 for fibroids. There was no history of pleurisy or rheumatic fever, and no family history of tuberculosis. Pain in the right lower chest had developed three weeks previously, it had been worse on deep breathing and had lasted about two days. It was replaced by aching pain in both shoulders diagnosed as fibrositis, and she was feeling out of sorts.

On examination the apex beat was 3½ in (8.75 cm) from the midline in the fifth intercostal space. There was impairment of the percussion note at the left base, with diminution of breath sounds. The heart sounds were normal and there were no murmurs but at the base to the left of the sternum a to-and-fro pericardial rub could be heard. The blood pressure was 120/80 and the pulse of good volume. The temperature on admission was 101° F (38.3° C), pulse 90, and respirations 20. A radiograph of the chest on Aug 8 showed an enlargement of the heart shadow on both sides. The liver and spleen were not palpable. There was no oedema.

Progress—Next day it became clinically obvious that the area of cardiac dullness had extended considerably beyond the apex beat, and a radiograph of the chest showed a large pericardial effusion with some pneumonic consolidation of the lingula of the left lung. For the next three days, until Aug 12, the pericardial effusion increased in size, the temperature remained around 101° F (38.3° C) and the pulse at 90 and she had pain over the praecordium. The area of cardiac dullness extended to the mid-axillary line and upwards to the second rib. The pulse was of poor volume, the apex beat was not palpable, and the heart sounds were diminished in intensity. A Mantoux test on Aug 10 was positive 1:1,000 old tuberculin. After Aug 13 the temperature settled to normal, the pulse to 72 and there was daily improvement in her general condition. It became clinically obvious that the area of cardiac dullness was rapidly diminishing, and by Aug 28 it was practically back to normal heart outline. A radiograph on Aug 22 showed the heart shadow to be normal in size, shape and position. The patient's general condition improved considerably, and a heart examination on Sept 7 showed the apex beat 3½ in (8.75 cm) from the midline in the fifth space, the sounds were clearly heard, and there were no murmurs. When last seen on Oct 12, 1945, in the out-patient department her pulse was 84 and regular, there was no enlargement of the heart, and no murmurs.

Subsequent Progress—She was readmitted to the County Hospital, Farnborough, in November, 1945, with left pleural effusion. Aspiration showed this to be typically straw-coloured tuberculous effusion, although no tubercle bacilli were actually seen in the fluid.

Case 4

A boy aged 11 was admitted on Nov 18, 1941, with pain in the epigastrium and right hypochondrium of two days' duration. This had been accompanied by vomiting and diarrhoea on the day of admission. During the previous five days there had been an unproductive cough accompanied by some mild headache, but he had been relatively well until the onset of abdominal pain. The previous medical history revealed nothing relevant.

On examination he looked pale and ill, his temperature was 102° F (38.9° C), pulse 120 and respirations 32. The heart sounds were muffled with dullness at both bases, especially the left, where there was marked diminution of air entry. The abdomen was tender in the right epigastrium and there was marked guarding of the right upper rectus. X-ray examination confirmed a diagnosis of a large pericardial effusion. On Nov 20 the heart sounds were more muffled, dullness extended from the right nipple to 1 in (2.5 cm) outside the normal left border of the heart and there was rigidity over the whole of the epigastrium.

Full doses of sodium salicylate were given with no effect. Sulphapyridine was substituted. An enema relieved the abdominal distension, and the liver was palpable three fingerbreadths below the costal margin. On Nov 24 a pleuro-pericardial rub developed and his white cell count was 12,000.

0 (54% polymorphs) After four days on sulphapyridine was no response and the temperature still ranged between 101° and 102.8° F (38.3° and 39.3° C). It was stopped after 3 g had been given. By Dec 4 the general condition was obviously better and there was decreasing cardiac dullness on the left, by the 12th the apex beat became palpable and showed no enlargement, the heart sounds were clearly audible, and there were no murmurs. There was still some tenderness of the liver, which was palpable, and a radiograph of the chest showed marked diminution in the size of the pericardial effusion. The patient was discharged to a convalescent home on Jan 17, 1942. In a radiograph of the chest taken before his discharge from the home the heart shadow appeared to be normal.

When seen subsequently as an out patient there was no enlargement of the heart, no murmurs, the sounds were clear and normal, and there was no tachycardia. There were, however, a fixed apex beat, dilated veins in the neck, and a palpable liver. Constrictive pericarditis was diagnosed. He was afterwards seen several times as an out patient, when it was apparent that the engorgement of the neck veins and the liver enlargement were becoming less, and on April 11, 1946, when he was admitted to hospital for dental extraction, there was no evidence of cardiac involvement, his pulse was regular, the apex beat was 3½ in (8.75 cm) from the midline in the fifth space, the sounds were normal and the blood pressure was 130/80. A radiograph of the chest showed a normal heart in shape and position, and no pulmonary lesion was seen.

This boy showed no rheumatic manifestations, no response to salicylates or sulphonamides, no cardiac enlargement, and no subsequent cardiac manifestations.

Discussion

Case 1 shows the development of a large pericardial effusion in a child of 18 months. The rapidity with which the pericardium contracted down and became thickened was very marked. This was almost certainly a primary infection, as the child had been in the ward for some weeks previously and during this time a case of open tuberculosis had been admitted for a short period. As has been noted by others the guinea-pig test may take several months to develop—five months in Barrett and Cole's (1944) case—and in some cases it may be negative and yet at necropsy or operation the aetiology be proved (Suzman, 1943; Sellors, 1946). In this case the guinea-pig survived for three months after inoculation. The patient had died before this.

In Case 2 the clinical picture is typical of this condition without rheumatic manifestations of cardiac involvement. The Mantoux reaction changed from negative to positive during the course of the illness. In Case 3 the subsequent development of a typical tuberculous pleural effusion makes it likely that this was the cause of the pericardial effusion. In this case there was great rapidity in the development and absorption of the effusion, the whole process taking little over two weeks. The fourth case shows no real evidence of a tuberculous aetiology, but there was marked absence of any rheumatic or cardiac manifestations and there was no response to salicylate treatment. Boas and Ellenburg (1940) claim that in rheumatic pericardial effusion salicylates in large doses produce a prompt relief in the general condition of the patient and a more rapid absorption of the effusion, although the actual endocardial involvement is not affected.

It is suggested that tuberculous pericardial effusion may be a commoner condition than previously diagnosed and that its prognosis is not nearly as bad as has been apparent. It may be argued that in many of the cases which have been quoted, including three of the four cases described, the actual causation has not been proved, and it is these improved cases which carry the best prognosis. This is similar to the position with regard to the so-called idio-

pathic pleural effusion in which the direct evidence of infection by the tubercle bacillus may be extremely difficult to prove, and yet follow-up of cases indicates that most of these are tuberculous in aetiology. The difficulty in proving an effusion to be tuberculous may further be stressed by the duration for which guinea-pigs survive. In Case 1 the guinea-pig survived long after the patient was dead, and in other cases (Suzman, 1943; Sellors, 1946) the guinea pig test was negative, although subsequently at necropsy or operation the lesion was shown to be tuberculous. Again, in Harvey and Whitehill's (1937) series of 13 proved cases in which paracentesis was performed five showed no evidence of tubercle bacillus by examination or guinea pig inoculation.

The analogy between pericardial and pleural effusion may be taken further: thus a large pericardial effusion may be a late primary tuberculous manifestation occurring in younger subjects secondary to mediastinal gland involvement. In these cases the tubercle bacilli would be scanty and difficult to demonstrate. The pericarditis may, however, progress to caseation and death, producing a condition similar to that which occurs in later life but terminates in an adhesive caseation. This would account for the higher age incidence in this latter type of case and for the higher mortality of those cases which prove easy to establish as tuberculous.

All cases of pericardial effusion without joint or other rheumatic manifestations should be considered as potentially tuberculous. Especially is this so when the heart itself remains small, though this may be difficult to determine with a large and radio-opaque effusion. In these cases paracentesis and air replacement is of great value in allowing the heart outline to be visualized. The value of pneumopericardium as a therapeutic measure in preventing pericardial adhesion and fibrosis is considered by some, however, to be slight. The fluid aspirated is usually similar to that of the pleural effusion, but may be blood-stained, the usual predominating cell being the lymphocyte. There are of course many other causes of pericardial effusion, and Smith and Willius (1932) in sorting 373 cases of pericarditis into adherent pericarditis, calcification of the pericardium, and pericarditis with effusion found that there were 113 in the latter group—77 were acute purulent and 30 were fibrinous, and only three were tuberculous and three of non-inflammatory origin. The fibrinous pericardial effusions were mainly secondary to intrathoracic infection, but even then nine of these cases might very well belong to the group now under discussion.

With regard to the development of Pick's disease it has been suggested that in the healing of such a pericardial effusion constrictive symptoms may develop and that as the process is one of healing there may be no pathological lesion resembling a tubercle left in the fibrous pericardium. Thus Norris (1911) collected 1,780 cases of tuberculosis of which 82 showed tuberculous pericarditis, but in only 32 were actual tubercles seen, while in the others no tubercles or any other demonstrable aetiology could be found. If this was so it would account for Smith and Willius finding tuberculosis present in only 2.1% of the 373 cases of Pick's disease examined.

Summary

Four cases are described. Only one case is bacteriologically proved tuberculous although the others strongly suggest a similar aetiology.

The proved case was that of an infant of 18 months in whom the pericardial effusion was the presenting clinical feature; the condition was diagnosed, although not proved, during life.

It is suggested that tuberculous pericardial effusion may be a commoner condition than has been previously recognized and

that it may be insidious in its onset, transient in its course, and complete in its resolution. It is also suggested that in some cases it may be a late primary tuberculous manifestation and analogous to pleural effusion.

The difficulty in proving the aetiology is stressed and the value of pneumopericardium in allowing the heart outline to be visualized is noted.

Guinea-pigs inoculated with pericardial fluid may survive for many months before showing signs of disease, and much longer than the conventional six weeks is required before passing judgment.

Gross pericardial thickening may develop in a relatively short space of time and this relationship with Pick's disease is considered.

All cases of pericardial effusion with a small heart and absence of rheumatic manifestations should be considered as potentially tuberculous unless proved otherwise.

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MEDULLARY SUPRARENAL CHROMAFFINOMA PRODUCING MALIGNANT HYPERTENSION

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The following case of medullary suprarenal chromaffinoma (phaeochromocytoma), with presenting features of intermittent attacks of paroxysmal hypertension and vasomotor crises, ending in malignant hypertension with uraemia as the cause of death, seems worthy of record.

Case History

A married woman aged 38 was admitted to hospital on Oct. 13, 1944. She complained of cough with sputum of several years duration and attacks of dyspnoea chiefly at night. These usually started with a feeling of discomfort in the lower abdomen followed by nausea and shivering, severe palpitation sensation of constriction in the chest, profuse perspiration, pain behind the eyes and marked tremor of the hands. The patient was kept under close observation and was examined during and between attacks which occurred about every third day. The following is a brief description of a typical one.

The attack was induced by the patient's turning on the right side whilst lying in bed. She became restless, trembled, was very excited and talkative and sweated so profusely that her underclothing was drenched with perspiration. There was pronounced tachypnoea and some dyspnoea and pallor, with cyanosis of the lips, ears, cheeks, hands and forearms. The forearms and legs were cold and white and the fingers and toes cyanotic. Pulsation of the brachial and radial arteries was palpable but in both dorsalis pedis and the popliteal and femoral arteries it was feeble. The pulse rate was rapid—approximately 130—but regular. The blood pressure was

300/170. The pupils were much dilated, the temperature was in the region of 100° F (37.8 C) and the urine contained albumin and sugar. Neck. The thyroid was not enlarged, there was no lymphadenitis, the trachea was central, there was no venous pulsation or engorgement. Chest. Signs of disease were absent save for a few scattered rales and rhonchi at both bases. Heart. This was slightly enlarged to the left. The cardiac impulse was forcible and diffuse and the sounds were normal. Abdomen. There was some fullness and marked tenderness below the right costal margin, but no rigidity in the right hypochondrium. Dullness to percussion was present over an area of about 2½ in (6.3 cm) in this region. The liver and spleen were not palpable. CNS. Some oedema was observed round the eyes, which watered profusely. The pupils were dilated but reacted promptly to light and accommodation. The retinæ showed bilateral papilloedema greater on the left side than on the right and multiple haemorrhages and discrete exudates. The reflexes were brisk. There were marked dermographism and tremor of the fingers, tongue, and upper lids. There were no other abnormalities.

The urine passed during an attack was copious, clear, and almost watery in colour, with a specific gravity varying between 1004 and 1010. It contained a slight trace of albumin and sugar (0.1 and 0.2%). The average duration of an attack was about half an hour.

After the attack the patient, though exhausted, was calm and placid, talking slowly and normally. The cyanosis and pallor soon disappeared, the skin became dry and the pulse slow (approximately 72) and the blood pressure fell below normal, varying between 90 and 100 systolic and 70 and 80 diastolic, only to rise slowly to about 200/120, which was her usual blood pressure between attacks. It remained fairly constant at that level until a further attack occurred, when it abruptly rose again to 300/170.

From the history and from physical examination during and after attacks a preliminary diagnosis of medullary suprarenal chromaffinoma was made. That it was on the right side was suggested by the fullness present below the right costal margin and by the fact that the attacks were precipitated by turning on to that side. There were no symptoms or signs indicating involvement of the cortex in the way either of hyperfunction resulting in "adreno-cortical syndrome" or of hypofunction resulting in Addison's syndrome.

Ancillary investigations were carried out with the following results.

A catheter specimen of urine after an attack showed specific gravity, 1008, albumin, slight trace, sugar, 0.2%, deposit occasional leucocytes, epithelial cells, a fair number of erythrocytes, hyaline and cellular casts, culture, sterile. Blood urea was 54 mg per 100 ml. From a urea-clearance test the renal function appeared to be 34% of the average normal maximum clearance and 24% of the average standard clearance. The glucose-tolerance test showed diminished tolerance as the fasting blood sugar was 150 mg per 100 ml 3¼ hr after 50 g of glucose, 270 mg, and in another 3¼ hour 260 mg. Lumbar puncture revealed cerebrospinal fluid under normal pressure. This was clear and colourless and contained 1 lymphocyte per cmm, protein, 30 mg per 100 ml, sugar, 130 mg per 100 ml, and chlorides 740 mg per 100 ml. The Queckenstedt test was positive.

Radiological examination of the skull showed no evidence of abnormality. The pituitary fossa was rather small but the clinoid processes appeared normal. Radiographs of the chest revealed some fibrosis in both lungs probably due to old healed tuberculous infiltration. Bronchial thickening was present at both bases.

X-ray examination showed that the heart was globular in shape suggestive of concentric hypertrophy of heart muscle without dilatation. An electrocardiogram revealed depression of S-T intervals in all leads, but otherwise it was within normal limits. Intravenous pyelograms showed that the kidneys were normal in size and position. Both excreted well. There was no evidence of any organic lesion in the urinary tract. No suprarenal calcification was found but there was a depression in one calyx of the right kidney probably due to external pressure and suggesting that the tumour was on the right side.

erythrocyte sedimentation rate was 59 mm in 1 hour (estergren). The white cells numbered 12,700, with a normal differential count. The Wassermann and Kahn reactions were negative.

As these clinical investigations strengthened the diagnosis of a right suprarenal chromaffinoma, it was decided to perform an exploratory laparotomy. Before this could be done however the patient had another severe attack which proved fatal.

Post-mortem examination—This was carried out at Charing Cross Hospital on Dec 5, 1944 and the report by Dr Vines was as follows: 'Brain No abnormality was found. The pituitary appeared normal. Thorax Lungs Both lungs showed some emphysema and chronic bronchitis, they were closely bound to the thoracic wall by chronic fibrous adhesions. In both lungs there was extensive patchy fibrosis at the apices, but no active tuberculosis was seen. Heart There was gross hypertrophy of the left ventricular wall. The tone of the muscle was good. The aorta was rather small and some early atheroma was present. Abdomen The only pronounced changes were seen in the kidneys and the right adrenal. In the latter there was a spherical tumour about 1 in (2.5 cm) in diameter projecting forwards. It felt soft and almost cystic, and was not incised. It did not appear to infiltrate, and no metastatic deposits were found. In both kidneys the cortical band was reduced in width and the capsules were adherent, leaving a finely granular surface. In the lower two-thirds of the right kidney there were numerous areas of cortical necrosis suggestive of malignant hypertensive changes, the total changes in the kidneys suggested uraemia as the ultimate cause of death.'

Histological examination of the adrenal tumour revealed a fairly typical medullary chromaffinoma. In accordance with the clinical evidence and the presence of an actively secreting tumour, the kidneys histologically showed well marked hypertensive changes with arteriosclerosis and necrosis. Although the adrenal tumour should have been easily removable, in view of the extensive renal damage it is unlikely that the patient would have survived operation.

There are, of course, reasonable grounds for belief that the accessory chromaphil bodies also secrete adrenaline. It is not surprising, therefore, that similar tumour masses should be found associated with one or other of these bodies anywhere in the sympathetic autonomous nervous system, causing similar paroxysmal attacks of hypertension. For instance, cases of paroxysmal hypertension associated with tumours of the carotid sinus and carotid body and also of the aortic bodies have been reported. The structure and function of both are probably identical. They consist of masses of glandular-looking cells arranged in characteristic clumps resembling those of chromaphil cells. Such a tumour of the carotid sinus or carotid bodies has often been mistaken for an enlarged cervical gland.

In essential hypertension cerebral hypertensive crises may simulate paroxysmal hypertensive attacks such as I have described. It is important to remember these occurrences in order that errors of diagnosis, and thus of treatment may be avoided.

Summary and Conclusions

A case of medullary chromaffinoma of the right adrenal medulla in a woman aged 38, diagnosed during life, is reported and the syndrome discussed. The patient unfortunately died from secondary malignant hypertension and uraemia before operation could be performed. The history of the case and the results of various examinations conducted during and after attacks are described.

The symptom complex was caused by a tumour of the right adrenal medulla which consisted of adrenalinic secreting chromaffin cells discharging into the blood paroxysmally though possibly also constantly small quantities of adrenaline. This caused hypertension with periodic exacerbations to very high levels—sometimes to over 300 mm Hg—glycosuria and when the kidneys became ischaemic, albuminuria and uraemia. The vasomotor crises were also due to a discharge of adrenaline into the blood stream.

The treatment is removal of the tumour, but this is likely to be successful only if it is recognized early and before permanent changes in the kidneys have occurred. The tumour, as in the present case, is seldom malignant and is usually unilateral. It can therefore be concluded that a certain proportion of all cases of paroxysmal hypertension are due to a hyperfunctioning medullary tumour. In this case there was evidently gross hyperfunction, but cases also occur in which the tumour is less active and the symptoms correspondingly less pronounced.

Within the past few years a number of tumours of chromaphil tissue have been reported some authenticated at necropsy, others actually removed surgically with beneficial results.

I have to thank Dr P J W Mills, medical superintendent, Lister Emergency Hospital Hitchin, for permission to publish this case, Dr H W C Vines for the post mortem and histological findings, Dr J W Linnell and Dr A A Cunningham for their kind encouragement and Dr C Hilliard and Dr M Brown and their technical staffs for the radiological and pathological investigations respectively.

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A CASE OF PHAECHROMOCYTOMA

BY

J. M. K. SPALDING, B.M., B.Ch.

The surgical removal of a chromaffin tumour or phaeochromocytoma of the adrenal medulla is rare enough to warrant the report of a recent case.

Case History

The patient, a 24-year-old secretary, was admitted on June 4 1945, under the care of Prof Ellis, complaining of blurring of vision and of attacks of upper abdominal pain and vomiting with palpitations and headache. There was nothing relevant in her past history. The attacks began two years before admission and at first recurred about once every four weeks. They became gradually more frequent, and on admission she was having one or more daily. Immediately before an attack she had a premonition that it was about to occur. She then felt a burning pain in the epigastrium, followed by severe headache, nausea and often vomiting. She had severe palpitations, 'as though her heart would burst through her ribs,' her hands and face became pale, and she felt cramp like pains in the limbs. The attacks occurred at any time of the day or night and usually lasted 10 to 20 minutes, but might last an hour. On three occasions she had lost consciousness. After an attack she felt weak, her arms and face were flushed, and she had a sensation of pins and needles in her arms. Five months before admission she was examined elsewhere and found to have a raised blood pressure. The fundi and urine were normal but the cerebrospinal fluid contained 80 mg of protein per 100 ml. No record of the pressure of the cerebrospinal fluid at this time was available. She was noted as unduly excitable and her condition was dismissed as functional, a

diagnosis for which there was ample foundation in her social history. Four weeks before admission she first noticed blurring of vision in the right eye immediately after an attack, and two weeks later the left eye was similarly affected.

On examination she was "nervous" and anxious to demonstrate that her disease was not functional. There were no abnormal findings apart from the blood pressure, fundi, and urine, and there was no demonstrable enlargement of the heart or peripheral arteries. Blood pressure readings between attacks ranged from 120/80 to 250/170, and during attacks from 230/135 to 300+/205 mm Hg. Prof. Mann reported on the fundi:

The ophthalmic condition resembled that seen in albuminuric retinitis in that there were numerous flame-shaped haemorrhages, fluffy patches of exudate, and a well-marked macula fan, with slight blurring of the disk but no true papilloedema. The condition was not absolutely typical in that the arteries which were all reduced to threads, were narrower than is normal in albuminuria. The urine consistently contained a trace of protein, and its specific gravity varied from 1008 to 1024.

She had frequent attacks after admission and a moderately severe one was followed in detail. It began while the patient was sitting quietly in a chair. When seen three minutes later she looked pale and her respirations were deep and rapid. The cardiac impulse was extremely forcible, but the radial pulse was barely perceptible. There was marked 'goose skin', and the pupils were widely dilated and did not react to light. The blood pressure was 300/200 mm Hg, and the pulse rate 120. Ten minutes after the onset there was subjective improvement, after 15 minutes the systolic and diastolic pressure began to fall, after 30 minutes she became flushed and after one hour the blood pressure reached a resting level. It was another hour before the pupils returned to normal.

Special Investigations—The haemoglobin was 118%, the leucocytic count 7,000 per c mm, and the Wassermann reaction negative. The blood sugar during an attack was 107 mg, during an interval 120 mg per 100 ml. Ventriculography and examination of the cerebrospinal fluid revealed nothing abnormal. The patient was profoundly collapsed for 12 hours after ventriculography. An electrocardiograph showed left axis deviation and an inverted T₁ wave. Intravenous pyelography was normal. The right kidney was 4.5 cm lower than the left. A barium meal revealed no abnormality. An unsuccessful attempt was made to demonstrate the presence of adrenaline in blood taken during an attack.

A provisional diagnosis of phaeochromocytoma was made, and it was decided to explore the suprarenals. In answer to direct questioning the patient admitted having slight pain in the right loin, and she believed that lying on the right side precipitated an attack, it therefore was decided to explore the right side first.

Operation—This was performed by Mr. Corry on July 24 under ethyl chloride and ether anaesthesia. A tumour weighing 86 g was removed from the suprarenal region through an incision in the right flank. Neither induction of anaesthesia nor handling the tumour altered the blood pressure which remained about 180/150 mm Hg throughout the operation. But half an hour after the removal of the tumour the blood pressure fell to 80/60 and the patient appeared profoundly shocked. During the next two hours she was given 20 ml of 'eschatin' 20 minims (12 ml) of adrenaline and 1 pint (568 ml) of normal saline parenterally. At the end of this time the systolic blood pressure had risen to 100 mm Hg and her condition began to improve. During the first 24 hours after operation she was given 120 ml of 'eschatin'. Convalescence was uneventful and until she was discharged from hospital 18 days after operation her blood pressure maintained a steady level of 140/100. The lesions in her fundi were regressing when she left hospital and her eyesight was improving rapidly.

Fifteen months after operation she was doing a full-time clerical job with no symptoms and was about to be married. Her blood pressure was 135/100 and the urine was clear. Her vision was 6/5 on the right and 6/9 on the left, and was not improved by correction. Prof. Mann reported:

The disks are normal and the veins and arteries are of normal calibre and have healthy walls. The whole fundus colour is slightly pale. The macula however shows gross abnormality in both eyes being pigmented and covered with

small dots of exudate and minute atrophic patches all rather resembling senile macular degeneration. It is remarkable that with so definite an ophthalmoscopic change the visual acuity should be so good."

Pathology and Histology (Dr. Biggs)—The specimen consisted of an enlarged adrenal gland measuring 7.5 by 7.5 by 5 cm and weighing 85 g. Externally there was a thin layer of cortical tissue with a ridge of cortex over the upper pole. On section the medullary tissue was replaced by a homogeneous grey-white tumour. Microscopically the tumour consisted of dense masses of darkly staining cells separated by sinusoidal blood channels. The tumour nuclei varied in size, but there were few nuclear divisions and no giant-cell forms. The cells stored neither fat nor glycogen, but chrome fixation showed that the cells had an affinity for chrome salts. The general structure and histochemical reactions are characteristic of a phaeochromocytoma of the adrenal medulla, the regular pattern, the infrequency of nuclear divisions, and the absence of giant cells suggest that the tumour is benign. Biological assay, kindly performed by Prof. Burn, showed that it contained 5 mg of adrenaline per gramme of tumour (normal=0.4 mg/g).

Comment

The characteristic syndrome associated with phaeochromocytoma is paroxysmal hypertension with palpitations, headache, nausea, and abdominal pain (Padis, 1945). Pallor and tingling of the extremities are also common, profuse sweating sometimes occurs (Biskind *et al.* 1941; McCullagh and Engel, 1942; Evans and Stewart, 1942; Thorn *et al.*, 1944), and occasionally there is persistent hypertension (McCullagh and Engel, 1942; Thorn *et al.*, 1944). The adrenaline content of the tumour is variable, as much as 20 mg per gramme having been reported (MacKeith, 1944). Raised blood-sugar levels and glycosuria have been found in several cases (Duncan *et al.*, 1944). Post-operative shock is greater than would be expected from the severity of the operation and responds to large doses of adrenaline (Biskind *et al.*, 1941; Duncan *et al.*, 1944), and parenteral fluid has also been recommended (McCullagh and Engel, 1942).

Biskind and his colleagues (1941) reviewed 29 reported cases treated by operation. Five patients died soon after operation, 22 remained well for a period of 7 months to 13 years, 1 had a recurrence after 6 years, and 1 died from metastases. MacKeith (1944) collected 165 case reports, mainly from necropsies. In 16 of these the tumour was bilateral and in 15 malignant.

I wish to thank Prof. Ellis and Dr. Alice Stewart for their help in preparing this report, Prof. Burn and Miss Bulbring for biological assay of the tumour, and Prof. Mann for reports on the eyes.

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¹ The L.C.C. has agreed, at the request of the Ministry of Health, to the establishment at Sutton Emergency Hospital of an industrial neurosis unit of 100 beds (50 for each sex). This will be used for the reception of persons apparently suffering from neurotic disorder and referred from employment exchanges. They will be given a trial, as in patients in industrial processes with a view to later treatment, training or employment according to their ascertained need. The whole hospital (500 beds), which has hitherto accommodated a number of general cases, is to be reserved for patients suffering from psychoneurosis, and will continue to rank as an emergency medical service hospital. Two full-time psychologists are to be appointed one for the industrial neurosis unit and the other for the remaining 400 patients.

SEMINAL FLUID ACID PHOSPHATASE
IN STERILITY

BY

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The discovery of large amounts of "acid" phosphatase in the seminal fluid and the prostate gland has proved of great value in the diagnosis and treatment of prostatic cancer. Nevertheless the fascinating question of the function of this enzyme still awaits an answer. The most obvious starting hypothesis is that the enzyme is concerned with spermatozoal motility, and it may be noted in this connexion that acid phosphatase is not present in the prostate before puberty, although it appears precociously in the rhesus monkey after injection of testosterone propionate (Gutman, Sproul, and Gutman, 1936).

It seemed worth while to estimate the acid phosphatase content of the semen of patients attending hospital for advice because of the sterility of their marriages, and to correlate the findings with observations of pH, volume, abundance, motility, and morphology of spermatozoa. If the enzyme played a fundamental part in maintaining optimal conditions for fertility, then we would expect to find a correlation between the enzyme content and the physical observations. At the same time a low enzyme content might have been demonstrated in samples of seminal fluid from patients who showed no other abnormality to account for their sterility.

Examination of the Seminal Fluid

The patients were requested to deliver the samples to the department as soon as possible after the emission. In the majority of cases the ejaculate was received into a condom and transferred immediately to a dry phial. Through the kind co-operation of Dr G B Manning and Dr C V Harrison samples were received from the Royal Infirmary, Bolton, and the Pathological Department of Liverpool University, respectively. In these instances the determinations of constituents other than acid phosphatase were carried out in the laboratories of the senders. Preliminary experiments showed that there was no serious diminution in enzyme content when the sample was analysed up to 48 hours after collection. No preservative was needed.

Each sample of seminal fluid was suitably diluted (usually 1 in 4,000) and the acid phosphatase content estimated as previously described (Watkinson, Delory, King, and Haddow, 1944). The other properties—pH, abundance, morphology, and motility of spermatozoa—were studied in the usual manner (Lane-Roberts, Shaiman, Walker, and Wiesner, 1939). The findings are given in the accompanying table. The correlation coefficients between the acid phosphatase content and the motility and between the enzyme content and the abundance of spermatozoa were 0.046 and 0.047, respectively, showing complete absence of correlation.

Discussion

From the table of results it will be seen that, although the lowest acid phosphatase figure recorded (244 units per ml) is from a sample showing no motility, the highest figure (7,000 units per ml) is also found in the presence of reduced motility. While the former figure is low, it still represents a considerable amount of enzyme, and it is difficult to believe that this would be insufficient to allow carbohydrate metabolism to proceed at the rate required to maintain an optimum degree of spermatozoal motility, if this indeed is the function of that enzyme.

Gutman and Gutman (1941) estimated the acid phosphatase content of samples from 24 sterile males. The semen contained only 33 units of acid phosphatase in one case, but all the others gave results within normal limits. They do not, however, report the results of any other examinations on the samples. There is no correlation in the present determinations between the acid phosphatase content of the seminal fluid and either the motility or the abundance of spermatozoa. This does not support the hypothesis advanced by Gutman and Gutman (1941) that the enzyme is responsible for spermatozoal motility. Mann

The Seminal Fluid of Patients Attending Hospital for Sterility

No	Vol (ml)	Spermatozoa (Millions/ml)	Motility (%)	Abnormal Forms (%)	pH	Acid Phosphatase (Units/ml)
1	6.5	77	Nil	—	8.0	244
2	1.5	96	60	20	8.0	1,403
3	3.5	64	60	20	8.0	1,560
4	5.5	Nil	—	—	8.0	1,070
5	5.0	—	—	—	8.0	630
6	2.5	90	80	—	8.5	2,680
7	2.1	Nil	—	—	7.8	2,560
8	3.5	—	—	—	7.6	1,230
9	3.0	90	96	—	7.9	1,120
10	1.0	20	90	—	—	2,560
11	3.8	164	—	—	8.4	560
12	3.5	200	Nil	30	7.8	2,500
13	2.8	12	74	60	7.8	1,500
14	1.8	12	85	—	7.8	550
15	4.0	80	1	30	7.8	1,600
16	5.9	130	90	—	—	1,200
17	6.0	15	Nil	90	—	1,200
18	8.0	4	—	85	8.0	840
19	6.0	61	86	—	8.0	960
20	3.6	100	90	36	7.8	1,300
21	5.8	15	15	50	7.6	1,600
22	4.5	40	38	25	7.8	2,700
23	5.5	166	10	10	7.8	390
24	4.0	Nil	—	—	7.5	720
25	4.0	263	60	46	7.8	2,600
26	2.2	63	Nil	30	—	860
27	3.1	260	80	20	—	1,200
28	4.6	15	Nil	76	7.8	3,600
29	11.9	114	10	—	—	2,800
30	3.0	10	Nil	—	—	760
31	3.5	20	50	48	7.8	7,000
32	3.0	48	Nil	50	7.8	818
33	4.0	260	95	—	8.0	1,500
34	5.0	25	Nil	50	8.4	2,300
35	2.7	140	90	—	8.0	1,800
36	1.6	45	Nil	45	8.2	1,200

(1946) studied the reducing sugar of seminal fluid and found it to be *D*-fructose, he suggested that its main function was to supply the spermatozoa with readily glycolysable material.

Working with prostatic secretion obtained by digital massage, Lundquist (1946) obtained evidence leading to the conclusion that the function of acid phosphatase was the splitting of phosphorylcholine into choline and inorganic phosphate. On the other hand, Lardy and Philips (1941) have shown that when seminal fluid is stored there is an increase in the ester phosphorus at the expense of lipid phosphorus, and suggested that the fatty acid produced is then oxidized to provide energy for spermatozoal motility. In view of this work, samples of seminal fluid were tested for lecithinase by the method of King and Dolan (1933), but the presence of such an enzyme could not be demonstrated.

Since the metabolism of human spermatozoa is almost entirely glycolytic (MacLeod, 1939) it seems probable that acid phosphatase is not concerned with spermatozoal motility and that its function is still unknown.

Summary

Samples of seminal fluid from 36 men attending hospital for investigation of sterility have been examined for acid phosphatase content, pH, morphology, motility, and abundance of spermatozoa.

No correlation exists between the enzyme concentration and either the number of spermatozoa present or their motility.

There is no evidence that the acid phosphatase is constantly low in male sterility.

Lecithinase was not detected in the seminal fluid.

It is probable that acid phosphatase is not responsible for the maintenance of spermatozoal motility

Thanks are due to Dr G O Stephens for his help with the statistical analysis to Prof E J King for his valuable advice, and to Dr F B Smith for his helpful co-operation. The work on which this paper was based formed part of a thesis approved for the degree of Ph D in the University of London

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Medical Memoranda

A Case of Sulphaguanidine Anuria

During the last few years sulphaguanidine has been extensively used to combat bacillary dysentery. The toxic effects of this drug have been very slight compared with the other members of the sulphonamide group though huge doses are sometimes administered. In view of the rarity of sulphaguanidine anuria the following case is presented

CASE REPORT

On Jan 10, 1946 an R A F corporal aged 32 was admitted to a British military hospital. For five days he had had abdominal pain and severe diarrhoea his stools containing blood and mucus. He was put on sulphaguanidine, 6 g immediately and 4 g four hourly. Before starting treatment however, two stools were sent to the clinical laboratory (these proved to be negative for pathogenic organisms). He vomited three times on Jan 13, and again early next morning. On the 14th he confessed that he had not passed urine for 24 hours and that he had not taken the prescribed amount of fluid.

On examination he was slightly anaemic and the bladder seemed empty. He was catheterized 9 oz (255 ml) of blood stained urine being withdrawn. The clinical laboratory reported heavy crystalluria in this specimen. His red blood cell count was 4,000,000 per cmm, haemoglobin 77% (Sahli) and blood urea 210 mg per 100 ml. Cystoscopy was performed. The catheter was passed up the left ureter to the limit, and 20 ml of 2% sodium bicarbonate solution was injected into the pelvis of the kidney. On withdrawal of the catheter good effluxes of blood stained urine were seen. The catheter would not go beyond 2 cm up the right ureter, and 40 ml of the bicarbonate solution was injected but on withdrawal there was no efflux into the bladder. The post-operative treatment consisted of fluids by mouth 20 ml of 40% sucrose intravenously, sodium citrate, and an intravenous drip of normal saline.

On Jan 15 he had occasional bouts of vomiting. The drip was changed to glucose. At 5.30 p.m. 4 oz (114 ml) of very heavily blood stained urine was withdrawn from the bladder. The intravenous drip had been continued all day the solution having been changed to 3.5% sodium sulphate. Next day his condition was unchanged and cystoscopy was again carried out. Peristalsis was seen down both ureters but there was no efflux from either orifice. The catheter in the left ureter was blocked at 5 cm from the orifice but on withdrawal an ordinary efflux was seen. Catheterization of the right ureter was unsuccessful. A second attempt to catheterize the left ureter was successful and the catheter was left in situ.

On Jan 17 his general condition was satisfactory and heavily blood stained urine was recovered from the indwelling catheter. The haemoglobin was 55% (Sahli). On the 18th he had an epistaxis and a slight haematemesis. While the catheter was left in position he was washed out with 5 ml of 1% sodium bicarbonate solution were given and up to 10 a.m. on the 18th 1.5 ml had been injected up the catheter and a total of 260 ml of blood stained urine recovered. Between 10 a.m. and 8 p.m. on the 18th the injection of fluid up the indwelling catheter was discontinued and during this time 105 ml of blood stained urine flowed down. At 11 p.m. an

ordinary rubber catheter was passed into the bladder and 24 oz (680 ml) of blood stained urine was withdrawn. There was no change in his condition on Jan 19. Next day the left ureteric catheter was withdrawn, but the bladder catheter was left *in situ*. Drainage was now satisfactory and the clinical condition slowly improved. The urinary output became normal, and iron was given to combat the anaemia. On Feb 5 the erythrocyte count was 3,030,000 haemoglobin 65% (Sahli). The patient's appetite was good, and he was very contented. On Feb 20 the blood urea was 30 mg per 100 ml, the red cells numbered 3,730,000, and the haemoglobin was 82% (Sahli).

COMMENT

Cystoscopy followed by ureteral catheterization is a life saving measure in these cases. It is suggested that the ureteral catheters be left *in situ* and that the kidneys be washed out with 1-2% solution of sodium bicarbonate the amount of fluid injected and the amount of urine subsequently collected being charted so that the return of kidney function may be assessed. Sodium sulphate 3.5% solution or glucose-saline should be given continuously by the intravenous route.

I wish to thank Lieut-Cols W D Hughes, R A M C and J Mackay Dick, R A M C for their kind advice and especially Major B Brookes, R A M C who carried out the surgical treatment. I should also like to thank Col R H C Pryn for permission to publish this report.

PAUL B WOOLLEY M B, Ch B
 Capt R A M C

Empyema of the Gall-bladder in a Child

The following case seems worthy of record in view of its rarity. The success of treatment without drainage was an interesting feature.

CASE HISTORY

A Chinese boy aged 6 was admitted to hospital on Sept 16 1946. There was a history of fever and chilliness for ten days and of pain in the right hypochondrium and epigastrium for four days. The mother stated that he had been healthy and had never suffered from any abdominal complaint suggestive of typhoid fever, dysentery, or appendicitis. About ten days before admission there was a gradual onset of malaise and feverishness followed six days later by pain in the right hypochondrium and epigastrium, and the mother discovered a mass below the right ribs. The bowels had been acting normally, and there had been no nausea or vomiting.

His temperature on admission was 102.8° F (39.3° C), pulse 140 and respirations 24. There was slight jaundice of the conjunctivae. On inspection the abdomen, which was slightly distended, clearly showed a round tumour below the ribs on the right side. This moved on respiration and was tender. Examination of the blood showed a leucocytosis of 25,000 per cmm, and a van den Bergh reaction was direct negative, indirect positive. *Ascaris* eggs were present in the stools. He was given penicillin, 10,000 units three-hourly for three days without any effect on his temperature, which continued to swing to 104° F (40° C). This treatment was followed by sulphadiazine, 0.5 g four hourly for five days, also without effect.

Operation—On Sept 24, under open ether and local anaesthesia the abdomen was opened through a right subcostal incision. The gall bladder was found distended, thickened, and roughened but there were no adhesions of omentum or bowel. No stone or worm could be palpated in the cystic or common bile-ducts. The liver was enlarged, but no abscesses were found. The gall bladder was stitched to the parietal peritoneum by a purse-string suture, and opened. 15-20 ml of thick greenish pus was evacuated, and the interior explored by a finger. The gall bladder was closed and 80,000 units of penicillin in 10 ml of distilled water was injected into it. The wound was closed in layers. Examination of the pus showed a pure staphylococcal infection. The day after operation there were signs of consolidation of the lungs, penicillin, 15,000 units three-hourly, was given for three days, after which the patient made an uninterrupted recovery.

COMMENT

Infection of the gall bladder was probably via the blood stream but the presence of *Ascaris* eggs in the stools raises the possibility of a worm having temporarily blocked the cystic duct. However, a case I recently operated on, in which obstruction of the common bile-duct by an *Ascaris* caused severe colic and obstructive jaundice, contrasts with the predominance of fever in the above case.

S C CHEN M B, Ch B,
 Moukden Hospital China

Reviews

HAEMATOLOGY

Clinical Hematology. By Maxwell M. Wintrobe, M.D., Ph.D. Second edition thoroughly revised. (Pp. 802, 197 engravings and 14 plates, 10 in colour 55s.) London: Henry Kimpton.

This is probably the world's most accurate and carefully documented textbook of haematology. One can only marvel at the industry and organization which have gone to its making in the midst of the active research work of Wintrobe and his collaborators. It is suited to the professional haematologist and research worker rather than to the general practitioner. The following description of the metabolic changes observed following liver therapy in pernicious anaemia is typical of the author's style.

'The high plasma iron characteristic of pernicious anaemia in relapse drops precipitously even to subnormal values. The protoporphyrin in the erythrocytes, normal or somewhat low in relapse, may tend to rise. The excretion of coproporphyrin I, generally regarded as an index of haemopoietic activity and found elevated during relapse, is restored to normal by specific therapy sometimes after a preliminary increase. Megaloblastic bone marrow has been reported as containing no protoporphyrin. Concomitant with the reappearance of normoblasts following liver therapy protoporphyrin was found in the bone marrow and its quantity increased until just prior to the maximal rise in reticulocytes, following this a lower level was attained. Simultaneous with the reduction of the number of normoblasts in the marrow and in association with the increase of reticulocytes in the peripheral blood, the uric acid content of the blood and urine increases.'

The author discusses metabolism well, and the new chapter on the production and destruction of red corpuscles contains a wealth of information on the chemistry of the manufacture of haemoglobin and the production of red cells much of it obtained by the new tracer technique. In an excellent section on haemoglobinometry he recommends the photoelectric technique (unfortunately wartime British work in this field has not yet been fully published). There is much recent information about folic acid in the megalocytic anaemias and the use of radioactive phosphorus and nitrogen mustards in the treatment of leukaemia and allied conditions, though he does not mention the value of urethane in leukaemia. Some may still wish for a textbook of haematology in which the biochemical and metabolic aspects are less heavily stressed and the morphological, cytological, and genetic factors and the comparative pathology of blood diseases are given more prominence, but perhaps that would be beyond the powers of a single author. The book is well produced, and the last word in the index is the only misprint found.

L. J. WITTS

WATERS OF HIPPOCRENE

Essays and Studies. By W. A. Osborne, formerly Professor of Physiology in the University of Melbourne. (Pp. 188, 10s. 6d.) Melbourne: Lothian Publishing Company Pty., Ltd. 1946.

There is no liberal art which has not been successfully cultivated by some member of our profession. Only Keats indeed, who abandoned practice soon attained the summit of Mount Parnassus, but Beddoes and Bridges are not likely to be forgotten by even exclusive anthologists. Of great prose writers, critics, novelists, and historians we have had plenty. Among those of our faculty who devoted themselves to laboratory rather than clinical science and loved one or other of the Muses, the names of Ronald Ross and Charles Sherrington will be honoured. Prof. W. A. Osborne belongs to this company. His volume of essays and studies includes some excellent papers—for instance, 'Landmarks in Man's Evolution' and 'Eye, Ear, and Finger tip'—which could have been written only by a trained physiologist but their literary form has an artistry that professional allusions sometimes lack. Most of the papers owe little directly to his scientific experience and must therefore be judged beside those of professed men of letters. I think they can abide the trial. His ironical fiction, 'The Garland of Gadara' may not reach Anatole France's level, but it is pleasing. Shakespearean scholars—a quarrelsome tribe—

will no doubt find fault with some of his remarks on the text and its author, the reviewer, however, enjoyed them.

Particularly attractive are the papers which discuss the music of words and the advantages or disadvantages of particular languages. Consonantal alliteration is noticed by everybody, but, Prof. Osborne remarks, vowel resonance has not attracted so much attention, although some famous passages owe much of their beauty to it—for instance, assonance of the broad 'a' in 'A transient and embarrassed phantom,' or of the long 'a' in 'angels and ministers of grace,' or of the long 'u' in 'Arise, shine, for thy light is come.' Our language is supreme in what Prof. Osborne calls 'the magic of monosyllables'—the authorized version of the Bible provides countless examples—'The sun shall not smite thee by day nor the moon by night,' for instance. Shakespeare, whom we are apt to associate with polysyllabic passages, uses chiefly monosyllabic phrases when his characters are deeply moved—for instance Lady Macbeth after the murder. A defect of our language is sigmatism. We all notice the sibilants in congregational hymn singing but our great masters did not always avoid it. The first line of *Paradise Lost* has four 's' sounds. Prof. Osborne points out that Tennyson hated sigmatism and said he would rather have died than written Pope's line, 'What dire offence from amorous causes springs.' Tennyson took great pains to avoid the gagging of geese, 'The Brook.' Prof. Osborne notes is a fine example of his success.

The author discourses on many languages and, as might be expected, knows his Virgil, whose verbal beauty can be loved even by those whose knowledge of Latin is slight. Here are two examples which remain in the reviewer's memory. When Virgil wishes to draw a cheerful picture he uses dactyls—for instance, the helmsman in a clear sky: *Sidera cuncta notat tacito labentia caelo* but when the Sibyl leads Aeneas to the underworld, they move in spondee: *Ibant obscuri sola sub nocte per umbram*. This illustrates another argument of Prof. Osborne—namely the impossibility of an adequate translation from one language into another with a different melody. Any one who cares for verbal beauty will enjoy these essays.

MAJOR GREENWOOD

ADVANCES IN RADIOLOGY

The 1946 Year Book of Radiology. July 1945–June, 1946. Diagnosis, edited by Charles A. Waters, M.D., associate editor Whitmer B. Firor, M.D. Therapeutics, edited by Ira I. Kaplan, M.D., associate editor Sidney Rubinfeld, M.D. (Pp. 464, illustrated \$5.50 or 30s.) Chicago: Year Book Publishers Inc. London: H. K. Lewis and Co.

A year book should give a selection of abstracts of the outstanding contributions from the year's publications, together with editorial comment to guide the less experienced reader. *The Year Book on Radiology* provides such information for radiodiagnosticians and radiotherapists in two distinct parts separately edited. The summaries of the papers are lucid and easy to read, and the illustrations are apposite. The papers chosen from clinical as well as from purely radiological journals are of high quality, and the book will interest others in the profession besides radiologists, the orthopaedic surgeon, neurosurgeon, genito-urinary surgeon, and general physician will find much to stimulate their imagination. The majority of the papers reviewed have been published in journals written in English.

In that half of the journal devoted to diagnosis a successful technique for pneumarthrography of the knee joint is described and illustrated with skiagrams. There is a description of an apparently new syndrome characterized by cortical hyperostosis and intermittent fever in young infants. Diagnostic x-ray findings in all parts of the body are dealt with, as well as plainography, arteriography, and stereoscopic fluoroscopy. Jaffe has reported further on 62 cases of osteoid osteoma, and there are accounts of a case of streptococcal osteomyelitis cured in 10 months by means of penicillin, of the dangers of thorotrast and of intrapulmonary lipiodol, and of tracers in diagnostic radiology. X-rays show that uranium combined with Type I pneumococcus antigen remains attached to it and does not destroy its specificity.

In the introductory section of the part on radiotherapeutics the editor discusses general measures required for cancer control, the relief of pain, the possibilities of super-voltage x-rays,

sensitivity of cephalic myelin to radiation the milk factor in mammary cancer work on chromosome damage, and the possibility of combined thiamine deficiency and high oestrogen activity in causing the cancers of the female genital tract. Radioactive sodium and phosphorus and mustard gas have not been found advantageous in the treatment of cancer. The uses of radiotherapy in various inflammatory and rheumatic conditions are mentioned. The treatment of cancer of the breast, bronchus, stomach, rectum, and uterus by ordinary radiation methods and also the intravesical treatment of bladder cancer by rays are discussed. The account of oestrogen treatment of carcinoma of the prostate emphasizes that it does not cure the condition. There is a report of implantation metastases of a breast cancer at the site of removal of skin for grafting. Other features are the use of the blood coagulation time as a measure of general effects of radiation, articles on radiation physics, the use of radiation in general medicine, neurology, ophthalmology, dermatology, otorhinolaryngology, gynaecology, bone conditions and genito-urinary conditions. A section is devoted to radiation injuries and the uses of radon ointment in their treatment. We must, however, criticize the inclusion of a case of sarcoma of bone said to have been cured by radiation in which diagnosis was confirmed after amputation.

F. ELLIS

SCHEUERMANN'S DISEASE

Die Scheuermannsche Krankheit und ihre Differentialdiagnose
By J. E. W. Brocher, Privatdozent, University of Geneva
(Pp. 91, 122 illustrations, 11 Swiss francs.) Basle: Benno Schwabe and Co., 1946.

The publication of a concise monograph on Scheuermann's disease (osteochondrosis of the spine) is timely, since the condition is being more often diagnosed both clinically and radiologically. The author considers the clinical symptoms and radiological diagnosis in detail and discusses various theories of pathogenesis—without, however, shedding much new light on the matter. He stresses the importance of early diagnosis and recommends that in view of the familial predisposition to the disease children in affected families should be medically supervised. The section on treatment is disappointing and might well have been expanded. The radiographic illustrations are numerous and excellent and since they refer particularly to differential diagnosis, add considerably to the value of the monograph.

PERIPHERAL NERVE INJURIES

Peripheral Nerve Injuries—Principles of Diagnosis By Webb Haymaker and Barnes Woodhall (Pp. 227, 225 illustrations, 22s. 6d.) London: W. B. Saunders Company.

Although Major Haymaker and Col. Woodhall are personally responsible for this book, the United States Army has sponsored its production, and the material for it was collected in army hospitals. The authors have not made a scientific survey of peripheral nerve injuries but have illustrated, from individual cases, the results of different lesions. Their main purpose was to help Service medical officers in the diagnosis of peripheral nerve injuries, but the work is of greater scope than any such guide produced by our Services.

It begins with a detailed and practical account of the peripheral nervous system, and then describes muscle movements and methods of testing them. Some of the techniques differ slightly from those usually employed here, but they are all useful. The clinical description of nerve injuries is clear and readable. The illustrations are an excellent feature of the book—they are as numerous as the pages—and there are photographs of wasted muscles, abnormal postures, sensory markings and sweating tests for every conceivable injury; line drawings are used where photographs would be inadequate. This is an admirable reference book for clinicians who have not had extensive experience of nerve injuries, a sound guide to diagnosis and though not intended for the expert, useful to him in teaching.

DEMIS WILLIAMS

The index of the *Bulletin of War Medicine* edited by the staff of the Bureau of Hygiene and Tropical Diseases has been published by H.M. Stationery Office, price 6d.

BOOKS RECEIVED

[Review is not precluded by notice here of books recently received]

Hunterian Society Transactions Vol. IV, Session 1945-6 (Pp. 83, No price.) London: Metropolis Press, 1947.

Prints, lectures on 'The Second Biological Revolution' by Julian Huxley, 'Rehabilitation' by A. H. McIndoe, 'Giddiness' by Parsons Smith, 'Vertigo' by T. Cawthorne and 'Hysteria' by J. R. Rees.

Health Instruction Yearbook 1946 Compiled by O. E. Byrd, Ed. D. (Pp. 399, \$3.00.) California: London: Geoffrey Cumberlege, 1947.

Intended as a reference book for those interested in public health, this book is a review of recent developments and includes many abstracts from the American literature.

Transactions of the American Proctologic Society Forty-fifth annual session (Pp. 621, No price.) California: American Proctologic Society, 1947.

Records a number of papers on proctology and a historical note on 'The First Proctologist'.

Friends in Need (Pp. 75, 1s. 6d.) London: H.M.S.O., 1947.

An illustrated account of the activities of the American British War Relief Society.

Chemical Methods in Clinical Medicine By G. A. Harrison, M.D., F.R.C.S. 3rd ed. (Pp. 630, 40s.) London: J. & A. Churchill, 1947.

New sections have been added on sulphonamide crystals in urinary deposits, aetiology of calculus, analysis of post-mortem blood and cerebrospinal fluid, globin, zinc, insulin and other subjects.

A Short Textbook of Midwifery By G. F. Gibberd, M.S. F.R.C.S., F.R.C.O.G. 4th ed. (Pp. 563, 21s.) London: J. and A. Churchill, 1947.

New material includes discussion of penicillin in puerperal infection and rhesus incompatibility.

Diabetes and Food Rationing 3rd ed. of *Diabetes in Wartime* (Pp. 29, 1s. 3d.) London: H. K. Lewis, 1947.

A summary of diabetic diets and instructions given to patients attending the diabetic clinic of University College Hospital.

The Principles and Practice of Gaseous Anaesthetic Apparatus By A. Charles King, with a foreword by I. W. Murray, C.V.O. D.Sc., M.B., D.A. 2nd ed. (Pp. 47, No price.) London: Bullimore, Tindall and Cox, 1946.

A short account with diagrams of anaesthetic apparatus and its functioning, with notes on the properties of gaseous anaesthetics.

Bacteria in Relation to Domestic Science By C. L. Dukes, M.D., M.Sc., D.P.H. (Pp. 240, 12s. 6d.) Oxford: University Press, Geoffrey Cumberlege, 1947.

An outline of bacteriology for students of domestic science.

The Eye Manifestations of Internal Diseases By I. S. Tieszen, M.D. 2nd ed. (Pp. 614, 50s.) London: Henry Kimpton.

An account of manifestations in the eye of general diseases as well as purely ophthalmic affections. Intended for general practitioners as well as ophthalmologists.

Child Health Edited by A. Moncrieff, M.D., F.R.C.P., and W. A. R. Thomson, M.D. (Pp. 254, 14s.) London: Eyre and Spottiswoode (*Practitioner Handbooks*), 1947.

This book covers the wider aspects of child health, including an account of the health services, preventive measures—such as child guidance clinics, residential schools for handicapped children, school health services and tuberculosis in childhood—as well as four articles on the feeding of infants and children.

The 1946 Year Book of Pediatrics Edited by I. A. Abt, D.Sc., M.D. (Pp. 464, \$3.75.) Chicago: Year Book Publishers, 1947.

A survey of recent advances in pediatrics, including notes on folate, the rhesus factor, and intramuscular sulphonamides.

Annual Review of Physiology Vol. IX, 1947. Editor: Victor E. Hall. (Pp. 736, 36s.) London: H. K. Lewis, 1947.

This book contains reviews of recent advances in physiology in America, Britain, New Zealand, and other countries.

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TOBACCO

Whether or not Columbus brought syphilis from the New World to the Old, it appears that he was responsible for the first importation of tobacco. In 1492 an expedition to the island of Cuba came back with the news that the inhabitants perfumed themselves with certain herbs. A Franciscan who went with Columbus on his second voyage (1494-6) described the habit of snuff-taking, and in 1502 Spaniards on the south coast of America described the practice of tobacco-chewing. The exploration of the American Continent uncovered the fact that the smoking of tobacco was universal and immemorial and often associated with tribal ceremonies. A physician, Francisco Fernandes, sent by Philip II of Spain to Mexico, brought the tobacco plant to Europe in 1558. Jean Nicot, the French Ambassador to Portugal, sent seeds to Catherine de' Medici, and his name has been perpetuated in the generic name of the tobacco plant *Nicotiana*. Ralph Lane, the first Governor of Virginia, and Sir Francis Drake initiated Sir Walter Raleigh into the use of what Burton in his *Anatomy of Melancholy* described as "hellish, devilish, and damned tobacco, the ruin and overthrow of body and soul". Some schoolboys may have heard that Raleigh "took a pipe of tobacco a little before he went to the scaffold" and Raleigh's example was responsible for the popularity of tobacco-smoking among the Elizabethan courtiers.¹ So a physician brought the plant to Europe, and an Englishman introduced an old-fashioned American custom—a custom that has prevailed for 400 years in spite of the "counterblaste" of King James I, who described smoking as "a custom loathsome to the eye, hateful to the nose, harmful to the brain, dangerous to the lungs, and in the black stinking fume thereof nearest resembling the horrible Stygian smoke of the bottomless pit". As medical men we should ask ourselves whether there was not a grain of truth in the declamation of the first Stuart monarch in England. If there is, then according to the Chancellor of the Exchequer "all we need do is smoke a little slower, make cigarettes last a little longer, throw away our stubs a little shorter, knock out our pipes a little later—and all this might even be good for our health".

In reviewing what has been written by doctors on tobacco one cannot fail to notice the marked stress of natural bias. There have been medical men who have approached the subject from a moralistic standpoint. Others, we suspect, have allowed their natural scientific caution to be coloured by a wish not to cast too much discredit on a habit they find pleasurable. At least we can say that no medical man yet appears to have proved that

the consumption of tobacco is good for health, unless we interpret the psychologists' explanation of the smoking habit as a beneficial but infantile assuagement in moments of stress. And we may recall that the late Sir Buckston Browne was firmly convinced that snuff was a useful prophylactic against the common cold.

Tobacco amblyopia is accepted by ophthalmologists as a real thing. Work has been done on the effect of tobacco smoking on muscular performance on peptic ulcer, on post-anaesthetic complications, and particularly on the cardiovascular system. In his Croonian lectures² in 1906 W. H. R. Rivers refers to the observations of Lombard in 1892 that tobacco-smoking depressed muscular activity, but Hough subsequently observed the opposite effect. Rivers concluded that "tobacco comes out from the ergographic test less creditably than the other drugs we have been considering". Most physicians encourage their peptic ulcer patients to cut down smoking, but tobacco enthusiasts received some encouragement from the observations of Jamieson, Illingworth, and Scott³ that there was no correlation between tobacco consumption and severity of symptoms in patients whose peptic ulcers had perforated. H. J. V. Morton⁴ concluded that there was a heavier incidence of post-operative lung complications after abdominal operation in those habitually smoking more than 10 cigarettes or 1/2 oz tobacco a day than in non smokers. The literature on the effect of smoking on the cardiovascular system is extensive, and much of it is referred to in an article by Roth, McDonald, and Sheard,⁵ and in broadsheets issued by the American Heart Association.⁶ Clifford Allbutt, himself a sufferer from angina, described⁷ in 1915 what he called "tobacco angina". He wrote thus of a patient of his believed to be suffering from tobacco angina: "The patient, a strong man of middle life, but presenting some signs of arteriosclerosis, had an attack in my presence. He writhed in a passion of distress, by his wrestling with the invisible foe the sofa on which he was lying was partly overturned, so that from the back of it he rolled on the floor". Allbutt was not only a great physician but a man who used his words carefully and with precision. Neuhof⁸ in 1916 reported a case of sinoauricular block from over-indulgence in tobacco. Briefly, subsequent work with controlled observations shows that smoking tobacco causes a fall in temperature of the hands and feet due to vasoconstriction, an increase of the basal metabolic rate, a rise in blood sugar, a quickening of the pulse, and a lowering of the amplitude of the T wave of the electrocardiogram. These changes are believed to be due to the nicotine and not to the pyridine bases and carbon monoxide also present in tobacco smoke. Another indictment of smoking came from Prof. Raymond Pearl, who gave life tables from the age of 30 for 2,094 non-users of tobacco, 2,814 men who were moderate smokers and 1,905 who were heavy smokers, neither of these last two groups being chewers or snuffers of tobacco. He

² *Influence of Alcohol and Other Drugs on Fatigue* Edward Arnold London 1908

³ *British Medical Journal* 1946 2 287

⁴ *Lancet* 1944, 1 368

⁵ *J Amer med Ass* 1944 125 761

⁶ April 1945 14 No 4 May 1945 14 No 5

⁷ *Diseases of the Arteries including Angina Pectoris* Macmillan London 1915

⁸ 244

⁹ *Arch intern Med* 1916 17, 659

found that 45.9% of the non-smokers lived to the age of 70, 41.4% of the moderate smokers, but only 30.4% of the heavy smokers. In commenting on this⁹ we pointed out that Prof. Pearl had stated a correlation but refrained from passing from this to an aetiological conclusion. In a recent issue of the *Journal*¹⁰ we discussed the melancholy fact that nicotine has a depressing effect on fertility.

Mr. Hugh Dalton may well believe that excessive tobacco smoking is incompatible with "a song in my heart." Nicotine comes out of its age-long history as a drug of addiction to which billions of people have shown a fair degree of tolerance. Whether the social and psychological benefits of smoking outweigh the disadvantages of a potent toxin will be for the future historian to decide. But tobacco has now entered a new phase in its history and has become an economic force controlling the destinies of the nation. As an article in the *Economist* of April 12 suggests, it has replaced gold and silver as an international standard of currency. To borrow a phrase from that journal, Mr. Dalton is now trying to take us off the "tobacco standard"—and we agree with him that this might be good for health. And he is, after all, following sound tradition, for in 1604 Parliament imposed a duty of 6s. 8d. a lb. on all tobacco entering England.¹¹ The purpose was to reduce its consumption—"For nowadays this herb (which was formerly used only by the better sort as physic to preserve health) is so excessively taken by disordered persons of base condition that they consume their wages, impair their health and weaken their bodies, and are driven thereby to unthrifty shifts to maintain their gluttonous exercise."

HIGH-VOLTAGE X RAYS

After an interval, due largely to war conditions, it appears that a serious attack is to be made on the medical problems presented by the use of high-voltage x rays. In 1943 Koch, Kerst, and Morrison,¹² at the University of Illinois, showed that the theoretical advantage to be expected is physically attainable. This advantage consists in the enhancement of depth dosage, compared with that at the surface, and its therapeutic significance in relation to the irradiation of deep seated carcinomas is at once evident. Physically, the effect is due to the emission of secondary radiation within the body, so that the total intensity of radiation builds up to a maximum, at a depth characteristic of the initial energy, and then falls off again because of absorption. Working at 20 million volts, the Illinois team found that maximum dosage was at depth of 3 centimetres, and was approximately equivalent to three times that at the surface. It has since been stated¹³ that at 50 million volts the depth for maximum dosage is 10 centimetres, and that the intensity realized is six times the surface value. None the less there has been a dearth hitherto of supporting and detailed information. The experimental material for the Illinois measurements consisted, in effect, of a rectangular block of pressed wood, with provision for the measurement

of radiation intensity at various points within it. Although that was adequate to establish the main point, it is clear that fuller investigations are desirable, comparable for example with those already undertaken by Mayneord and Clarkson¹⁴ at normal x ray energies. The need is indeed all the greater in that x rays of the order of 20 to 50 million volts are therapeutically untried.

The x rays used in the Illinois experiments were obtained from the electromagnetic machine known as the "betatron," for the introduction of which to physical science Prof. Kerst was himself responsible. Medically this has no further significance than as an engineering device for the acceleration of an electron beam to high energies. For use as a source of x rays it is necessary in addition only that a "target" should be provided, impact on which releases the accumulated energy of the electrons. The basic requirement is thus electron acceleration, and apart from such mundane considerations as cost it is immaterial to the radiologist by what engineering methods this is achieved. Such practical considerations cannot, however, be so lightly dismissed in relation to hospital policy. Recent progress in the design and operation of alternative methods of electron acceleration is accordingly relevant from the point of view both of the experimental facilities immediately available and later for the provision of hospital equipment.

A notable step forward was reported last autumn, when it was announced from the Ministry of Supply's Telecommunications Research Establishment at Malvern¹⁵ that the energy level obtainable from a small betatron had been effectively doubled. This was attained by the adoption of the "synchrotron" principle which, during the previous year, had been independently suggested by Veksler¹⁶ in Russia and McMillan¹⁷ in the United States. In brief whereas a "betatron" makes use only of magnetic forces in a "synchrotron" electrical and magnetic forces are employed in combination. And the distinction of the Malvern workers was simply that this laboratory was the first to make a "synchrotron" work. Various alternative methods of producing high-energy electrons are already in the offing. The effect, however, of the Malvern experiments has been to leave the "synchrotron" as the most efficient, and therefore the most economical, that is immediately available. Subsequent progress has, moreover, been encouraging. Within the next few weeks a "synchrotron" capable of producing 12 million-volt electrons, and therefore x rays of corresponding energy, is to be made available for physical and biological tests by a medical research team. This will be a useful step and will give added weight, and no doubt further useful detail, to the information already available. Further progress appears in the main to be a question of engineering. In the United States the General Electric Company has operated a betatron at 100 million electron-volts, and the National Bureau of Standards¹⁸ has completed plans for similar equipment. The latter, together with a 50 million electron-volt betatron, which should be in operation this year, are to be used for the working out of protection

⁹ See *Brinsh Medical Journal* 1938 1 791

¹⁰ *Ibid.* 1947 1 303

¹¹ Dunbarin T. *Daily Telegraph* April 21 1947 p. 4

¹² *Radiology* 1943 40 120

¹³ Empire Scientific Conference 1946 verbal communication

¹⁴ *Brit J Radiol* 1944 17 151

¹⁵ *Nature* 1946 158 413

¹⁶ *J Phys Acad Sci USSR* 1945 9 151

¹⁷ *Phys Rev* 1945 68 143

¹⁸ *Science* 1947 105 230

standards for hospital workers. For further installations, however, and for the reason already given, it is to be expected that the synchrotron method will be employed. Here, fortunately, British medicine is more happily placed. Following up its earlier success, the Telecommunications Research Establishment has now designed a 30-million electron-volt synchrotron, and this equipment is already complete, apart from the magnet itself. It should be in operation before the end of the present summer, and it would be a poor compliment to the laboratory's physicists to suggest that any serious degree of difficulty is likely to be experienced.

At this stage, and possibly sooner, a number of policy questions will fall to be decided. The problem is the old one of whether to grasp what is already available or to wait for more. Two different issues are involved—the first, that of the voltage to be used, and the second the physical means to produce it. As to the first, it would be expected that at 30 million electron-volts the greatest x-ray dosage would be at a depth of about 5 centimetres, and that the intensity at that depth would be about four times that at the surface. This is a big enough margin to offer a quite substantial advantage for therapeutic use. Moreover, the evidence is that at such voltages the rate at which intensity falls off at depths greater than the maximum is comparatively slow. The ratio of maximum to surface dosage is therefore the more important figure of the two. And if we can have a four-to-one ratio at once there would seem to be no good reason to wait a further period until the six-to-one ratio, offered by 50 million-volt working, is attainable. It would be equally unwise, however, to go to the opposite extreme and suggest that all major hospitals should at once be provided with 30 million-volt synchrotrons. There is the possibility, on the physical side, not only of further increases in effective voltage but also of new methods which may reduce production costs. Equally, there is a case medically for the obtaining of practical experience at 30 million volts at a limited number of centres before proceeding to any more general programme. And this, it may be expected, will be the line taken.

THE ADRENAL MEDULLA AND HYPERPIESIS

The importance of rare diseases rests in the light they so often throw on normal processes and common abnormalities. Pheochromocytoma is a very rare condition, but its existence shows that there are occasions on which the excessive discharge of adrenaline is capable of causing a rise in the blood pressure and justifies speculation on the part which the adrenal medulla may play in the regulation of the blood pressure in healthy people and in the production of hyperpiesia, both of the malignant variety and of the kind so curiously described as benign.

The usual syndrome produced by pheochromocytomata of the adrenal medulla or of other chromaffin tissue is paroxysmal hypertension, the relationship having been recognized by Von Neussen as long ago as 1897. Two such cases are described in the present issue of the *Journal*. In Spalding's case the disease had after two years progressed so far that the blood pressure was raised for part of the time even between attacks. As a result a condition resembling albuminuric retinitis had appeared. Despite

this, operation produced a remarkable improvement, the blood pressure dropping from such values as 300/205 to 140/100 and the fundi returning almost to normal. Gutman's patient had suffered from paroxysmal hypertension for "several years," and her blood pressure was 300/170 during attacks and 200/120 between. She also suffered the typical ophthalmic changes of malignant hypertension. Although a correct diagnosis was made she died, probably of uræmia, before operation could be carried out. It may be guessed from the changes found post mortem in the kidneys that operation would not for long have prolonged her life. She had already entered the vicious circle of Wilson and Byrom: persistent high blood pressure had produced arterial degeneration, arterial degeneration had given rise to kidney damage, and kidney damage had resulted in accentuation of the hyperpiesis.

It is important to realize that in adrenal medullary hyperpiesis the blood pressure does not necessarily return to normal between attacks. The persistence of the high pressure may be due to a persistent oversecretion of adrenaline. Though some physiologists find this clinical belief difficult of acceptance, Spalding's case affords further evidence of its truth. Should the tumour not be removed we must expect that ultimately kidney damage will take over the job of maintaining the pressure at an abnormal height as in Gutman's case. Early diagnosis is therefore imperative, for if a cure is to be expected adrenalectomy must be performed before the patient has entered the vicious circle. Such early diagnosis is not easy if attacks are rare for they may last only a few minutes, leaving no physical signs to guide the physician who sees the patient in the interim. Suspicion should be aroused by a story of attacks of pallor associated with shivering, perspiration, tremor, breathlessness, nausea, vomiting, a feeling of pressure in the epigastrium, precordial pain, headache, and extreme anxiety. Naturally only a few of such symptoms may be present in the individual case. Sometimes attacks are induced by turning on to the side of the tumour. If the physician is lucky enough to be present during an attack he may find the systolic pressure raised out of proportion to the diastolic. Tachycardia is usual but not invariable, and fibrillation may occur. Hyperglycaemia may be present, though in Spalding's case the blood sugar was lower during an attack than in the interim. The tumour is rarely palpable, but between attacks it may be demonstrable by x-rays after perinephric insufflation.

Much has been written about the possible relationship of the adrenal medulla to common benign hypertension. It has been suggested that the fault may lie with the receptor tissues, which may respond excessively to a normal output of adrenaline, or that inactivation of adrenaline occurs in such cases at an abnormally slow rate. Such speculations do more credit to the imagination of their authors than to their reputation as scientific investigators. Nevertheless it may be said without fear of contradiction that the occasional case of persistent hyperpiesis is found to be due to a pheochromocytoma and that the investigation of hyperpiesis is not complete until this disease has been excluded with as much care as a unilateral renal lesion.

STANDARD SYRINGES

During the war certain foreign sources of supply of syringes were cut off, and manufacture had to be undertaken on a larger scale by British firms. It was in these circumstances that the Surgical Instrument Manufacturers' Association requested the British Standards Institution to prepare British Standard specification for syringes to ensure both

uniformity and an efficient product. This task was begun in 1942, it involved, among other things, research in the Metrology Department of the National Physical Laboratory. The standard specification has now been published,¹ and any syringe conforming to it may in future be identified by the description "B S 1263". As the specification points out, this labelling on the barrel indicates only that the syringe is intended to comply with the specification and is no guarantee that it does so. The specification provides for all capacities, and the use of the word "hypodermic" seems inappropriate in connexion with the larger instruments. There are separate descriptions for all-glass (two-piece) and glass-and-metal syringes. In connexion with the latter it is not required that the cement used for the metal-glass junction shall withstand a certain degree of heat without softening. This requirement, if met, as it has been in certain syringes of Continental make, would save much trouble. The specification deals exhaustively with all dimensions, it is noteworthy that those of the nozzle correspond to the American "Luer" type. The tolerances on capacity—permissible errors in the volume delivered—vary from 0.02 ml for a 1-ml syringe to 1.5 ml for a 50 ml syringe. These may appear generous, but many syringes exceed them. Tests are prescribed for leakage past the piston, with permissible limits for such leakage, and for the tightness of the needle fitting. A "thermal shock" test requires that the barrel "and its permanently attached mountings" shall be capable of being plunged into boiling water without damage. Syringes complying with this specification should be not only more accurate but easier to use, owing to their smoother working and generally better adaptation to their purposes. It is to be hoped that the all-glass type will find more general favour and come into widespread use, particularly in view of the fact that it can be sterilized so much more easily by efficient methods than the glass-metal type. Further specifications are promised for hypodermic needles and for syringes used for special purposes.

POTASSIUM IN DIARRHOEA

The poor results so often obtained hitherto in the treatment of infantile diarrhoea have been due to a false assumption, in the view of Darrow² and of Govan and Darrow,³ that the potassium ion is retained in the cell while the sodium and chloride ions are excluded. These authors suggest that many therapeutic failures have resulted from the belief that it was necessary to restore the normal electrolyte balance only in the extracellular fluids. Recent work has shown that certain cell membranes are permeable to potassium. Darrow and Govan attempt by somewhat complicated calculations to show exactly how much of the body potassium may be lost in cases of dehydration, quite apart from cell destruction. They conclude that in the most severe forms of infantile diarrhoea as much as one-third of the estimated body potassium may be lost. With this in mind they have supplemented the usual oral administration of sodium chloride, lactate, and glucose with potassium chloride. They claim that after giving the electrolyte mixture subcutaneously or intravenously for twenty-four hours they are able subsequently in most cases to give it by the oral route. In addition all very ill patients received blood or plasma transfusion. The reluctance to administer potassium has been largely due to a well-founded distrust of giving an ion that is known at times to have toxic effects. Darrow had no

deaths due to potassium toxæmia, but one patient had heart block, and recovered, there were 5 instances of intense erythema in 50 patients. In 53 cases treated by the old method by the authors there were 17 deaths, in another series of 50 receiving potassium chloride in addition there were only 3 fatal cases. The groups were unfortunately not collateral and were admitted over different periods of the year, so that the observations were not strictly controlled. Nevertheless this line of therapy would appear to be worth serious consideration.

YOUNG THIEVES

Now that juvenile delinquency is receiving belated but fairly purposeful attention from the authorities nothing is so valuable as careful study of the facts. Dr John Bowlby, the psychiatrist in charge of the child guidance unit of the Tavistock Clinic, has had reprinted as a monograph¹ a study, which appeared in the *International Journal of Psycho-analysis* in 1944, of 44 young thieves referred to his clinic. He used as a control group 44 other children who had also been referred to the clinic but who did not steal. The two groups did not differ much in sex, intelligence, or economic status, but the outstanding feature of the thieves was the presence of 9 classified as depressed, 13 as hyperthymic, and 14 of a type which has been called "affectionless". There were no children of this type in the control group, and the affectionless children were significantly more delinquent than the other thieves. All but one were serious offenders, and most of them played truant as well as stole. They constituted more than half of the more serious and chronic offenders, and Dr Bowlby believes that they manifest a true psychiatric syndrome which has hitherto been only partially recognized. Eighteen thieves had a parent or grandparent with serious mental disorder, the incidence was almost identical in the control group, and certainly higher than it would have been in a control group of normal children.

Seventeen of the thieves but only two of the controls, had been completely separated from their mothers or foster-mothers for a long time during their first five years. Significantly, 12 of the 14 affectionless thieves and only 5 of the remaining 30, had suffered a prolonged separation, which is shown to be a principal cause of the affectionless character. Dr Bowlby concludes that prolonged separations are a specific and very frequent cause of chronic delinquency by thwarting the development of the capacity for object-love and hence of the super-ego function. He pleads for combined research on psycho-analytic and social economic factors and for the early diagnosis, treatment, and prevention of the affectionless character. His report confirms the finding of other workers that much delinquency is due to failure of the mother-child relationship. The problem is obviously bound up very closely with that of the neglected child, which has recently come into such prominence.

The Moynihan Lecture in the University of Leeds will be delivered in the Riley-Smith Hall of the University Union at 3.30 p.m. on Monday, May 5 by Dr M. N. Smith-Petersen, Professor of Orthopaedic Surgery in Harvard University. His subject is the evolution of the surgery of the hip-joint. Members of the medical profession are invited to be present.

¹ *Hypodermic Syringes for Use in Medical and Surgical Practice* 1946 British Standard 1263
² *Pediatr.* 1946 28 515
³ *ibid.* 1946 28 541

¹ *Forty-four Juvenile Thieves, Their Character*
Bowlby, M. N., D. 1944

TRAVELLING FELLOWSHIPS IN MEDICINE

The Medical Research Council invites applications for the following Travelling Fellowships for the academic year 1947-8

Rockefeller Medical Fellowships

These Fellowships are provided from a fund with which the Council has been entrusted by the Rockefeller Foundation of New York. They are intended for graduates resident in this country who have had some training in research work in clinical medicine or surgery, or in some other branch of medical science, and who are likely to profit by a period of work at a centre in the United States or elsewhere abroad, before taking up positions for higher teaching or research in the United Kingdom. The stipend will ordinarily be at the rate of £525 per annum for a single Fellow and of £800 per annum for a married Fellow. Travelling expenses and some other allowances will be paid in addition.

Dorothy Temple Cross Research Fellowships in Tuberculosis

These Fellowships are awarded by the Council from a special endowment of which it is the trustee. The object of the Fellowships, as defined in the trust deed, is to give special opportunities for study or research to suitably qualified British subjects of either sex "intending to devote themselves to the advancement by teaching or research of curative or preventive treatment of tuberculosis in all or any of its forms". The Fellowships will, as a rule, be awarded to candidates who wish to make their studies or inquiries elsewhere than in the United Kingdom. They will ordinarily be awarded for one academic year. The Fellowships provide for the payment of stipend, together with an allowance for travelling and incidental expenses. The stipend will ordinarily be at the rate of £525 per annum for a single Fellow, and of £800 per annum for a married Fellow.

Completed applications for Fellowships of either type must be lodged with the Council not later than June 1. Further particulars and forms of application are obtainable from the Secretary, Medical Research Council, 38, Old Queen Street, Westminster, S.W. 1.

Reports of Societies

CONFERENCE ON SILICOSIS

Health of Underground Workers

A two day conference on silicosis, pneumoconiosis, and dust suppression in mines was held at the Royal Institution on April 16 and 17 under the auspices of the Institution of Mining Engineers and the Institution of Mining and Metallurgy. Seventeen papers were submitted on various aspects of the problem as it affected mines in different parts of the world.

History and Prevention

On the eve of the conference the first Sir Julius Wernher memorial lecture of the Institution of Mining and Metallurgy was delivered by Major-General A. J. ORENSTEIN, chief medical officer of Central Mining, Rand Mines Ltd. His subject was the history and prevention of silicosis, with special reference to the Witwatersrand. He reminded his audience how ancient these diseases were. It had been suggested that neolithic man suffered from them, certainly there were signs of them in a number of Egyptian mummies. The disease was described by Agricola and by Paracelsus, the former mentioning a suppuration of the lung and the role of dust in producing it.

General Orenstein then turned to the silicosis records in South Africa describing the early conditions in the Rand mines and the improvements which had followed the recommendations of the Miners' Phthisis Commission set up by Lord Milner in 1902. This was followed by another commission—wholly medical—in 1911 to inquire into the prevalence of miners' phthisis. Various acts of legislation had been passed with a view to prevention, the latest of them in 1946, the result of yet another commission appointed in 1941. These enactments had not been forced upon the mining industry of the Rand, the directorates and the technical staffs of the mines at least during his own thirty-three years' experience, had eagerly co-operated with the State in means of prevention, and as a result a marked improvement

in the incidence of silicosis had been brought about, but silicosis had by no means been eliminated from the Witwatersrand.

For the purpose of the recent Act, in South Africa silicosis had been defined as any form of pneumoconiosis which was due to inhalation of mineral dust—a very broad definition. Silicosis in South Africa was not interpreted legally as a condition due only to the inhalation of silica or silicate any dust which caused any kind of pneumoconiosis was included in the description.

Discussing the present state of knowledge of silicosis, General Orenstein said that the important causative agent was silicon dioxide silica. The silicate could produce a pneumoconiosis of pathological significance, but it was not so deadly as silica though an exception must be made of asbestosis under certain conditions. Silica damaged the lung by chemical action, and not mechanically, as was thought in the early days. Another reason for the greater danger associated with the smaller particles was that the time during which they remained suspended in the air was in inverse proportion to their size. He went on to speak of various experimental investigations in the prevention of silicosis and methods of dust control. He emphatically endorsed the findings of a committee of the American Medical Association to the effect that although in experimental animals, the prophylactic use of aluminium had been found to inhibit the toxic action of relatively pure quartz, it was not safe to assume, without much more prolonged and careful clinical observation, that this applied to the human subject. Human silicosis generally speaking, evolved much more slowly than experimental silicosis in animals and was often modified in type. Great caution was necessary in the application of aluminium therapy, and it must be stated once and for all that there was no substitute for accepted methods of dust control. The therapeutic use of aluminium in man appeared to relieve symptoms in a very small number of cases but its general application in industry should be delayed until adequately and impartially controlled clinical observation demonstrated its efficacy. No method of prevention should be supported which was likely to push into the background ever so slightly, dust prevention and dust removal.

Pneumoconiosis in British Mines

The conference proper was opened by Mr EMANUEL SHINWELL, M.P., Minister of Fuel and Power. During the past two years, he said, 10,500 coal miners in this country had been certified by the Silicosis Medical Board as suffering from pneumoconiosis. Of these cases 80% came from the South Wales coalfield. The reason for the heavy incidence in South Wales had not been altogether elucidated, and was the subject of intensive research. An interdepartmental committee was about to consider what more could be done. At the same time, this question should not be viewed with despondence. In the technique of dust suppression in coal mines, particularly in methods of wet cutting and water infusion, there were grounds for claiming that Great Britain led the world.

Lord CITRINE, a member of the National Coal Board, presided over a later session, said that from what he had of the mining industry it was evident that the incidence of pneumoconiosis in Great Britain was growing rapidly. It by no means confined to South Wales. The Miners' Welfare Commission was considering certain aspects of rehabilitation of workers recovering from silicosis, though up to the present universally agreed form of rehabilitation had been worked out.

Pathology of Silicosis

The first technical discussion was opened with a paper by Prof. SUTHERLAND STRACHAN, professor of pathology, University of the Witwatersrand, on the pathology of silicosis. He drew attention to the changes which have been observed in the pathological lesions found in the lungs of Rand miners during the last 30 years. In the earlier period the lungs were found at mortem to be large and heavy and to contain large amounts of dust, often showing a true dust pneumonia, with the alveoli and lymphatics packed to capacity with dust. A dense marked degree of bronchitis and emphysema was also present, producing cardiac failure, which was the common cause of death. With the increasing control of dust in the Rand

a more slowly produced silicosis of a simple nature had developed, taking five or possibly eight years to show the first manifestation, with the lungs somewhat larger than normal, chronic bronchitis, a moderate degree of emphysema, possibly discrete silicotic islets, and plaques on the pleural surface. The time taken for tuberculous manifestations to develop had been greatly increased. Silicosis, said Prof Strachan, was in a sense a self-arresting disease. While the man was actively at work, the dust-laden phagocytes continuously accumulated around the silicotic lesions, but this accumulation disappeared some years after the man had been removed from the mines, the lesion was arrested, and no further progress of the disease was likely to take place unless a superimposed infection such as tuberculosis, arose, when a tuberculosilicosis might supervene.

Dr JETHRO GOUGH, lecturer in pathology at the Welsh National School of Medicine, discussed the pneumoconiosis of South Wales coal workers. The disease, he said, had its highest incidence in the anthracite area, was less frequent in the steam coal area, and less frequent still in the bituminous area, though when the disease occurred it had the same characters in all areas. Geological and petrological studies gave no clear explanation of the difference in incidence in different parts of the field. It was an open question whether the quantity of dust inhaled was more important than its chemical composition. He laid stress on the fact that in simple pneumoconiosis of coal workers the amount of fibrosis was small, and that the important change was the focal emphysema, probably due to dust accumulation interfering mechanically with the function of the lungs.

A recondite paper on the action of mineral particles on the lung and the mechanism of their removal was given by Prof A POLICARD of the University of Lyons. One point he made concerned the contrast between 'dead' or inactive dusts and 'young' or active dusts. In the Sahara desert the sand which is 90% silica, is pathologically inert. A flock of sheep, producing a dense dust cloud as it moves, will breathe an extremely dusty atmosphere but the animals never suffer from silicosis. Apparently it is the fresh dust which is noxious. Dust from natural sand is harmless but dust from the same sand when it has been heated is injurious because it is newly split up. Freshly broken particles have a biological activity much greater than old ones.

Dr C M FLETCHER, director of the Pneumoconiosis Research Unit at Cardiff, said that the point as to whether the fibrosis seen in South Wales miners was due purely to overloading the lung with a vast amount of inert dust or to some particular noxious element in the dust—perhaps its silica content—would be borne in mind in a proposed investigation of the remarkable concentration of the disease in South Wales as compared with the rest of the country. Sir MALCOLM WATSON, speaking as a medical man who had had to do with both large scale and small-scale investigation, uttered a warning concerning reliance on animal experiments. Various fallacies were involved if the results of such experiments were taken as analogous to the conditions found in miners who had contracted silicosis. More research was also necessary on the controversial question concerning the role of sericite.

Special Fields

Dr ANTHONY CAPLAN gave a paper on pneumoconiosis in the Kolar goldfield. Dr J M SMITH a review of the work of the Silicosis Medical Bureau at Johannesburg, and Dr W E GEORGE and others on the incidence and prevention of silicosis at Broken Hill New South Wales. Special attention was given to a paper by Dr JOHN CRAW on the control of silicosis in the haematite mines of the north west of England. The haematite deposits in the Cumberland and Furness districts are in two locations, the north mines produce pulmonary fibrosis, the south mines do not. The disease has probably been prevalent for the last forty years—that is to say, before the advent of pneumatic drills. The death-causing factor is infection, usually tuberculosis. In 1935 a new regime was introduced whereby mist projectors were installed to diminish the dust content of the air, and at the same time a complete medical service was set up whereby only fit men were selected for the work, and workmen were x-rayed before beginning employment and periodically thereafter. The results of the combined engineering

and medical control, said Dr CRAW, had been entirely successful, and it was probable that silicosis would cease to be a problem in this locality if the incidence of tuberculosis was strictly controlled. A comparison of the x-ray changes found in miners who had worked under the old conditions and miners who had worked for ten years under the new conditions appeared to be conclusive. Among the old workers a normal x-ray picture was found in 53.3% of the group examined and among the workers under the new conditions in 84.6%.

Aluminium Therapy and Prophylaxis

Dr PETER EDWARDS, medical superintendent of Cheshire Joint Sanatorium, opened the subject of aluminium therapy and prophylaxis for silicosis. He believed that aluminium under proper control could be advantageously used for therapeutic purposes and also, until engineering science had eliminated the dust hazard, as a prophylactic. Only pure aluminium in proper size and concentration should be used, and it was essential that the experiment should be properly conducted and have the support of competent medical authority, as well as of engineers, owners, trade unions, and any Government department concerned, thus preventing any laxity in the conduct of the experiment or immaturity in the assessment of the results. The method of giving aluminium which he favoured was to have a chamber in which aluminium was dispersed by an ejector from a 10 g tin, the chamber on its three sides had 20 openings to permit the attachment of individual mouthpieces for the men under treatment.

Dr DUDLEY IRWIN (United States) said that the problem of silicosis had many facets. It might vary from a disease predominant in the alveoli to a disease predominant in the lymphatics, it varied also with the industry, the department, the plant, and the individual. Aluminium therapy was at best only a second line of defence and when the removal of the dust problem had been surmounted there should be no need for aluminium or any other type of prophylactic. Lieut-Col J R BLAISDELL of the scientific branch of the Field Information Agency B A O R said that the first mine to employ aluminium therapy in silicosis was the Porcupine-McIntyre in Canada, where, over a period of about three years, 54 cases of silicosis were treated by this method, and a number of physiological tests, particularly of respiratory function, were carried out. A good deal of subjective improvement was obtained which was not borne out in the tests. The men felt better, but there was no corresponding improvement in the x-ray findings or the physiological estimations. His feeling was that aluminium probably did not offer much in the case of established silicosis and indeed it was never claimed by the Canadian workers that it was likely to be of great service in that condition but there was every reason to believe that it had a certain prophylactic action.

Dr C L SUTHERLAND, chief medical officer of the Silicosis Medical Board, said that one explanation of the apparent improvement under aluminium was that the substance might have a general tonic effect on the system. It was possible that it relieved the inflammatory thickening of the alveoli or the bronchial spasm, and something might be attributed to the value of the breathing exercises themselves and to the psychological effect. It was intended he said to carry out controlled experiments, but in this country we did not get the type of dust conditions encountered in the United States where this treatment could have a more ready effect nor did we find here—even in Cornwall—the rapidly developing type of silicosis which was most likely to be affected by aluminium treatment.

Dust Suppression and Control

The later papers of the Conference were mostly concerned with ventilation of mines and dust suppression and the sampling of air-borne mine dusts. Mr IVON GRAHAM presented a report on the suppression of dust in the coal mines of Great Britain. Much had been done, he said, especially in South Wales to reduce the average concentration of the dust breathed by the miner. In South Wales pits some years ago concentrations as high as 50 g/1000 cu ft were fairly common in various operations at or near the coal face, and the average was 20 g/1000 cu ft, whereas now the concentration in what were previously

dusty pits was probably not greater than 3 g/1,000 cu ft. In South Wales it was claimed that 99% of the coal faces requiring treatment had been dealt with either by wet cutting, infusion, or hand spraying. Other papers were read on the organization of dust research in South Wales, of which the Mining Research Laboratory, Cardiff, is the centre. Most of the colliery owners have appointed special dust officers, with the status of colliery manager, and there is also a special dust inspector under each of H.M. divisional inspectors. Yet other papers contained an account of similar work carried out in the Transvaal.

After these papers had been read Dr C. M. FLETCHER, who is in charge of the Pneumoconiosis Medical Unit set up under the auspices of the Medical Research Council, made a strong plea for the recognition that in all pneumoconiosis research medical men as well as mining engineers should be called in to co-operate. He failed to find a recognition of this in some of the papers read before the conference. Even in dust suppression, which might be considered to be wholly an engineer's job, the methods and machines were not infallible, they were subject to human control. In the design and functioning of any machine for underground work the human problem should not be overlooked. He regretted that in a plan put forward in South Wales for the appointment of dust officers and others there was apparently no place at all for medical men or biologists. Pneumoconiosis was a disease. Its investigation must be by medical men. The operation of dust control was in the hands of mining engineers, and without their aid nothing could be achieved, but the mining engineer must work in co-operation with the doctor in the design of his methods and the assessment of his results.

The National Coal Board

A very lively and fruitful conference closed with an address by Dr IDRIS JONES, director of research, National Coal Board. He said that it still remained to be established whether the concentration of dust was more important than its chemical composition. Dust suppression devices should be incorporated as a matter of routine in the manufacture of mining machinery. The potentialities of foam and wetting agents must be studied and new instruments developed for sampling and recording of dustiness and for rapid size analysis both underground and in the laboratory. The National Coal Board had these and many other problems very much in mind. This was part of their job as custodians of the nation's collieries and as employers of labour. The scientific department of the Board was still in its infancy, but it was getting to work. The dust officer organization in South Wales was being further co-ordinated, new machines and working methods were being examined and new devices tried out. One of the Board's research directors was concerned with the human problems, and part of his task would be to ensure the closest possible liaison between the engineers and the Medical Research Council workers. The primary object was to ensure that every possible help was given to the medical researchers. The Board had no vested interest in dust; its concern was to get rid of it, and anyone who could contribute from any side towards this end would have the Board's full support.

Long before the bombing of Pearl Harbour brought America into the war her citizens, with characteristic generosity, were providing Britain with all kinds of equipment—mobile kitchens, clothes, medical necessities and even seeds for allotments. *Friends in Need* (H.M.S.O., 1s 6d) tells the story of the British War Relief Society of America. The B.W.R.S. was formed as early as October, 1939, eventually it had established over 900 committees, covering every state in the U.S.A. with the two main committees in New York and London. It sent a total of £12,000,000 in cash and kind to Great Britain, the first shipment arriving in February, 1940. When London was bombed later that year "the stream of relief became a flood," and a special committee to deal with air-raid relief was established. Besides directly benefiting nearly every hospital in Britain the society provided six elaborate X-ray installations for emergency war hospitals, set up and maintained a radon centre, completely re-equipped the Hadfield Spears Field Hospital, and equipped and financed the Churchill Hospital in Hampshire. This attractively illustrated pamphlet is both a catalogue of unsurpassed generosity and a historically interesting survey of many wartime welfare services.

Correspondence

Control of Leprosy

SIR—Dr C. J. Austin (April 12, p. 506) quotes from your leading article of Nov. 2, 1946, a sentence on the injurious effects of compulsory isolation of leprosy patients. As that article dealt mainly with my address of last year before the Royal Society of Arts—a full abstract of which appeared in your issue of June 1, 1946 (p. 825)—may I once more point out that what I have repeatedly condemned as "worse than useless" is the indiscriminate compulsory isolation of *all types of leprosy*, including a very large proportion of uninfected neural ones, with consequent hiding of nearly all the early cases until their disease has become too advanced to be amenable to treatment and they have infected members of their households. Happily, during the first quarter of a century that plan has nearly universally been modified to allow early and uninfected cases to be treated as out-patients, at about one hundredth of the cost of isolation.

As a matter of fact, as early as 1925—in an unpublished memorandum which has served as a basis for the work of the British Empire Leprosy Relief Association—I wrote "No hard and fast rules can be laid down to cover every area. Fiji, with its numerous scattered islands, is an exceptional case and I am well aware of the good work done there by the late Dr. Neff and by Dr. Austin. I am also in agreement with commendation of that work in an annotation in your issue of March 10, 1945 (p. 338)—I am, etc.

London NW 3

LEONARD ROGERS

Malayan Medical Service

SIR—The Colonial Office intends soon to recruit a large number of doctors to the European staff of the Malayan Medical Service, and there are several important facts which might be published for the benefit of readers who are considering the attractions of this service.

The greatest shortage of medical officers in Malaya is at present in Singapore and it is to this town that the majority of recruits will be posted. The intending candidate will be informed at his interview that the salary will be more than adequate for all his needs in spite of the difficult conditions in Malaya. He will also be told that if a particular branch of medicine interests him he will be encouraged to develop his interest especially if he intends to study for a higher degree in his subject. But on arrival at Singapore the newcomer will find that his salary will meet vital expenses only if he exercises the strictest economy, should he be married and have any children, then it will be absolutely impossible to meet expenses from salary alone.

As regards his work, I can assure him from bitter experience he will not be encouraged to follow the branch of medicine which interests him. He will be sent from one unsatisfactory task to another. If the recruit protests on these two points and asks for a transfer up country where living is much less expensive and the work more satisfactory he will be refused and asked as I was, "What sort of service would this be if juniors were allowed to do only the work which interests them?"

Also of great interest to the recruits is the proposed amalgamation of the present Malayan Medical Service, which comprises mostly doctors recruited from Great Britain, with the local service which comprises graduates of the medical school at Singapore. The latter at present are not eligible for the higher posts except when they are promoted to the Malayan Service, and it is proposed now to give both the local graduate and the graduate from Great Britain equal rights to promotion—a welcome change which has been long overdue.

The morale of the medical service in Malaya is very bad. The local graduates have no faith in the present administration and already two thirds of their total number in the service have resigned. Many of the European doctors would also resign were it not for the fact that in the case of the older men the loss of pension rights added to their already too heavy financial burdens would place them in an impossible position.

and in the case of the younger men the financial penalties imposed on them if they resign before the end of the three years probationary service are too great for their slender resources

Those who intend joining the service must know that there is grave discontent among medical officers in Malaya and that this discontent is amply justified. They must also realize that they can place no trust in the truth of statements concerning conditions of service in the Colonies made to them at their interview in London. These are not the complaints of an inexperienced person who takes badly to service conditions, for I have already had six years with the Navy and am well used to the discipline of that Service. Nor are they those of one who dislikes hard work in a hospital. They are the bitter complaints of a man who resigned after six months in the Malayan Medical Service and who has seen his plans for the future destroyed by the deliberate misrepresentations of a supposedly responsible Government Department—I am, etc.,

Singapore

R O KANE

** The Colonial Office informs us that a commission to investigate salaries in the Malayan Medical Service has now arrived in Malaya—ED B M J

Tuberculosis and the NHS Act

SIR—We may expect to see the personnel of the regional boards published at any moment, and as soon as appointed they will have to get to work on the new organization due to operate from April 1, 1948. We also note that the Minister of Health himself is to give an address on July 8 at the Commonwealth and Empire Health and Tuberculosis Conference, arranged by the National Association for the Prevention of Tuberculosis, on the National Health Service Act and its Effect on Tuberculosis Schemes.

Tuberculosis, because of its effect not only on the patient but on the community, presents special problems and difficulties as is generally admitted, we note that the Minister of Health and Minister of National Insurance have accepted the position that pulmonary cases will qualify for extra benefits, and the Ministry of Labour is planning special workshops for the tuberculous. No scheme for the prevention and treatment of tuberculosis can ever be efficient and effective unless the family is regarded as the unit. If separate medical staffs undertake separate parts of what should be a unified tuberculosis scheme, then we shall surely see return a state comparable with the pre-Astor-report days.

Leading officials of the Ministry of Health have stated that it is the full intention to continue the best features of efficient tuberculosis schemes. How, then, can we ensure within the framework of the new Act the greatest possible integration of the several components which ought to constitute a workable and successful regional organization? May I set down my views to achieve this end?

1 The Minister of Health, after consultation with central health services council should have a tuberculosis advisory committee to advise on policy and to provide technical guidance on tuberculosis, such course being permissible by Section 2 (3) of the Act.

2 For the control and direction of the day-to-day tuberculosis work of diagnosis and treatment there should be appointed by each regional board a tuberculosis committee to be assisted by a regional tuberculosis officer and staff. The committee could take the form of (a) selected members of the regional hospital board, with co-opted persons of experience in tuberculosis or (b) an advisory technical body of mainly tuberculosis officers and medical officers of health, or (c) in large regions, both (a) and (b)—that is, a tuberculosis committee aided by a technical body.

3 The tuberculosis medical staff for each region should consist of one or more graded medical teams with clerical assistance and tuberculosis health visitors who would assist in the dispensary work and bring a first hand knowledge of the family circumstances and conditions and contacts—so important in a scheme based on persuasion. Each team could be given responsibility for an area containing several hundred thousand population, and preferably co-extensive with one or two hospital management committee areas. The teams should perform both dispensary and sanatorium duties, work in the closest relation with the general practitioners, examine contacts, and be given the definite duty to assist the medical officers of health of county and county borough councils in care work and in preventing the spread of infection. Each team should have a

register of all the tuberculosis cases in their area, and generally hold the tuberculosis service together so that they would always know what is happening to the patients, both pulmonary and non-pulmonary.

4 Throughout the country there are many small tuberculosis institutions, it is the intention gradually to eliminate these as separate units and to provide equivalent accommodation as part of the large and improved general hospitals. They may take a long time. Meantime how should the day-to-day management of the existing sanatoria be effected? I suggest that they and the tuberculosis dispensaries be taken as a group in each region and administered by the regional tuberculosis committee, which could and should co-operate where advantageous with hospital management committees in the region.

The proposed transfer of the whole hospital and specialist services on April 1, 1948, will involve (along with general medical, dental, pharmaceutical, ophthalmic, etc., services) a considerable feat of organization, in the event of delay, and if the date fixed cannot be amended, I suggest that the county councils and county boroughs be asked to continue by contract the tuberculosis service on behalf of the regional boards until the transfer can be made on a well-planned basis—I am, etc.

Church Stretton Shropshire

G LISSANT COX

Intra-group Transfusion Reactions

SIR,—One of the problems in connexion with iso sensitization to the Rh factor that still awaits clarification is why transfusion reactions due to this cause were not recognized till 1939, when Wiener and Peters encountered three cases following transfusions of blood of the homologous groups. It cannot be said that opportunities for iso-immunization were not frequent. Previous to the discovery of liver therapy for Addison's anaemia repeated blood transfusion was the only effective treatment. It is seen from the reports of the British Red Cross Blood Transfusion Service relating to this period that approximately one patient in five that was transfused was a subject of pernicious anaemia.

The demonstration of anti-Rh agglutinins by the rapid slide test of Diamond and Abelson would seem to throw some light on the cause of the delay in the recognition of intra-group transfusion reactions. In this test ovalated undiluted blood is used instead of a dilute suspension of red cells employed in the tube-agglutination test. The use of a 2% suspension of red cells in routine blood grouping and cross matching has now become the standard technique in every blood bank and laboratory. The advantages claimed for this technique are that it helps iso agglutination to develop promptly by providing optimal conditions, and also prevents errors due to false agglutination. Concentrated blood on the other hand tends to mask a weak reaction.

It will be remembered that, previous to the adoption of the tube method, whole blood or defibrinated blood was almost exclusively used for blood grouping and cross matching purposes and that the tests were performed on a tilt or slide. Very often the drop of blood was transferred to the drop of grouping serum (or recipient's serum) direct from the finger-prick by means of a platinum loop. I saw this rapid test done on a porcelain tilt by Dr H F Brewer, medical officer of the British Red Cross Blood Transfusion Service, at St Bartholomew's Hospital, London, in 1932.

It will be seen that the Diamond-Abelson test for Rh iso sensitization does not appreciably differ from the blood-grouping and direct-matching technique followed in the earlier days. Is it possible that incompatibilities were encountered and donors though of the homologous blood groups, were rejected, although the true explanation for the anomalous reactions was not known? The answer would seem to be in the affirmative. In a plea for a national blood transfusion conference made by P L Oliver, founder and honorary secretary of the British Red Cross Blood Transfusion Service (*Journal* Nov 21, 1936, p 1032) one of the problems suggested for consideration was "cross grouping of donor against patient". The following statement is found under this heading: "During the past eight months 78 donors have been found to be incompatible against patients of their own group. This has been found especially prevalent in Group I (Moss)". Whether they were all due to subgroups or to some other cause it is difficult to say. But it is clear that intra-group incompatibility was a problem for serious consideration. It was naturally a problem to the service rather than to the clinicians.

There can be no doubt that the change in the technique from the use of whole blood to diluted blood was directly responsible

sible for bringing down the sensitivity of the direct matching test by almost one-half. It was apparently not suspected that the use of dilute blood would interfere with agglutination of the red cells sensitized by the "blocking" or "incomplete" antibody.

I have been prompted to point out the similarity between the Diamond-Abelson test and the direct matching test as it was performed in the 'thirties as a possible explanation for the non recognition, or perhaps non occurrence, of intra-group transfusion reactions due to the Rh factor and not to bring any discredit whatever on the value of the test. Indeed, to us in India, where anti-Rh serum is so hard to obtain, the test has been a real boon as it enables the detection of intra group incompatibility in the absence of anti-Rh serum and also helps to select a compatible donor. And that is what the clinician is interested in—I am, etc.

Office of the Director-General
Indian Medical Service
New Delhi

K S RANGANATHAN

Retrodisplacement and Fertility

SIR—Whenever a man states that there is 'no shadow of doubt' about an assertion one may know that even he suspects its truth. Dr Bethel Solomons (April 5, p 465) asserts that

There is not the slightest doubt that retrodisplacement of the uterus is a cause of sterility. Had he stated that retrodisplacement is frequently associated with lowered fertility there would be less reason to disagree with him.

Some people with retroussed noses have nasal obstruction, but one should not assert that retroussed noses cause nasal obstruction. On the other hand damage to the nasal septum may produce both nasal obstruction and a retroussed nose. It will not cure the nasal obstruction for a plastic surgeon to build a Roman nose, and the obstruction is usually relieved without altering the curve of the external organ.

Retroversion is one of the normal positions of the uterus, though less common than anteversion. Lowered fertility is a frequent concomitant of uterine hypoplasia, and the hypoplastic uterus is very frequently either acutely retroflexed or acutely anteverted, but it is a bold statement that the position of the uterus causes the failure of conception. To put the uterus in another position will not cure its imperfect development, and as a matter of practical experience does not cure infertility—I am, etc.,

Newcastle upon Tyne

FRANK STABLER

Reiter's Syndrome

SIR—In the interesting annotation on Reiter's syndrome (April 12, p 495) it is noted that this condition is apparently confined to young adult males.

Two cases occurring in women have been described. Details of one are given by Dr A. Touraine under the title of "pseudogonococcie enteritique" (*Ann Derm Syph*, Paris, 1946, 6, 687). The other case, described by W. Lever and G. M. Crawford (*Arch Derm Syph*, Chicago, 1944, 49, 389), is cited by A. Touraine and A. Ruel in a very comprehensive survey of the subject (*Ann Derm Syph*, Paris, 1946, 6, 61)—I am, etc.,

London SW1

JAMES MARSHALL

SIR—I read in your annotation (April 12, p 495) that Reiter's disease is apparently confined to young adults.

It might be of interest to report that three months ago I attended a man of 58 who had this disease. It began with painful haematuria following in three days with bilateral conjunctivitis and two days later an arthritis of the right ankle. The urethritis cleared in a week and the conjunctivitis in five days, but the arthritis became increasingly painful, and both knees were affected ten days from the onset of the original symptoms. Eventually his only relief was from diathermy and spa treatment. This man had no venereal history, nor had he ever had any dysentery. Four years previously he had had arthritis in the right knee, and presumably this had left him susceptible to a recurrence of arthritic symptoms—I am etc.,

Hales Owen, Wores

G T NEWTON

Curare

SIR—Having followed the recent correspondence on the condition of shock and respiratory depression associated with the use of curare, commencing with a letter by Dr Massey Dawkins (Jan 18, p 111), with considerable interest, it is felt that the following points are pertinent.

Respiratory depression caused by anaesthetic agents, whether due to their action on the respiratory centre or on the respiratory musculature, is associated, first, with an increase in the CO₂ tension and, secondly, with a decrease in the O₂ tension. To understand this it is necessary to realize the underlying physiological facts. The optimum number of respirations for elimination of CO₂ with a tidal air of about 500 ml is approximately 16 per minute in a person having a normal basal metabolic rate. However, the amount of oxygen available for normal tissue respiration is four times the value necessary, so by this it can be seen that the important factor in respiratory depression is CO₂ accumulation and not anoxaemia. CO₂ accumulation when about 7% causes a rise of blood pressure through its central action on the vasomotor centre, at lower concentration the CO₂, having a peripheral dilating effect on the arterioles, causes the central effect to be counterbalanced.

Some interesting work has recently been published by R. D. Dripps in America (*Anesthesiology* 1947, 8, 15), where he has shown that a fall in blood pressure following cyclopropane anaesthesia is associated with a high CO₂ tension in the blood during operation. This also is probably the mechanism of the condition of shock occurring after the use of curare where marked respiratory depression has occurred without adequate CO₂ elimination. In using curare I have made a practice of not administering it within half an hour of the expected termination of an operation, but if increased relaxation is required I increase the concentration of the anaesthetic agent I am using and so avoid causing respiratory depression lasting from 15 to 30 minutes.

With this CO₂ accumulation theory in view I do not ever add CO₂ to the anaesthetic mixture, but if there is not a good respiratory exchange at the closing stages of the operation I give a few minutes of "aided" respiration by pressure on the reservoir bag, having first "blown off" the anaesthetic gases.

Since having followed this routine I have had no cases of shock following curare administration, except on one occasion when I found I had been using non acting soda lime in a closed circuit apparatus—I am, etc.

Leamington Spa

GEOFFREY L. WAY

SIR,—In his letter dealing with the post-operative anoxaemia allegedly attributable to the use of curare, Dr W. M. Maidlow (April 5, p 466) invokes total carbon dioxide absorption in closed circuits as a more culpable factor. In support of his contention that absorption should be but partial or intermittent he asserts that "the carbon dioxide in the circuit causes dissociation of oxygen from oxyhaemoglobin in the tissues." The italics are mine, and I would submit, Sir, that what promotes the dissociation of oxyhaemoglobin in the tissues is the carbon dioxide tension in the tissues. This tension is normally higher than that in the alveoli. Under resting conditions the relative figures are 46 and 40 mm Hg. If this normal carbon dioxide tension gradient is reversed, by either incomplete absorption or the addition of carbon dioxide artificially to the inspired gases, it becomes easier for the oxyhaemoglobin to dissociate in the lungs than in the tissues, and the blood leaves the lungs having secured rather less oxygen than it would otherwise have done. In fact the tissues have not been 'given the benefit' which was intended. Left to themselves the tissues will by their own respiration build up a local carbon dioxide tension conducive to oxyhaemoglobin dissociation, and we can raise that local tension only at the expense of a similar rise in the alveolar tension—the old dilemma of the swings and roundabouts.

It is true that any patient in first- or second plane inhalation anaesthesia will breathe less deeply if he is put into a circuit with total absorption, and if the atmosphere he was breathing was just sufficient to maintain oxygenation he will now become anoxic. But since it is the usual practice to use oxygen enriched atmospheres in closed circuits this situation does not arise during

maintenance It is, however, advisable towards the close of the anaesthetic gradually to admit air to the circuit and simultaneously to allow slightly less absorption, so that the patient leaves the theatre with alveolar nitrogen and carbon dioxide tensions as near the resting normal as possible and is less likely to have the depressed respiration which is almost as bad for his ward sister as for him

Dr Maidlow also holds that the use of an endotracheal tube necessitates the use of more curare to relax the larynx I would suggest that cocaine would make the larynx more tolerant of the tube without predisposing to post-operative respiratory depression—I am etc,

Woodford Green Essex

DONALD V BATEMAN

d-Tubocurarine

SIR—May we, as manufacturers of *d* tubocurarine chloride, comment on the paper by Dr Gordon Ostlere (April 5, p 448)?

Nomenclature of Curare Preparations—We suggest that in order to avoid confusion the general term "curare" should not be used as it has been in the past when referring to preparations of the drug "Curarine," as originally issued by us, was solid crystalline *d*-tubocurarine chloride For the convenience of the profession this has been replaced by "tubarine," an aqueous solution of *d*-tubocurarine chloride

Sterility—The extemporaneous preparation and sterilization of solutions containing *d*-tubocurarine chloride is no longer necessary, as tubarine is a sterile solution Attempts to sterilize *d*-tubocurarine chloride solutions by heat will probably cause a partial decomposition of the salt, this may account for some of the variations in response reported and possibly for some of the side-effects

Stability—Ostlere states that "The potency of these preparations remained fairly constant as long as required, in some cases up to six months It is not clear whether he is referring to all the preparations he lists or only to the solutions made up by him The method of preparing tubarine ensures its stability over considerable periods under normal conditions of storage

Curare Preparations and Hypertension—In the same issue of the Journal (p 445) Drs J A Hobson and Frederick Prescott describe their experiences with tubarine in electric convulsion therapy They noted no spectacular rises in blood pressure, and, in fact, they deliberately included hypertensives in their series without untoward results We do not consider that hypertension *per se* is a contraindication to the use of tubarine either in electric convulsion therapy or general surgery In the well-ventilated patient undergoing an operation with relaxation secured by tubarine the blood pressure rarely rises more than 10-15 mm Hg (Prescott, F, Organe, G, and Rowbotham, S, *Lancet* 1946, 2, 80)—I am, etc,

JOHN CURTIS

Burroughs Wellcome and Co
London NW 1

Tubocurarine and Blood Pressure

SIR—I was interested to note that Dr Gordon Ostlere (April 5, p 448) reports that blood pressure very commonly rises after the administration of curare The early work on this subject (Griffith) shows no effect on the heart and no rise or fall in blood pressure

I have of necessity used curare in an open or semi-open circuit and have stepped up the oxygen percentage to 50 or more By this means, with or without squeezing the rebreathing bag, it is possible to keep the patient well oxygenated, but it is more difficult to ensure that one is giving the patient a flow of mixed gases of at least 5 litres a minute I think that the explanation of the increase in blood pressure noted may in some cases be due to a rise in blood CO₂ content due to diminished pulmonary ventilation and in the absence of precise evidence to the contrary not attribute this vasopressor action to curare or tubarine I have myself noted a rise of blood pressure from 150/100 to 180/120 at the end of an operation for closure of perforated gastric ulcer I used a somewhat similar technique to that described by Dr Ostlere, and the patient's colour and general condition were good, but there was then paralysis of the intercostal muscles The blood pressure became normal

(140/100) after artificial respiration I shall be interested to see what blood-pressure changes have been recorded by anaesthetists using tubarine in a closed-circuit machine with CO₂ absorption—I am, etc

Newport Mon

K STEVENSON THOM

Pethidine

SIR—The communication by Miss Josephine Barnes (April 5, p 437) on the use of pethidine in labour is of interest to the staff at the County of Lanark Maternity Hospital and the Motherwell and Wishaw Hospital, where the administration of pethidine during labour has been a routine practice for over two years During that time 4,000 cases were given this preparation, with beneficial results in most instances The effects of the drug were similar to those so accurately described by Miss Barnes

Miss Barnes noted that effective analgesia was experienced by 55% of the patients My impression is that a higher percentage would have been gained by giving larger doses of pethidine At one time we also administered it in quantities of 100 mg, but we found that greater benefit could be obtained by increasing the dose to 200 mg It is a preparation which every practitioner should include in his obstetrical outfit—I am, etc,

Bellshill Lanarkshire

SAMUEL J CAMERON

Safety in Electric Convulsion Therapy

SIR—In their article (April 5, p 445) on the use of *d*-tubocurarine chloride and thiopentone in electric convulsion therapy Drs J A Hobson and F Prescott have discussed the question of additional therapeutic procedures which they claim to lessen the incidence of the traumatic complications of this treatment They have sought, therefore, to minimize these risks by the use of curare, and, because this substance produces subjective sensations at least as terrifying as leptazol, have been driven to anaesthetize their patients with thiopentone as a preliminary Surely a case can be made for adopting a more practical view of the traumatic risks of ECT In my experience, if the patient is placed on a firm surface with a small horse hair pillow under the thoracic spine, no mechanical restraint is necessary and compression fractures of the spine with symptoms of pain in the back are almost unknown X-ray photographs show that under these conditions both lumbar and dorsal spine are in very slight hyperextension A lumbar pad merely increases the extension of the lumbar spine without altering the position of the thoracic spine unless the pad is very large If these fractures were likely to produce later disability, we should surely by now have heard of some in the eight years that have passed since ECT was commenced at this hospital, but none have so far come to our notice Such risks from fracture must, from the patient's point of view, weigh lightly when compared with the much more serious risks of curare and thiopentone Indeed, the authors admit that four deaths have so far been reported in the literature from curare-controlled convulsions

Drs Hobson and Prescott further claim that a rise of blood pressure is prevented by curare For the normal individual this is not important, occurring as it does in ordinary exercise while the work of American authors has shown how well hypertensive patients tolerate ECT Finally, it is claimed that the unpleasantness of ECT is eliminated If this is all that is desired, then it seems that thiopentone alone would be sufficient but let us recognize that ECT, properly carried out with modern apparatus, is not particularly unpleasant and that most of our patients complain not of the treatment itself but of the loss of memory and confusion that sometimes follow In this sphere much can be done with co-operative patients in explaining that these temporary symptoms may be expected

A therapeutic diagram can be drawn which is a complete circle of medication If we start with a convulsant drug, such as leptazol, fractures are controlled by curare, while curare is controlled by thiopentone In the event of an overdose of thiopentone, we come back to the convulsant for its antidote One wonders what therapeutic heights will be reached if this crescendo of medication is allowed to continue—I am etc

Worthingham Surrey

RONALD ARTHUR SANDISON

International System of Weights and Measures

SIR—In his letter (April 19 p 545) Mr Oliver Stewart says that in my article on 'The International System of Weights and Measures' I argued that because there is no whole number relationship between the metre and the kilogram and the litre these last two are no longer part of the metric system. I did not say this. What I did say was that the kilogram and litre have now no connexion with the metre and consequently to apply the term metric to them is misleading.

Mr Stewart says that the description metric is justified on the ground that it is a metonymy, but even if it were a metonymy one should avoid using a figure of speech when, as in this case, it misleads. One of the reasons why I discussed the title for the system was that opponents of the system in the United States have already drawn attention to the error of calling the system metric when in fact it is not. Let us heed this criticism and not lay ourselves open to it in our turn. Mr Stewart's objection to the description International System on the ground that it is unfamiliar is interesting. None of us who learnt in our youth the old system felt comfortable at first with unfamiliar millilitres, but none of us, I hope, would let unfamiliarity impede reform or let mental inertia gain a victory over mental integrity. What is now strange and unfamiliar will become ordinary and familiar to the rising generation.

I am glad that Mr Stewart is succeeding in his efforts to familiarize aviation circles with scientific methods of measurement and it is gratifying to learn that the International Civil Aviation Organization has adopted the appropriately named International System of Weights and Measures—I am, etc.,

London W 14

J M HAMILL

Child Guidance

SIR—Dr J A McCluskie's letter (April 12, p 508) contains several assertions which should be of interest to many psychiatrists and general practitioners. First Cases should be referred to the child psychiatrist, and then what happens will depend on where the child lives. This appears to me to be sensible and practical, and a sufficient answer to Prof Cyril Burt and the Nuffield Committee for the present time. One hopes however that it will become possible in the future to see that no child is denied the best form of help because of geographical factors. Secondly 'Only an experienced general practitioner knows sufficient of the intimate life of people to make eventually a really good child psychiatrist.' While this is rather sweeping I am prepared to support it to a great extent. For this reason, rather than the one put forward by Dr McCluskie I am also perturbed about the tendency to 'drive more child guidance into the out patient departments of mental hospitals.' It would be interesting to learn what percentage of practising psychiatrists to-day have had more than say six months' experience in general practice.

In this approaching new era of medicine when one understands that doctors will be classified and ranked, I suggest that no doctor should be given the status of specialist unless he has done a minimum period in general practice. In the specialty of psychiatry this period should be longer than in others, with perhaps child psychiatry necessitating the longest period—I am, etc.

REIGHTON

S SHARMAN

Correction of Medical Register

SIR—I am desired by the returning officer to say that voting papers for the purpose of the forthcoming election of one member of the General Medical Council to represent the registered medical practitioners resident in England were issued on April 22 to all practitioners having registered addresses in England, and that the authorities of the Council would be glad if any such practitioner who has not received a voting paper would communicate immediately with the office of the Council (44, Hallam Street London, W 1) whether or not he proposes to vote in the election in order to ascertain that his address is correctly entered in the *Medical Register*—I am, etc.,

London W 1

MICHAEL HESELTINE

Obituary

C LOUIS LEIPOLDT FRCS

We announce with regret the death on April 14, at the age of 67, of Dr C Louis Leipoldt, who was for many years editor of the *South African Medical Journal* and secretary of the Medical Association of South Africa. Dr Leipoldt was a remarkable personality. His reputation as a medical editor as a war correspondent, poet, and gourmet extended far beyond the bounds of his native South Africa.

Christian Fred Louis Leipoldt was born at Clanwilliam Cape Province, in 1880. He had no formal schooling but was educated by his father, who, like his grandfather was a missionary. After matriculating he joined the staff of the *South African News* in Capetown and was war correspondent during the South African War for a number of European newspapers. His literary career had begun rather earlier when he won a prize for an essay in the *Boys Own Paper*. At about the same time he had contributed to the correspondence columns of the *Cape Times*. His views and his way of expressing them so impressed the editor that Leipoldt was invited to visit the office. By 1902 Leipoldt was roving around Europe as a free-lance journalist, work which ended when he became a student at Guy's Hospital. He qualified MRCS, LRCP in 1907, studied for a while at Berlin and Graz and took the FRCS in 1909. A few years later he returned to South Africa. The record of his work as a pioneer medical inspector of schools in the Transvaal is to be found in *Bushveld Doctor* which was published in London in 1937. By 1919 Leipoldt had been appointed medical inspector of schools in Cape Province, but in 1923 he joined the editorial staff of the Pretoria newspaper *Die Volkstem*. Later he again left journalism for medicine and set up in Capetown as a paediatrician. His interest in this specialty continued and he was made a corresponding member of the British Paediatric Association in 1935.

In 1927 Leipoldt was appointed organizing secretary of the Medical Association of South Africa and at the same time with Dr W Darley Hartley, he became joint editor of the *Journal of the Medical Association of South Africa (BMA)*. The publication of the first number of this new journal on Jan 8, 1927, marked the successful outcome of efforts which had been made over several years to combine two medical associations and two journals, the *South African Medical Record* and the *Medical Journal of South Africa*. The union of the two associations and its establishment as an integral part of the British Medical Association owed much to the statesmanlike efforts of Dr Cox. In the following year Dr Leipoldt was one of the South African representatives at the meeting of the Representative Body at Cardiff.

Dr Leipoldt continued as editor of the *Journal of the Medical Association of South Africa* later the *South African Medical Journal* until the end of 1944, when he was succeeded by J S Du Plessis. He pointed out at one time that the policy of his journal was 'the policy of the Medical Association of South Africa on all questions whereon the Association in the interests of the practitioners of this country speaks with the consensus of its members. He added, 'That ideal does not exclude editorial responsibility, nor does it bridle editorial initiative, but it strengthens and enlarges both.' When Dr Leipoldt retired from the editorship his successor paid a farewell tribute to his 'few idiosyncrasies' as well as to his 'great and many virtues'.

Leipoldt cultivated a natural taste for food and wine, and one of his well known foibles was to proclaim that wine was infinitely more beneficial than milk, which he was inclined to distrust. Among other accomplishments he was a good cook, a keen botanist, and a student of bird life.

Leipoldt's main interests were in literature and in medical science. He wrote fluently and elegantly in either Afrikaans or English, and in 1936 he published a biographical study of Jan van Riebeeck, the first commander of the first white settlement at the Cape of Good Hope. Leipoldt will be remembered by medical men as an editor and as a devoted servant of the Medical Association of South Africa. He will be remembered

by many others for his contributions to literature and more especially to the Afrikaans literature. His tenure of office began with the establishment of the Medical Association of South Africa as a group of Incorporated Branches within the British Medical Association. He played a great part in the steady growth and development of the Association he served. In retirement he saw on Dec 31, 1945, the final separation of the Branches in South Africa from the parent Association, and the first steps taken towards affiliation.

Major-General A J Orenstein writes. Although I first met Louis Leipoldt in 1918, it was during his tenure of office as Organizing Secretary of the Medical Association of South Africa and Editor of its journal, particularly during the seven years of my presidency of the Federal Council, that I got to know him well. He held both offices for about twenty years during which he contributed much to the growth of the association and the journal. In this time the association grew into a powerful and influential body, and the journal kept full pace with the growth of the association. Leipoldt was rather impatient of restraint and resentful of what he considered undue interference. Thus there were some clashes between him and certain members of the Federal Council. Towards the end of his incumbency his health was poor and he considered retirement several years before he finally left. By this time the association and the journal were firmly established.

His contributions to Afrikaans literature earned him most deservedly a very high place in the esteem of South Africans. To this others more competent than I have borne testimony. A gifted man and a notable personality has passed away.

Dr JOHN INGRAM of Devonport, died on March 4 at the age of 77. A student of Aberdeen, he qualified M.B., C.M. in 1893 and joined the Colonial Medical Service shortly afterwards. He was posted to West Africa and saw service in the Gold Coast hinterland, for which he was awarded the medal with clasp and bar.

Prof G Grey Turner writes. John Ingram, a Northern Scot, studied at Aberdeen in the days when Alexander Ogston was such an outstanding figure in surgery. His influence made a great impression on Ingram and, in consequence, from the outset of his career he was attracted to the surgical side of his work. After returning to this country from West Africa he started practice at Wallsend-on-Tyne where he came under the influence of, Rutherford Morison, whom he greatly admired. Ingram was quick to exercise his aptitude for surgery, and as most of his patients at that time were of the humbler class he frequently called me in and we did a great deal of operative work together. I am glad to acknowledge the value of those early experiences and have often stated that I learned my surgical work operating in the small industrial homes of Tyne-side at the invitation of John Ingram. The cases were of considerable variety, though most were abdominal emergencies. He was an excellent diagnostician and had a happy knack of managing his patients, who always seemed to be guided by his advice so that there was no delay in getting their consent for operative procedure. The houses usually consisted of only two or three rooms with perhaps a scullery. A neighbouring doctor gave the anaesthetic, which was always chloroform on an open mask. We operated on the kitchen table and scarcely ever had the luxury of a nurse and only occasionally the help of a 'handy body'. Of course the technique was of the simplest and was entirely on the antiseptic plan, but Ingram was a first-rate assistant and co-operated splendidly, and wound infection was almost unknown. In retrospect I now realize that the results were really most satisfactory. After some few happy years in this practice Ingram moved south, and for a time joined his cousin Peter, who had also migrated from Wallsend, in practice at Muswell Hill. Then after two or three years he went on to Devonport in 1908 where he continued in practice to the end. As age crept on there was a period a sort of interregnum when he took up bulb growing as a sideline and later he made several passages to the East mostly to China as a ship's doctor, but his real interest was always in surgery. During the 1914-18 war he was surgeon to the Military Hospital in Devonport and throughout the whole of this last war Ingram acted as medical officer at a transit camp in Devonshire. It was towards the end of his service there that he began to exhibit some evidence of failing health but fortunately he was spared the tedium of a long illness.

Apart from the absorption of his work and his family his main interest was in country life, and he loved to steal away,

without preparation or formality, to his beloved Aberdeenshire or to the border country for a few days with rod or gun. John Ingram was a man of quiet efficiency and determination with high ideals and a strict professional code, and with a lasting sense of gratitude to those whom he conceived had helped or influenced him. His calm, even temperament and good humour inspired confidence and engendered affection in hosts of patients who mourn his loss. He is survived by a widow, a son, who is also in the profession, and five daughters.

Dr ARTHUR JAMES LEWIS died in Southport on March 26. A student of Edinburgh University, he qualified in 1904, and proceeded M.D. two years later. He held resident posts in the Royal Infirmary and the Simpson Memorial Hospital, and spent some time in the mission field before settling in Southport, where at first he worked in close association with his brother. For many years he played an active part in the work of the British Medical Association. He was a member of the executive of the Southport Division for twelve years, and he also held the offices of secretary and chairman. For some years he was secretary of the local medical war committee and president of the Southport Medical Society. For twenty-five years he was secretary of the panel committee and for most of that time representative at the Panel Conference. This last outstanding service was acknowledged on his retirement, by the presentation of a written testimonial and a cheque from his colleagues. Dr Lewis was medical officer to the local branch of Dr Barnardo's Homes, and in the 1914-18 war he served in the R.A.M.C. During the recent war the loss of his son on active service took its toll, but so far as his strength permitted he continued his services to his patients and to the profession. Never obtruding though always ready to avow and support his opinions, Lewis was held in the affection and esteem of his colleagues, whose sympathy goes out to his widow and two daughters.

Medico-Legal

A LOST INDEX FINGER

[FROM OUR MEDICO LEGAL CORRESPONDENT]

A butcher's wife, of Doncaster, made a deep cut in the index finger of her right hand in September 1945. She went to the assistant of the two partners whose insured patient she was. Eventually the finger became gangrenous and she had it amputated by another doctor. She brought an action against the partners and the assistant, which was heard before Mr Justice Oliver at Leeds Assizes at the end of March¹. She said in evidence that on her first visit the doctor had washed the wound under a running tap and bound the finger with adhesive strapping. She complained of pain and at the second visit he had given her two morphine tablets, but she alleged that he did not examine the finger properly, he covered the old strapping with more tape, which he wound tightly. It was left in place at a third visit. At a fourth one of the partners removed it but applied another tight bandage.

The assistant said in evidence that he had wished to stop further loss of blood. He had told the patient that she would have to rest her hand and see him in two or three days. At the third visit he could see that the wound was still bleeding, and blood was showing through the dressing. He removed it sufficiently to see that blood was still flowing freely. He prescribed further rest. There was no obstruction to the circulation. A Sheffield surgeon said in evidence that great care should have been taken with the bandaging of the finger and that the strapping should not be so tight as to cause constriction.

In giving judgment Mr Justice Oliver said that he had not been favourably impressed by the assistant as a witness. His manner had been extremely nervous and uncertain. The patient's manner had been eloquent of truth, and he had no hesitation in preferring her evidence to the doctors. He had no doubt that gangrene had been set up by the constriction of the strapping. It had been the assistant's obvious duty to remove the first bandage and rebandage the finger. He awarded £350 general damages and £12 1s agreed special damages, with costs, against the assistant, with liberty to apply against the partners.

¹ *Yorkshire Evening News* March 28 April 1 and 3

Universities and Colleges

UNIVERSITY OF LONDON

ST THOMAS'S HOSPITAL MEDICAL SCHOOL

Prof W G Barnard, FRCP, director of the Department of Pathology, has been elected Dean of St Thomas's Hospital Medical School in succession to the late Prof B A McSwiney.

The title of Professor Emeritus of Chinese Art and Archaeology in the University has been conferred on Walter Perceval Yetts, CBE, D Lit, MRCS, LRCP, on his retirement from the Chair of Chinese Art and Archaeology at the Courtauld Institute of Art.

The title of Reader in Physiology in the University has been conferred on Charles Cyril Norrey Vass, MSc, PhD, MB, ChB, in respect of the post held by him at St Thomas's Hospital Medical School, from Oct 1, 1946.

Sir Paul Fildes, MB, BChir, FRS, has been recognized as a teacher of biochemistry at the Lister Institute, in the Faculty of Science.

The following appointments have been approved for the purpose of the MD, Branch I examination: House physician, resident medical officer, and medical registrar at the Central Middlesex County Hospital, house physician, resident medical officer and medical registrar at the West Middlesex County Hospital, house physician, resident medical officer and medical registrar at the Redhill County Hospital, house physician at the Hillingdon County Hospital.

The following have been added to the list of areas approved for the purposes of instruction in public health administration for the DPH: Metropolitan Borough of Hammersmith, Metropolitan Borough of Islington, Municipal Borough of Wembley, Urban District of Harrow.

UNIVERSITY OF SHEFFIELD

At a Congregation to be held on July 1 the honorary degree of DSc will be conferred on Sir Howard Florey, MD, FRS, professor of pathology in the University of Oxford.

ROYAL COLLEGE OF PHYSICIANS OF LONDON

Prof Ronald Epey Lane, FRCP, will deliver the Milroy Lectures on Tuesday, May 20, and Thursday, May 22, at 5 p.m., at the College, Pall Mall East, SW. His subject is 'The Care of the Laid Worker'.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW

At a meeting of the Royal Faculty of Physicians and Surgeons of Glasgow, with Prof G B Fleming, President, in the chair, the following were admitted Fellows of Faculty *qua* Physician: J Allan, MB, R T S Gunn, MB, J R Lauckner, MB, A C Macdonald, MB, J H Ramage, MB, D N Ross, MB.

The following were admitted Fellows of Faculty *qua* Surgeon: J A V Hamilton, MB, D J Livingstone, LRCP & SEd, I McLennan, MB, V Muhamed, MB, J Neilson, MB, A Paterson, MB, W Reid, MB, D G Smith, MB.

ROYAL COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS

The William Blair Bell Memorial Lecture on 'Tubal Occlusion' will be delivered by Mr Linton M Sneath, MS, FRCS, at the College (58, Queen Anne Street, London W) on Wednesday, May 14, at 5 p.m. The William Meredith Fletcher Shaw Memorial Lecture will be delivered by Prof F J Browne, M.D., FRCSEd, at the College on Friday, July 4, at 3 p.m. His subject is 'Hypertension in Pregnancy', at 5 p.m., Mr J A Stallworthy will deliver the Biennial Scholarship (Sterility) Lecture on 'Fact and Fantasy in the Study of Female Sterility'. All members of the medical profession are invited to attend the lectures but admission is by ticket only obtainable from the secretary. Applicants should indicate for which lectures tickets are required.

SOCIETY OF APOTHECARIES OF LONDON

On May 8 the Honorary Freedom of the Society will be conferred upon Sir Stanley Hewett, Surgeon Apothecary to the King, and the Honorary Mastery of Midwifery will be bestowed upon Sir Allen Dray, Sir Eardley Holland, and Sir William Fletcher Shaw. The time of the ceremony is 8 p.m. for 8.30 p.m., a *soirée* will follow.

COLLEGE OF PHYSICIANS AND SURGEONS OF BOMBAY

The Council of the College of Physicians and Surgeons of Bombay at its meeting held in January decided to institute postgraduate diplomas in the following subjects: (1) dermatology and venereology, (2) otorhinolaryngology, (3) orthopaedics, (4) anaesthetics, (5) radiotherapy, (6) anatomy, and (7) physiology. The regulations relating to the examinations for these diplomas are in course of preparation.

Medical Notes in Parliament

THE BUDGET

On Tuesday, April 15, Mr DALTON the Chancellor of the Exchequer, in his Budget statement said that he was providing this year £25,000,000 more for housing and for the preliminary expenses of the national health services. There was also £23,000,000 more for the Ministry of National Insurance. Family allowances had cost this year £4,000,000 more than had been expected. He had been told that there were some 200,000 more eligible babies than were allowed for by the actuaries. Many uncertain factors would affect next year's Budget. They would see, however, increases in the expenditure on social services. In particular there would be an increase in the national expenditure on health following the transfer of the hospitals from local to national ownership. Next year the Minister of Health and the Secretary of State for Scotland would help him to rearrange the relationships of national to local finance at a cost to the Treasury of a little less money. A new block grant was needed, better arranged and costing less, and, so far as its distribution among local authorities was concerned, acting to a greater extent than heretofore for the benefit of the poorer authorities.

In his concluding remarks on the revision of the tobacco duty, Mr Dalton said, 'All we need to do is smoke a little slower. We must throw away our stubs a little shorter and knock out our pipes a little later. All this may even be quite good for our health and the state of our nerves.'

Scottish Health Services

The National Health Services (Scotland) Bill was considered in Committee in the House of Commons on Monday, April 21.

Mr WESTWOOD, on Clause 22, moved an amendment to delete the section appointing the local health authority as the local authority for the purposes of Part I of the 1937 Children and Young Persons (Scotland) Act. He said that since the Bill had been drafted the Clyde report on the care of homeless children had been received and was being considered. The amendment was agreed to the Committee stage was concluded and the motion for the Third Reading was debated.

Mr WALTER ELLIOTT moved an amendment for the rejection of the Bill on the grounds that it centralized control of institutions in the hands of the Secretary of State, deprived local authorities of the powers of administration, took power to divert trust funds against the wishes of the donors, and gravely threatened the future practice of medicine in the wider sense. After a full debate the amendment was defeated by 143 votes to 54, and the Bill was read a third time.

(A full report of the debate has had to be held over till our next issue.)

Mass Radiography.—On April 17 Mr CALLAGHAN asked when Mr Bevan expected to extend to all school children the benefit of the mobile x-ray units for detecting chest troubles at an early stage. Mr BEVAN said mass radiography was steadily increasing and would be extended to more children as apparatus and staff became available. Present experience suggested that it was of more value at school leaving age than before.

The Services

CASUALTIES IN THE MEDICAL SERVICES

Killed in Action.—War Subs active Captain John Wayne Gordon RAMC.

INDIAN MEDICAL SERVICE DINNER CLUB

The Indian Medical Service annual dinner will be held at the Connaught Rooms, Great Queen Street, Kingsway, London WC on Thursday, June 12, at 7 p.m. for 7.30 p.m., when Lieut Gen S Bennett Hance will preside. The cost of the dinner is £2 2s per head, inclusive of wines, cigarettes, and gratuities to waiters. The charge for a ticket to those members of the Dinner Club whose subscription is not in arrear will be 16s 6d, while the charge in all other cases is that charged by the caterers, viz., £2 2s. Dress will be either dinner jacket, dark lounge suit, or service dress, but decorations will not be worn with civilian attire. Emergency commissioned officers, including ladies, are invited to attend, and are also eligible to become members of the club. Applications to attend the dinner should be sent, together with a remittance, to Mr A W Brown of Grindlays Bank, Ltd (54 Parliament Street, London, SW 1).

No 14

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended April 5

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year for (a) England and Wales (London included) (b) Scotland (d) Eire (e) Northern Ireland

Deaths recorded under each infectious disease in England and Wales (including London) (b) London (administrative county) (e) The 16 principal towns in Scotland (d) The 13 principal towns in Eire (e) The 10 principal towns in Northern Ireland

A dash — denotes no cases a blank space denotes disease not notifiable or no return available

Disease	1947					1946 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever Deaths	86	102	25	8	1	96	132	35	3	3
Diphtheria Deaths	1845	18	42	10	101	4637	36	107	46	12
Dysentery Deaths	44	6	21	—	—	294	28	34	—	—
Encephalitis lethargica acute Deaths	1	—	—	—	—	1	—	—	—	—
Erysipelas Deaths	—	—	37	10	2	—	—	45	13	4
Infective enteritis or diarrhoea under 2 years Deaths	89	20	22	17	—	65	17	10	507	4
Measles* Deaths	834320	440	2543	25	46	22682	736	8143	41	2
Ophthalmia neonatorum Deaths	68	4	17	—	1	49	6	19	—	1
Paratyphoid fever Deaths	6	—	—	—	—	3	—	1(B)	—	—
Pneumonia influenzal Deaths (from influenza)†	73027	556	774	4	51	96747	614	172	15	23
Pneumonia primary Deaths	—	54	129	27	10	—	50	314	57	16
Polio encephalitis acute Deaths	1	1	—	—	—	1	—	—	—	—
Poliomyelitis acute Deaths	4	—	1	1	—	4	—	—	—	1
Puerperal fever Deaths	—	1	14	—	2	—	1	6	—	1
Puerperal pyrexia‡ Deaths	115	6	10	—	1	176	11	17	1	2
Relapsing fever Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever Deaths	9951	86	155	24	33	1192	102	193	29	39
Smallpox Deaths	2	—	—	—	—	7	—	—	—	—
Typhoid fever Deaths	81	—	—	2	—	3	—	2	3	—
Typhus fever Deaths	—	—	—	—	—	—	—	—	—	—
Whooping cough* Deaths	177513	192	1985	71	152	21097	1603	942	36	13
Deaths (0-1 year) Infant mortality rate (per 1000 live births)	519	78	80	—	16	431	64	59	38	19
Deaths (excluding still births) Annual death rate (per 1000 persons living)	5301	870	690	143	151	5225	820	683	237	157
Live births Annual rate per 1000 persons living	5536	1277	1085	219	294	7975	1129	990	377	268
Stillbirths Rate per 1000 total births (including stillborn)	285	27	33	—	—	266	38	35	—	—

* Measles and whooping-cough are not notifiable in Scotland and the returns are therefore an approximation only

† In latest primary form for England and Wales (London (administrative county) and Northern Ireland)

‡ In latest puerperal fever for England and Wales and Eire

Return of births and deaths for Eire from week ended March 8 to week ended April 5 appears on page 584

EPIDEMIOLOGICAL NOTES

Influenza in Europe

During the winter of 1946-7 the incidence of influenza varied from near epidemic to virtual absence in European countries. The largest outbreak recorded was that in Sweden, where 25,000 cases occurred in the central and southern section of the country during the first five weeks of this year. The epidemic was due to a benign type of virus A and the mortality was insignificant. The neighbouring north-western countries recorded no undue prevalence of influenza. The only other countries with a high incidence were Belgium and Bulgaria. In Belgium 10 to 15% of the population suffered a mild attack in January and February, and in Bulgaria the incidence rose sharply in February but only a few deaths were recorded. In most of the countries for which information is available the distribution of the disease was patchy and of low virulence. In those countries where the virus has been isolated an A type was found. In England and Wales the virus A isolated this winter was antigenically somewhat different from that recovered in previous outbreaks.

Sanitary Control of Ice cream

New regulations for the heat treatment of ice cream will come into force on May 1. They are regulations made by the Ministry of Health under the Food and Drugs Act, 1938, and originally put forward in the form of a Draft Order which was the subject of an annotation in the *Journal* of Oct 19, 1946 (p 584). Ice cream prepared by typhoid carriers was responsible for outbreaks of typhoid fever at Aberystwyth and at Coatbridge, Lanarkshire, last year, and for less spectacular outbreaks in other parts of the country. It will be recalled that at Aberystwyth Vi-phage Type C organisms from a urinary carrier who was an ice cream merchant gave rise to 210 cases with 4 deaths.

The new 'Ice cream (Heat Treatment, etc.) Regulations, 1947' will mean that, in effect, the mixture of which ice-cream is composed must be pasteurized before freezing. It may be heated either to 150 F (65.5°C) for 30 minutes or to 160 F (71.1°C) for 10 minutes. Further regulations govern the subsequent cooling process and the maintenance of a sufficiently low temperature thereafter. These requirements do not apply when a "complete cold mix powder" is used, supplied in air-tight containers and manufactured from previously heat-treated material. This may be made up with 'wholesome drinking-water,' and colouring or flavouring materials, fruits, nuts, or chocolate may be added without subsequent pasteurization. The apparatus used must be installed, maintained, and operated to the satisfaction of the local authority, and a general requirement has been made to the effect that ice cream, during its manufacture, storage, and distribution, shall at all times be protected from contamination, and also that all apparatus and utensils brought into contact with it shall be cleansed immediately after use and kept clean at all times. The Minister has given further consideration to the prescription in the Regulations of a bacteriological standard of cleanliness for ice-cream, but he is still not satisfied that there is any test the reliability of which is sufficiently established to justify its use as a statutory test, non-compliance with which would constitute an offence. Attention is drawn, however, to a form of methylene blue test, adapted for testing ice cream, particulars of which were published in the Ministry of Health's *Monthly Bulletin* for March, 1947.

Outbreaks of Smallpox

Up to April 22 no further outbreaks had been reported. The foci at Grimsby, Stepney, and Doncaster are believed to be extinct, following control by surveillance and vaccination of close contacts.

At Scunthorpe the number of confirmed cases remains 7. The last case was removed on April 12 (onset April 7, rash April 12).

At Bilston the position is unchanged. The last of the 8 patients died at home in the prodromal stage on April 11. The last removals to hospital were on April 10.

Decennial Supplement Part IV

The Registrar General's *Decennial Supplement*, 1931, Part IV, Multiple or Secondary Causes of Death, has just been published. This volume was prepared before the war to meet the need for knowledge in mortality studies of the secondary causes of death. A sampling method was employed in the preparation of this volume, because of the large numbers of deaths involved. A proportion of the deaths classified in each International List heading was studied, such proportion varying inversely according to the total numbers assigned to the heading and ranging from the whole in the case of small numbers to one tenth in the case of the largest. Each group was not

sampled in the same year but relates to one of the years during 1923-30. All the figures are based on the classification of causes of death in use in 1921-30. Any comparison with figures from a later period will be affected by the revision of the classification which has been made. This will be so particularly for years after 1940 when the certifying practitioner's preference was adopted in place of a given rule of selection.

Infectious Diseases during the First Quarter

A summary of the weekly returns for England and Wales for the first thirteen weeks of this year shows that the incidence of infectious diseases has been relatively light. Diphtheria was at the lowest level ever recorded and at less than half the level of the two preceding first quarters. A dramatic fall has occurred in the returns for dysentery although some of this may be more apparent than real. The diseases which were slightly more prevalent were whooping cough and cerebrospinal fever.

Returns for the First Quarter of Each of the Last Five Years

England and Wales	1943	1944	1945	1946	1947
Scarlet fever	26 759	26 962	19 163	16 952	15 527
Whooping-cough	23 005	26 141	19 780	20 033	27 922
Diphtheria	10 799	9 005	6 061	6 220	2 832
Measles	220 556	20 278	247 455	17 652	165 895
Acute pneumonia	18 211	14 977	14 782	16 278	15 500
Cerebrospinal fever	1 287	978	968	906	1 110
Dysentery	1 317	2 834	4 681	4 444	931
Paratyphoid and typhoid	175	111	140	138	98
Deaths from influenza	1 149	1 131	692	2 156	1 342
Case mortality per 1 000					
Scarlet fever	1.9	1.2	1.7	1.2	1.2
Whooping cough	14	11	16	10	14
Diphtheria	47	34	29	31	26
Measles	2.6	1.3	1.9	3.5	2.4
Live births	83 801	90 109	87 123	97 468	132 825
Infant mortality	67	62	68	60	58

Deaths from influenza were in excess of those for some recent years, but were less than half the number in the first quarter of 1940 and less than one fifth of those in the same quarter of 1937. The fatality rate from diphtheria fell to the lowest level of recent first quarters. The live births were 36% above the number recorded in the March quarter of last year. Infant mortality was below that of the preceding first quarters.

Figures for Eire

The table below gives the returns for the principal towns of Eire for the last five weeks for which figures are available. During this period there were no deaths due to diphtheria, dysentery, scarlet fever, smallpox, typhoid or typhus.

Week ending	Deaths under 1 year	Birth Rate	Death Rate	Causes of Death			
				Diarrhoea and Enteritis (under 2 yrs)	Measles	Influenza	Whooping cough
March 8	64	31.1	26.2	16	2	10	3
15	76	29.2	25.6	11	—	3	9
22	55	22.0	23.3	11	2	4	5
29	63	24.5	22.1	8	—	6	9
April 5	62	23.4	17.9	10	—	2	9

Discussion of Table

In England and Wales infectious diseases were less prevalent during the week and large falls were recorded in the incidence of measles 2 437, whooping cough 488, scarlet fever 322, acute pneumonia 295, diphtheria 70, dysentery 41, and cerebrospinal fever 29.

The fall in the notifications of measles was general except in the eastern counties, where a rise of 92 was recorded. The incidence of whooping cough remained unchanged in the eastern and north midland counties, while declining elsewhere. A fall in the number of cases of scarlet fever occurred in all areas except Wales where a small increase was reported.

The largest decrease in the incidence of acute pneumonia was in the south-west region, where the notifications fell from 71 to 16. The only variations of any size in the local trends of diphtheria were decreases in Lancashire 28 and London 10. The experience of Lancashire was mainly due to the county boroughs. Lancashire 16 was the only important centre of dysentery and 10 of these cases were notified from rural areas.

In Scotland there was a considerable fall in the notifications of infectious diseases. The decreases included whooping cough 160, acute primary pneumonia 144, measles 116, scarlet fever 65 and cerebrospinal fever 12.

In Eire a decline in the incidence of infectious diseases was reported. The largest falls were in the notifications of whooping cough 23, diarrhoea and enteritis 16 and measles 11.

In Northern Ireland falls were recorded in the notifications of scarlet fever 24, whooping cough 14 and diphtheria 8. An outbreak of measles involving 12 persons was reported from Lisburn UD.

Week Ending April 12

The notifications of infectious diseases in England and Wales during the week included scarlet fever 928, whooping cough 1,751, diphtheria 213, measles 10 326, acute pneumonia 709, cerebrospinal fever 89, dysentery 77, smallpox 13, acute poliomyelitis 11, paratyphoid 1, typhoid 6.

Medical News

The St Bartholomew's Hospital Cricket Club will hold its first post-war annual ball at Grosvenor House Park Lane, London, W, on Saturday, May 3, from 8 p.m. till 1 a.m. Music by the Blu Rackets Dance Orchestra. Double tickets (2½ guineas) are available from the honorary secretary, St Bartholomew's Hospital Cricket Club, London, E.C.1.

A general meeting of the Medical Society for the Study of Venereal Diseases will be held at 11, Chandos Street, Cavendish Square, London, W, to-day (Saturday, April 26), at 2.30 p.m., when Sir Weldon Dalrymple Champneys will read a paper on 'The Epidemiological Control of Venereal Disease'.

The annual general meeting of the Central Council for the Care of Cripples will be held at Cowdray Hall, 1a, Henrietta Place, Cavendish Square, London, W, on Thursday, May 1, at 2.30 p.m., when the Minister of Education, the Rt. Hon. George Tomlinson M.P., will address the meeting.

The Société Suisse de Médecine Interne will hold its annual meeting at Rheinfelden on May 3-4. Prof. H. Staub of Basle, will give a clinical demonstration, and Profs. L. Brull of Liege, A. Fleisch of Lausanne, and E. Uehlinger, of St. Gall, will lecture on various aspects of nutrition and starvation.

A clinical meeting of the Irish Tuberculosis Society will be held at the Royal College of Surgeons in Ireland, Dublin, on Friday, May 2, at 7.30 p.m., when the speakers will be Dr. G. S. Todd, 'Collapse Therapy—Its Uses, Complications and Contra-indications'; Dr. Wm. MacPhail, 'Rehabilitation in Relation to Tuberculosis'; Dr. Morgan Crowe, 'Dispensary Organization in Tuberculosis'; and Mr. F. J. Henry, 'Surgery in the Treatment of Pulmonary Tuberculosis'. Members wishing to attend should notify the honorary secretary of the Society, The Hospital, Newcastle, Co. Wick. Membership is open to all registered medical practitioners. Annual subscription, 10s. 6d.

The North West Area Association of Scientific Workers is holding a conference on 'Industrial Health' to-day (April 26), at 2.45 p.m., at Milton Hall, Deansgate, Manchester. Prof. R. E. Lane of the Department of Industrial Health, the University of Manchester, is delivering an address entitled 'Production Comes from People'.

A Paediatric Congress will be held under the auspices of the Congrès des Pédiatres de Langue Française on May 22-24, 1947, at Lyons. The following subjects will be discussed: chronic rheumatism in childhood; malignant neoplasms in childhood; the treatment of acute meningitis in childhood. Further information may be obtained from the general secretary, Dr. M. Jeune, 24, Place Bellecour, Lyon, France.

Mr. D. D. Stenhouse Stewart, D.O.M.S., and Mr. J. Lumsden M.A., of the Ministry of Education, will open a discussion on 'The Education of Blind and Partially Sighted Children' at a meeting of the School Medical Service Group of the Society of Medical Officers of Health to be held in the Civic Hall, Leeds, on Wednesday, April 30, at 2.20 p.m. The meeting has been arranged at the request of the Minister of Education's Advisory Committee on Handicapped Children.

A clinical pathological demonstration of haemochromatosis will be given in the Meyerstein Lecture Theatre of Westminster Hospital School of Medicine (Horseferry Road, S.W.) on Monday, May 5, at 5 p.m.

On May 5 the out-patient department of the Central Branch of the Moorfields Westminster and Central Eye Hospital will be transferred to the Westminster Branch (Royal Westminster Ophthalmic Hospital), High Holborn, London, W.C. Medical practitioners are asked to make a note of this change so as to prevent patients attending Judd Street when they should go direct to High Holborn. The out-patient times at the Westminster Branch will be the same as those at the Central Branch and any further information can be obtained from the Westminster Branch (Tel. Temple Bar 1457).

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References: Lancet 1944 247 pp. 175 and 176; British Medical Journal 1946 1 p. 50; Pharmaceutical Journal 1945 155 p. 245.

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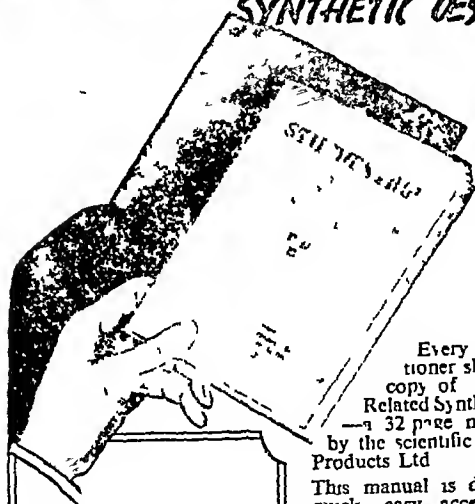
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References: Shortage of space precludes list of references but full documentation may be obtained on application to Chemical Research Dept 17A



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Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Termination of Pregnancy on Genetic Grounds

Q—In what heredo-familial disorders should advice be given against future pregnancy or for the termination of an existing pregnancy?

A—Surely the duty of a medical man is not simply to advise against future pregnancy on genetic grounds, or alternatively to advise abortion, but rather to explain to the patient what the chances are, and apart from this to offer no more than such guidance as may be directly requested. The responsibility for a decision must lie chiefly with the patient. Furthermore, it will depend on more than the genetic odds. For example, a young couple who have lost their two babies soon after birth owing to some recessive defect, when informed that the chance of losing the next one in the same way is one in four, may courageously decide to run that risk. Another couple, however, with the same history may say that they dare not face the prospect, that they will give up all thought of having another child of their own and will adopt one instead. Or, in another instance, the doctor may agree that the mental strain of another pregnancy with its one-in-four risk constitutes a serious threat to the mother's mental health.

There exist many hundreds of human hereditary abnormalities, nearly all of course, being individually rare though not numerically unimportant in the aggregate. Transmission is not always simple and not always the same. The individual family history must be investigated and then interpreted in the light of the literature. The chances, when they are known or can be deduced, should then be explained to the couple, whose decision cannot but be affected by their attitude to parenthood and children, their religious beliefs, and their age and by the numbers and kind of children they already have.

Sebaceous Cysts

Q—A young man has had four sebaceous cysts removed from his face during the past three years and more are beginning to form. Is any preventive treatment possible?

A—Sebaceous cysts may arise as retention cysts from blocking of the pilo-sebaceous orifice as in acne. Apart from this group the majority of these cysts are naevoid in origin and the condition is often familial. There is no preventive treatment.

Treatment of Post-herpetic Pain

Q—What is the best treatment for severe and long-standing post-herpetic pain?

A—Treatment of post-herpetic neuralgia is often unsuccessful. The possibility of a psychoneurotic background must not be overlooked. Measures which sometimes give relief are iodides, vitamin B in large dosage, cannabis indica, and x-ray therapy to the appropriate ganglion area (400 r units at 90 kV through 2 mm aluminium). Short-wave diathermy and ultra-violet light locally have sometimes helped.

Non union after Arthrodesis

Q—What are the causes of repeated failure of full bony union in an arthrodesis of the knee carried out between the ages of 38 and 45?

A—It is impossible to answer this question as comprehensively as one would like without at least a series of radiographs and without knowing the type of fusion performed. It should nowadays be possible to secure fusion without fail in the very large majority of patients between the ages of 38 and 45. Below is a list of the possible causes of failure of bony union in such a case.

General Causes—Any general disease which has lowered the patient's vitality to a stage where osteogenesis is not active—for example various vitamin deficiencies or any disease which has resulted in sclerotic changes in bone such as syphilis.

Local Causes—(1) The condition for which fusion of the knee is desirable—for example, union is slower or less likely to be complete in an arthrodesis for a tuberculous lesion than in one for injury or rheumatoid arthritis. (2) Imperfect operative technique. (a) Failure to expose raw cancellous bone in the opposing surfaces of the tibia and the femur. (b) Failure to obtain close end-to-end contact. It is wise to pack the "nooks and crannies" with bone chips taken from the ilium. (c) Failure to secure complete fixation. Probably the best method of doing this is to use crossed tibial grafts—the method described by Brittain. This procedure alone increased the rate of success in fusions for tuberculosis from about 66% to over 90%. There are, of course, other methods of fixation, such as an obliquely placed Smith-Petersen nail. External splinting by a plaster-of-Paris spica is also necessary.

Finally, anomalies of blood supply, whereby the end of one bone may be ineffectively supplied (an almost theoretical consideration), should be included in a list of causative factors.

Dyspareunia after Hysterectomy

Q—What treatment might be applied in a case of dyspareunia after panhysterectomy? As the normal cervical secretions are removed is there any effective lubricating ointment or any hormone treatment which might prevent the menopausal atrophy of the vagina?

A—The cervix does not normally play the dominant part in lubricating the vagina during coitus. The secretion comes mainly from Bartholin's glands and is poured out as a result of sexual stimulation. Even so, if both ovaries were removed at the time of the hysterectomy the activity of Bartholin's gland is likely to have decreased if not ceased. Menopausal atrophy of the vagina can be overcome by oestrogens. A large dose may be required, and in the first place hexoestrol, 1 mg thrice daily by mouth for three weeks, should be tried. After an interval of two weeks this course could be repeated. It should not, however, be continued for longer than that, and should in any case be stopped as soon as coitus is possible again. When it is discontinued the vaginal epithelium will atrophy again, but the vaginal canal should not undergo contracture if it is kept dilated by regular coitus. If for any reason coitus is discontinued for an appreciable time contracture will recur. If necessary an artificial lubricant can be employed, and the preparations used for the passage of catheters are suitable for this purpose.

Loa loa Infection

Q—What is known regarding the persistence of *Loa loa* in the human body? Is there any satisfactory treatment for Calabar swellings?

A—Symptoms of loasis may first become apparent some years after the patient has left an endemic area, and may continue for ten to fifteen or more years. Treatment consists in removing such adult worms as may present themselves in convenient situations for extraction, but the infection is usually multiple and symptoms may continue. Local manifestation may require symptomatic treatment, while allergic reactions may be diminished by such drugs as phenobarbitone, benadryl, or ephedrine. Desensitization by increasing doses of filarial antigen has also given promise experimentally. There is some evidence that certain antimony compounds may be useful in filariasis, but, as their effect is probably on the adult worms, microfilariae may persist in the peripheral blood for many months after treatment. Phenomena due to sensitization to filarial products may also persist for some time after treatment.

Sodium Bismuthyl Tartrate in Rheumatoid Arthritis

Q—Is sodium bismuthyl tartrate of value in the treatment of infective and rheumatoid arthritis? What is the dosage, at what intervals and for how long a period is it given and what are the toxic effects?

A—Sodium bismuthyl tartrate has not been in use long enough to enable a definite opinion to be formed as to its value in the treatment of arthritis of the rheumatoid type. It would appear to be less effective than gold, but useful where gold is not tolerated or where it has ceased to produce any improvement. The writer has used it in a good many cases with variable results, but with undoubted improvement in a

few, no toxic effects have been observed beyond some sense of malaise and fatigue for a day or two after administration. It is given by deep intramuscular injection, and this sometimes gives rise to pain at the site of injection. It is injected at fortnightly intervals in a solution of 1 gr (65 mg) in 1 ml, the dose to begin with being 0.5 ml; this may be increased up to 1 ml and the interval then may be a month, after six or eight doses an interval of a few months is desirable.

Pressure Cooking

Q—When food is cooked at 20 lb (9 kg) positive pressure and at a temperature up to 250° F (121° C) is there any loss of food value compared with ordinary cooking and does it incur a greater risk of food poisoning especially from meat?

A—Little work seems to have been done with domestic pressure cookers but, generally speaking, the effects may be expected to be similar to those of commercial canning. As compared with ordinary cooking, some further destruction of vitamin B₁ (thiamine) may occur, owing to the higher temperature reached. Loss of vitamin C may or may not be greater than with ordinary cooking, since although the conditions are more drastic, the time of exposure is less. Meat and vegetable juice may be more abundant and should not be thrown away.

We have found no reference suggesting any danger of food poisoning resulting from the use of a pressure cooker. This idea may have arisen from the fact that meat cooked in this way may develop a bitter flavour. This has been ascribed to the partial breakdown of some of the proteins into simple peptides and amino acids. On the other hand, the use of a pressure cooker in the home canning of vegetables obviates the risk of bacterial poisoning.

Pruritus Senilis

Q—What is the best treatment for pruritus senilis and is a cure likely?

A—There are many possible activating factors in senile pruritus particularly emotional and nervous stresses and strains, metabolic disturbances and deficiency states. Glucosuria, hypertension, arteriosclerosis and neoplasms must be carefully considered. In essential senile pruritus the senility of the skin itself may play some part, but the condition seems more often dependent upon arteriosclerotic changes affecting the central nervous system, and treatment is difficult. Local applications are not of much avail, though minimal doses of ultra-violet light or x rays are sometimes of value. Stilboestrol 0.5 to 1 mg combined with phenobarbitone gr 1/2 (32 mg) occasionally helps.

INCOME TAX

All inquiries will receive an authoritative reply but only a selection can be published.

Postgraduate Education for Ex Service Medical Officers

A note on this subject appeared in the *Journal* of Jan 18 (p 124). We have now been informed by the Ministry of Health that the Minister has been in communication with the Board of Inland Revenue regarding the liability for income tax of doctors holding posts or taking courses under the Postgraduate Scheme. He is advised that, as the practitioners holding Class I and Class III posts are employees of the hospitals to which they are appointed the salaries of these posts and the allowances of £100 paid in lieu of board and lodging are assessable to income tax under Schedule E, and tax should be deducted by the employing hospital under the PAYE provisions on making payments on account of these salaries and allowances.

The practitioners attending refresher courses provided under Class II will, in general, be liable to income tax under Schedule D upon the profits of their individual practices. Payments made to a practitioner in respect of subsistence travelling expenses, and the cost of providing a locum are not in themselves income liable to tax. If, however, a practitioner in arriving at the amount of his practice profits deducts the corresponding expenses incurred by him then the payments received by way of reimbursement must be credited. For example a doctor who uses his practice car to attend lectures and charges the full car expenses in his accounts should credit the amount received from the Ministry in respect of journeys to and from lectures. Similarly, if the cost of providing a locum is debited in the accounts the amount reimbursed by the Ministry should be credited.

Letters and Notes

Bleeding Tooth sockets

Dr J F MURPHY (Pickering, Yorks) writes: Troubles from a bleeding tooth socket were ended for me by a method shown me by a neighbour dentist many years ago. It is extremely simple, painless, and instantly effective. One assumes of course that the gum is not so badly torn as to require a stitch. Two wool swabs of suitable size are prepared, one dry and one damp enough to coat itself thickly with crystals of permanganate of potash when dipped into the jar. The dry swab is pressed into the socket to check the bleeding as much as possible, and on withdrawal the swab coated with the crystals is pressed up into the socket and held there for about 30 seconds before withdrawal. A firm black adherent coagulum instantly forms and the bleeding is at an end. (No swab is left in.) Occasionally a further application of the crystals is required but not often. The coagulum disappears without trouble in the course of two or three days. For many years I have not known this method fail.

Multihallucism

Dr ROYAN O RAHILLY (Newcastle upon-Tyne) writes: With reference to the photograph of Dr Ardesir K. Turner's case showing a Hindu with two big toes on each foot (March 29, p 436) I should like to call attention to the skiagram (reproduced) which I possess through the kindness of Dr T Lodge FFR. It shows a very rare condition of three big toes on one foot, making a total of seven digits on the right lower limb. The patient was a boy who was aged six months when the film was taken. The thickened first metatarsal can be seen to be associated with three biphalangal digits. The remaining toes were normal. Other cases of pedal heptadactylism have been described (e.g., by Pires de Lima, J A, *Ann Anat Path med chir* 1933 10 1215) and a case of octodactylism has been recorded by A E Sawday (*British Medical Journal* 1928, 1 846). Most instances of pedal polydactylism, however, are concerned with the lateral border of the foot in contrast with the pre-axial distribution in the case illustrated here, as also in that of Dr Turner.



Chilblains

Dr MARGARET VIVIAN (Bournemouth) writes: The woman doctor (March 1 issue) crippled with chilblains should try calciferol and parathyroid and calcium tablets. I have cured my own by taking both these remedies together, when neither singly was completely successful.

Treatment of Dipsomania

Dr H PULLAR STRECKER (Truro) writes: The reply (March 15, p 365) and the references quoted refer to the American method, which is rather involved, emetine, not apomorphine, is their nauseating agent. The apomorphine method was evolved by J Y Dent and is described in the issues of the *British Journal of Inebriety* from 1934 onwards.

Correction

A correspondent points out that the Cerebral Palsy Unit at Carshalton referred to in our annotation (April 5, p 459) was founded by the cerebral palsy therapist 4 years ago with the backing of the LCC.

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: ANTHOLOG. Western London. ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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B.M.A. SCOTTISH OFFICE: 7 Drumsheugh Gardens, Edinburgh.

SUPPLEMENT TO THE BRITISH MEDICAL JOURNAL

LONDON SATURDAY APRIL 26 1947

British Medical Association ANNUAL REPORT OF COUNCIL, 1946-7

Every member is asked to keep this Supplement which contains matters referred to Divisions until the subjects have been discussed by his Division

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PRELIMINARY

Membership of the Association

1 The membership of the Association continues to show a very satisfactory increase. During the year 1946 there was a net increase of 2,667 and on March 31, 1947 the membership was 55,049.

A survey of the membership recently made by the Council shows that of the practising members of the profession in the United Kingdom over 75% are members of the Association.

Deaths

2 The Council regrets to record the deaths of 472 members during the year 1946.

Annual Meeting

3 Owing to the war no Annual Meeting with Scientific Sections has been held since the Association met in Aberdeen in 1939. The Council feels that as soon as possible the ordinary Annual Meetings of the Association should be resumed. It has accordingly accepted with pleasure the invitation of the Cambridge and Huntingdon Branch to hold the Annual Meeting for 1948 in Cambridge.

President of the Association

The Council recommends

Recommendation That Sir Hugh Lett Bart CBE DCL FRCS be re-elected President of the Association for the year 1947-8.

The Cambridge and Huntingdon Branch has nominated Sir Lionel Whitby as President for the year 1948-9. The Council recommends

Recommendation That Sir Lionel Whitby, CVO MC MA MD FRCP Regius Professor of Physic University of Cambridge be elected President of the Association for the year 1948-9.

Annual Representative Meeting

5 The Annual Representative Meeting will be held on Tuesday, July 22, 1947, at 2 p.m. It will continue on Wednesday and Thursday July 23 and 24, and, if necessary on the following day.

Vice-Presidents of the Association

6 Recommendation That J C Matthews MC MA MD FRCP, and H W Pooler, MB BCh, be elected Vice-Presidents of the Association as an appreciation of the exceptional services they have rendered to the Association.

The Secretariat

7 The Council has appointed Dr J H Bruce and Lieut Col J Revans IMS, as Assistant Secretaries of the Association.

Agreement between the Association and the Association of Industrial Medical Officers

8 The Council has entered into the following agreement with the Association of Industrial Medical Officers

1 If the Association of Industrial Medical Officers desires to urge upon central or local authorities, or other similar bodies, any medico-political policy affecting the interests of public or private practice, or is consulted thereon by such authorities or bodies it shall communicate its proposals to the British Medical Association before taking action.

2 If such policy or proposals are approved by the British Medical Association either in their original form or in an agreed amended form, all action consequent thereon will be taken by the British Medical Association, and the Association of Industrial Medical Officers will refrain from taking any further action.

3 If the proposals of the Association of Industrial Medical Officers are not approved by the Council of the British Medical Association, or if the former Association is dissatisfied with the form in which the Council of the British Medical

willing to take action thereon, the Association of Industrial Medical Officers shall be free to take action independently.

4 The British Medical Association will provide for the representation of the Association of Industrial Medical Officers on its Industrial Medicine Committee and the Association of Industrial Medical Officers will provide for the representation of the British Medical Association at its meetings.

Priority Supplies of Milk to Invalids

9 In November 1946 the Minister of Food published a statement (see *BMJ* Nov 2, 1946 p 661) drawing attention to the increasing demands by invalids on milk supplies. He attributed the increase to lax or improper certification by medical practitioners and announced without consultation with the profession the measures he was taking to reduce demands for priority supplies for sick persons. The Council strongly protested to the Minister against the issue of such a statement unsupported by evidence and against his failure to consult the Association as his predecessors had done in connexion with this priority scheme since 1941. It also informed him that it would be glad to confer with him on the general arrangements of the scheme and on measures which might be taken to deal with the particular situation which had arisen.

Ex-Service Practitioners

10 The Council made representations to the Ministry of Health

(a) That the number of Class I hospital posts under the Government's postgraduate scheme should be increased to enable ex-Service practitioners eligible for such posts to obtain them at a reasonably early date subsequent to their release from the Forces.

(b) That a greater number of Class III hospital posts be authorized both in teaching and non teaching hospitals to expedite the absorption of ex-Service practitioners eligible for such appointments under the Government's postgraduate scheme.

(c) That the present restriction whereby only those ex-Service practitioners who can prove intent to specialize before recruitment to the Forces and who were not established either in general or special practice are immediately eligible for Class III appointments be removed, and that Class III appointments under the Government's scheme be open to ex-Service practitioners who have made progress in the direction of specialism during their service with the Armed Forces.

The Association was informed that authority had been given to a scheme designed to help ex-Service practitioners both the fully qualified specialists able to take senior posts in hospitals without the need for supervision and also the more junior specialists not yet qualified to take full responsibility in a higher post.

For the former, local authorities and the larger voluntary hospitals were invited to increase their hospital establishments by creating additional whole time posts wherever the volume of specialist work justifies it. The salary of these posts will be met from the Exchequer and will be of the order of £1,000 a year. An assurance was given by the Department to the Council that these arrangements were not to be regarded as establishing any precedent, and that they were to continue only during the interim period pending the commencement of the new service. For the latter the Ministry proposed to enlarge the facilities for postgraduate training both by extending the duration of the appointments and, as far as may be practicable, by addition to the number of posts.

For those practitioners who, though unable to prove intent to specialize before recruitment have attained full specialist status in the Forces, the Ministry agreed that subject to approval by the deans and directors of postgraduate studies at the appropriate universities, Class III posts will be made available for them under the Government's scheme. Candidates selected by hospitals were required, in the first place, to serve for a probationary period of six months which was extended where the candidate was considered suitable for further training.

The Council feels that the flexible arrangement under which the graded specialist and the practitioner who gained a higher degree or diploma while serving with H.M. Forces is appointed to a Class III post after an appropriate period of training in a Class I post should be put into operation at all postgraduate centres administering the Government's scheme.

The Council has also urged that specialists and graded specialists in psychiatry who are in need of further training should be afforded an opportunity of taking Class III posts at mental hospitals where there is an out-patient clinic.

Study Groups

11 In accordance with the wishes of the A.R.M., 1946 the Council has advised Divisions to establish local study groups where these are not already in existence, in order to facilitate and encourage widespread discussion on medico-political problems and to attract the active co-operation of more practitioners in the formation of policy.

Gift by the late Sir Kaye Le Fleming

12 The Council has gratefully accepted a gift made by the late Sir Kaye Le Fleming of a portrait, a silver presentation porringer, and a framed collection of medals.

Committee of Inquiry into Health and Welfare and Safety of Persons in Places of Employment, and the Hours of Employment of Young Persons

13 A Joint Committee consisting of representatives of the Association, the Society of Medical Officers of Health, and the Association of Industrial Medical Officers was set up by the Council to prepare evidence for submission to the Departmental Committee which is considering the present statutory provisions relating to the health, welfare, and safety of workers in their places of employment and the hours of employment of young persons.

The Council approved the Memorandum of Evidence prepared by the Joint Committee. A copy will be sent to any member on request.

Code of Standards relating to Advertising of Proprietary Medicine

14 The Council has appointed a special Committee to consider and advise on the manner in which the Association could co-operate with the Newspaper Proprietors' Association and the Newspaper Society in the practical application of a code of standards concerning the advertisement in the lay Press of medicines and treatments.

Future Policy Regarding Alien Doctors

15 The Council was consulted by the Central Medical War Committee concerning proposals made by the Secretary of State for Home Affairs relating to the position of foreign medical practitioners in the United Kingdom whose professional activities are at present controlled by the Aliens Order. The practitioners concerned are

(i) Those who have British medical qualifications and have been allowed (or told that they will be allowed) to set up in independent private practice subject to Home Office approval of the place of practice;

(ii) Those who have British medical qualifications but are subject to a Home Office condition that they shall take only hospital posts or posts as assistants and shall not engage in independent practice;

(iii) Those who have no British qualifications but hold medical diplomas recognized by the General Medical Council for registration in the Temporary Register set up under Defence Regulation 32 B and

(iv) Certain Polish doctors who have been serving abroad as medical officers with the Polish Forces and therefore were not registered on the Temporary Register under the Defence Regulation.

Group (i) comprises the survivors of the 200 German refugee doctors who came here before 1936, and of the 50 Austrian and 50 Czech doctors who were selected by an Advisory Committee set up at the suggestion of the Secretary of State, and allowed to settle in practice here after obtaining British medical qualifications. Permission to set up in practice has been subject to Home Office approval of the place of practice.

Group (ii) includes a number of refugee doctors, perhaps about 150, who were not included in the limited quotas of specially selected refugee doctors, and a number of refugees who have taken all their medical training in the United Kingdom. Although these persons have acquired British

qualifications, the Secretary of State has felt bound by the pledge given to the profession by his predecessor not to allow them to settle in independent practice. They have, however, since the Temporary Registration Order was introduced, been allowed to take posts in hospitals or as assistants after consultation with the Central Medical War Committee as to location.

With regard to Group (iii) it is estimated that the total number who will be affected by the expiration of the Temporary Registration Order will be between 1,200 and 1,500, but this estimate may be subject to modification when more definite information is available of the number of Polish doctors registered under the arrangements referred to in the next paragraph.

With regard to Group (iv) the Government has accepted responsibility for the resettlement of the Polish Forces and their dependants either in the United Kingdom or elsewhere. Members of the Forces transferred to the United Kingdom are being enlisted in a Resettlement Corps of the British Army. It is proposed to ask Parliament to authorize a special reopening of the Temporary Register for the purpose of registration of those Polish practitioners not yet on the Register.

There is another small group of alien doctors who were locally commissioned in the R.A.M.C. overseas for employment in overseas theatres of war. They were allowed, if they wished, to be released in the United Kingdom, and in order to place them on the same footing as medical officers serving with the Polish Resettlement Corps the Temporary Register is to be opened for them.

The Council has expressed agreement with the following views of the Central Medical War Committee:

(a) That the establishment of alien doctors in independent private practice should continue to be subject to approval of the alien's choice of locality.

(b) That no objection should be raised to alien doctors with British medical qualifications being allowed the same professional freedom as *quoniam doctores*.

(c) That no objection should be raised to temporarily registered practitioners who have been approved, as outlined in paragraph (d) being placed on the permanent Register, and consequently being treated in the same way as other permanently registered alien practitioners.

(d) That a scheme should be worked out by the General Medical Council, in conjunction with representatives of the Ministry of Health, the Home Office and the Central Medical War Committee for the 'screening' of temporarily registered practitioners to be transferred to the permanent Register.

(e) That no objection should be raised to the reopening of the Medical Register to admit Polish medical officers enlisted in the Resettlement Corps, and ex R.A.M.C. alien doctors.

Psychiatry and the Law

16 The Council has received from the Joint Committee of the Association and the Magistrates' Association and has approved for publication a memorandum dealing with the social problem presented by the unstable adolescent girl who comes before the court on a charge of stealing or some other offence or because she is out of control or is in moral danger or in need of care and protection. The memorandum was published in the *Journal* of Dec 14, 1946, p. 909 and is being reprinted in booklet form. A memorandum on certification under the Mental Deficiency Acts which is associated with the problem of the unstable adolescent girl will be published at an early date.

The Council was recommended by the Joint Committee to pass resolutions in favour of the abolition of judicial corporal punishment both for juveniles and for adult offenders, but in view of the fact that the evidence adduced in support of the recommendation was in large part sociological and in small part medical the Council preferred not to express an opinion.

The Council has approved a memorandum prepared by the medical members of the Joint Committee on the law relating to attempted suicide and this will be published shortly.

Commemoration of the One Hundredth Anniversary of the American Medical Association

17 The American Medical Association will commemorate its One Hundredth Anniversary at meetings to be held at Atlantic City, New Jersey, from June 9 to 13, 1947. The

Council has gladly accepted an invitation to send delegates from the British Medical Association, and for this purpose the Council has appointed its Chairman (Dr H. Guy Dain), Dr J. A. Pridham, the Secretary, and the Editor.

Committee on the Elderly and Infirm

18 In accordance with the instruction contained in Minute 153 of the A.R.M., 1946, the Council has appointed a special committee to investigate the whole position in regard to the care and treatment of the elderly and/or infirm. This committee has been discussing questions of classification and nomenclature and collecting information about the existing provision of residential accommodation for the able-bodied and institutional care and treatment for the disabled. Representations have been made to the Ministry of Health on the importance of ensuring that new housing schemes include the provision of accommodation specially designed for elderly people, and of avoiding a segregation of the able-bodied elderly from the rest of the community.

Medical Curriculum Committee

19 The special Committee appointed in 1945 to review the medical curriculum in the light of the requirements of modern medical practice is proceeding with its task. It hopes to complete its report by the end of 1947.

NATIONAL HEALTH SERVICE ACT

20 The Government's Bill to provide for the establishment of a comprehensive health service for England and Wales was presented to the House of Commons on March 19, 1946, and, after a Second Reading debate on April 30, May 1 and 2, was committed to a Standing Committee. The proceedings in Standing Committee occupied twenty Parliamentary days, and the House of Commons passed the Bill on Friday, July 26, 1946. The Bill was considered in the House of Lords immediately on the resumption of Parliament after the summer recess and received its Second Reading there on Oct. 8 and 9. The Bill was committed to a Committee of the House of Lords. During this stage a Clause was added to the Bill to secure that the remuneration of general practitioners should be by the capitation method, save in exceptional circumstances. The Bill was passed by the House of Lords with this amendment on Nov. 1, 1946. The amendment was rejected by the House of Commons on Nov. 4, 1946, and, on reconsideration by the Upper House, was not insisted on. The Bill received the Royal Assent and became law on Nov. 6, 1946.

The main improvements secured by amendment during the progress of the Bill through Parliament may be summarized as follows:

(a) The Bill, as introduced, gave the Minister the power to change the constitution of the Central Health Services Council as a mere administrative decision. He now has to bring such changes before the House. The Bill empowered the Minister to suppress any part of the Council's advice. The Act requires him to consult the Council, if he proposes not to publish any part of its report.

(b) The individual hospital has been made a legal entity with power to receive money and other property, and will be able to sue or be sued in its own right. The Bill, as originally drafted, provided no legal hospital unit lower than a regional hospital board. Moreover, gifts made between the passing of the Act and the appointed day to existing voluntary hospitals will not be pooled when the service comes into operation, but will be transferred to the appropriate new management committee and that body may continue to apply these moneys according to the intentions of the donor.

(c) The Medical Practices Committee, in considering applicants for a vacancy in general practice, is to have regard to the wishes of an applicant to practise with other practitioners in an area, to any desire expressed by the existing practitioners to take an applicant into practice with them, and special regard to family relationships. The Minister is also required to have regard to these factors in determining appeals against the decision of the Medical Practices Committee.

(d) The oppressive provisions of the penal clauses in the Bill have been substantially lessened by the inclusion in the Act of a provision enabling a practitioner to ascertain in advance whether a proposed transaction involves, in the opinion of the

Medical Practices Committee, a sale of goodwill. If this Committee, on consideration of the facts is satisfied that a transaction does not involve considerations of goodwill, it is required to issue to the applicant a certificate to that effect, this will provide a defence if it is alleged subsequently that an offence has been committed.

On the passage of the Act the Negotiating Committee issued a report to its constituent bodies including a factual summary of the Act and a commentary based on the views expressed by the organized bodies of the profession. The issue which arose at this stage was whether or not discussions should be entered into with the Minister on the many matters to be dealt with by Regulations, including terms and conditions of service. In transmitting its report, the Negotiating Committee sought from each of its constituents an answer to this question. The Association decided to put this question to every member of the profession for decision by plebiscite. As a result of the plebiscite, a small majority of the profession expressed themselves against discussions on the regulations. The Special Representative Meeting on Jan 28, 1947, on consideration of the plebiscite results, expressed its willingness that discussions should be entered into with the Minister, provided that such discussions were comprehensive in their scope and that the possibility that they might lead to further legislation was not excluded.

The Negotiating Committee, early in February, decided to enter into discussions with the Minister on the basis of the Representative Body's decision. The Minister agreed to meet the Committee on this basis and, as an outcome of the meeting with him on Feb 28, the Negotiating Committee appointed six subcommittees to begin comprehensive discussions with the Ministry based on the resolution of the Representative Body. The subcommittees will deal with general practice, hospital and specialist services, public health services, mental health services, eye services, and superannuation respectively.

The Negotiating Committee at its meeting on Feb 7 decided that the representation of the British Medical Association on the Committee should be increased from 16 to 18 members. The present position is that of the 34 members of the Committee, 18 are appointed by the Association. The Association's representatives are

Elected by the Representative Body

A Lawrence Abel	J A L Vaughan Jones
J C Arthur	J F Lambie
O C Carter	J B Miller
Lord Horder	J A Pridham
S A Winstanley	

Elected by the Council

H Guy Dan	F Gray
J A Brown	E A Gregg
R W Cockshut	R L Newell
W E Dornan	S Wand
Walter Jope (Nominee of Scottish Committee and Scottish IAC Subcommittee)	

GENERAL PRACTICE

Fees for Medical Examinations in connexion with Life Insurance

21 The Council has considered the following Minute 20 of the Representative Body, 1946

"That the Council be empowered to terminate at the appropriate time the Agreement reached with the Life Offices' Association in 1919 in regard to the fees for medical examinations for life insurance."

Negotiations have been pursued with the Life Offices and the Industrial Life Offices Associations, and the following provisional agreement has now been reached with these bodies for a full examination and report the fee should in all cases be £1 11s 6d but in cases where the amount of the policy does not exceed £300 a standard shortened form of report may be used at a fee of 10s 6d. Thus, in the latter class of insurance the company may either use the standard short form or request a full examination at the higher fee.

In reaching this agreement the Council has drawn the attention of the Life Offices Association to the exceptionally lengthy form of medical report used by certain companies, and has intimated that it does not propose to recommend the acceptance of a fee of £1 11s 6d in these cases. It has been proposed that the forms in question should be suitably modified, or a fee of £2 2s paid for their completion, and this question is being pursued with the Life Offices Association.

Recommendation That Minutes 119-133 of the A R M 1920, and Minute 81 of the A R M, 1935, regarding the fees payable for medical examinations in connexion with life insurance be rescinded and the following substituted therefor

(1) That the following "Short" form of medical report be approved for use in the case of all insurances where the amount of the policy does not exceed £300, the fee for the completion of this form of report to be 10s 6d

(a) Does the Proposed appear in good health? Is his/her appearance consistent with the age stated?

(b) Is there any reason to suspect irregular or intemperate habits?

(c) Are there any abnormalities of the heart or lungs or pulse?

(d) Are there signs or symptoms of kidney disease? Result of urine examination Albumin Sugar

(e) Height of the Proposed Weight of the Proposed (If possible the Proposed should be weighed and measured by the Examiner)

(f) Are there any other circumstances not covered by the questions with which the Company should be acquainted? (e.g. In female cases, is she in an obvious state of pregnancy?)

(g) In which of the following classes would you place the risk?—First Second, Third *

* Classification 1st Class, lives acceptable on ordinary terms, 2nd Class, assurable, but only on special terms, 3rd Class, unassurable

(2) That for a medical examination and report in cases where the amount of the policy exceeds £300 the fee shall be £1 11s 6d

(3) That no attempt be made to standardize the £1 11s 6d form of report, but that where the form required by the Life Office is exceptionally extensive a fee of £2 2s should be payable

(4) That where, in the case of an insurance for an amount not exceeding £300, the Office requires a fuller examination than is provided in the "Short" form, the Office may use its ordinary form at a fee of £1 11s 6d

(5) That in all cases the fee appropriate to the examination, and the amount of the policy, should be printed on the form

Fees for Police Calls and for Attendance on Members of Police Forces

22 The Council has reviewed the question of the remuneration of practitioners for attendance on members of police forces. Occasionally this work is carried out by whole time police surgeons, but usually practitioners are appointed for the purpose on a part-time basis. The method of payment is by annual salary, capitation fee, or on a per case basis, and the amount of remuneration, whatever the method employed, varies considerably throughout the country. In a small number of areas, usually rural, a "free choice" system is in operation, the practitioner being remunerated either upon an agreed scale or in accordance with his normal charges.

In the opinion of the Council the most appropriate method of payment is a capitation fee not less than that paid to dispensing practitioners under the National Health Insurance Acts (excluding special drugs and appliances), but this method of payment should be restricted to police officers whose annual income does not exceed £420. In the case of police officers with incomes above £420 per annum it is considered that payment should be on a per-case basis as follows

Chief Constables and Assistant Chief Constables

Consultation	7s 6d
Day visit	10s 0d
Night visit and Sunday visit	
after 12 noon	£1 1s 0d

Superintendents and Inspectors

Consultation	5s 0d
Day visit	7s 6d
Night visit and Sunday visit	
after 12 noon	£1 1s 0d

Mileage at the rate of 1s per mile or part of a mile (each way) after the first two miles

Where the open choice method is in operation the Council recommends that the following minimum rates should be observed

Chief Constables and Assistant Chief Constables		All Other Ranks	
Consultation	7s 6d	Consultation	5s 0d
Day visit	10s 0d	Day visit	7s 6d
Night visit and Sunday visit		Night visit and Sunday visit	
after 12 noon	£1 1s 0d	after 12 noon	£1 1s 0d
With mileage as a separate item			

As regards the examination of candidates for the police forces and of police officers for pension purposes, it is considered that fees of £1 1s and 10s 6d respectively would be appropriate

Representations have been made to the Home Office with a view to securing the adoption of the foregoing rates for attendance on members of police forces throughout the country

The Council has also reviewed the existing policy of the Association regarding the fees which should be paid to practitioners called in by the police to make examinations and reports in connexion with criminal charges or to render emergency treatment. The fees now paid in many areas are totally inappropriate to the degree of responsibility involved. In some areas a composite fee is paid for the examination and report and subsequent attendance at court and sometimes a fee is payable only when the practitioner is required to attend court. In some areas the practitioner receives a lump sum payment or annual salary for attendance on members of the force and for examinations and reports. The Council considers the last mentioned method to be undesirable, while there is no objection to the payment of an annual salary or lump sum for attendance on the police, additional fees should be paid for examinations and reports

Recommendation That the following be substituted for the existing policy of the Association regarding remuneration of practitioners called in by the police

Where a medical practitioner is called in by the police in one of the following circumstances a fee not less than that stated below should be paid

(a) To examine a person charged with being in charge of a motor vehicle whilst under the influence of drink or a drug to such an extent as to be incapable of having proper control of the vehicle

Between the hours of 8 a.m. and 8 p.m.	£1 1s 0d
8 p.m. and 8 a.m.	£2 2s 0d
For report to the prosecuting solicitor	£1 1s 0d

If the examination takes an unusually long time, or the practitioner is required to remain at the police station for longer than three quarters of an hour in order that the defendant's own medical attendance may be called a supplementary fee of £1 1s 0d should be paid

(b) To examine a witness or person charged with or suspected of sexual offences

For the examination

Between the hours of 8 a.m. and 8 p.m.	£1 1s 0d
8 p.m. and 8 a.m.	£2 2s 0d

exclusive of the collection and examination of pathological specimens for which a higher fee should be paid

For report	£1 1s 0d
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(c) To examine a witness or person charged with common assault

For the examination

Between the hours of 8 a.m. and 8 p.m.	12s 6d
8 p.m. and 8 a.m.	£1 5s 0d

If a special report is required an additional fee of £1 1s 0d should be paid therefor

(d) To examine a witness or person charged with assault with intent to commit grievous bodily harm including suspected rape or manslaughter

For the examination

Between the hours of 8 a.m. and 8 p.m.	£1 1s 0d
8 p.m. and 8 a.m.	£2 2s 0d
For report	£1 1s 0d

(e) To render emergency treatment to a person taken ill in the street, or a prisoner confined in the cells, to certify death in cases of "sudden death", and to examine a prisoner as to fitness for Borstal treatment

Between the hours of 8 a.m. and 8 p.m.	12s 6d
" " " " 8 p.m. and 8 a.m.	£1 5s 0d

The payment of the appropriate fees for the foregoing services should be irrespective of any subsequent action, and should not be combined with or included in the fee for attendance at court. Mileage should be paid at the rate of 1s per mile or part of a mile (each way) after the first two miles

Telephone Facilities for Doctors

23 The Council has considered the following Minute 44 of the Representative Body, 1946

Resolved That this meeting is of opinion that representations should be made to the Postmaster General that the telephone service should provide facilities at each exchange for taking messages during such times as a doctor may notify that his telephone will be unattended

The position has been discussed with the Postmaster-General, who has explained that a few years before the war the Post Office introduced an experimental service on these lines at one or two exchanges, but little use was made of it, and the war put an end to its development. Any wide reintroduction of such a service in London and the rest of the country would necessitate the employment of additional staff, and, especially at automatic exchanges, the provision of special equipment which at present is unobtainable. In these circumstances, and in view of the paramount need to meet the existing demands of new subscribers and to cope with the necessary arrears of repairs and replacements due to six years of war, the Postmaster-General sees no early prospect of resuming the experiments in providing a message-taking service

The only alternative, and one to which the Post Office would offer no objection would appear to be the operation of a private service. The Department has offered suggestions regarding the manner in which a satisfactory service could be established and a statement on this question was published in the *Supplement* on March 15 1947. Such a service, however, would be likely to prove expensive and would be practicable only in the larger centres

Medical Examination at the Request of an Insurance Company

24 The Council has considered the following Minute 24 of the Representative Body

Proposed by City That this meeting recommends that when a doctor is requested by an insurance company or a solicitor to be present at the examination of his patient by another doctor for the purpose of assessing a claim arising out of the patient's injury or illness, the fee payable should not be less than two guineas

The Council is of the opinion that it would be inadvisable to recommend a fee for this purpose in view of the fact that the circumstances vary from case to case. Sometimes the practitioner is required only to represent his patient, while at other times he is required to furnish information regarding the medical history of the patient. The Council considers, therefore that the question of assessing an appropriate fee should be a matter for arrangement between the practitioner and the insurance company or solicitor

Coroners' Acts

25 In accordance with the wishes of the Representative Body (Minute 46 of A.R.M.) the Council has appointed a special committee to review the operation of the Coroners Acts as they affect medical practitioners, and the committee has already begun its task

Remuneration of Civilian Medical Practitioners

26 The Council has again had under consideration the fees payable to civilian medical practitioners for occasional attendance on military personnel. It is not satisfied that the rates payable can be regarded as adequate at the present time, and accordingly the War Office has been urged to increase the fees

as follows and to abolish the daily maximum rate of £2 for all services rendered to the Department

Attendance and medicine	from 4s to 5s
Day visit up to 2 miles	" 6s " 7s 6d
Night visit up to 2 miles	" 10s " £1 1s

'Distance Fee' for day or night visit for each additional mile or part of a mile over 2 miles from 9d (one way) to 1s each way

The daily rates of remuneration of practitioners employed on full time or part-time duties have also been reviewed. These rates have not been increased since the beginning of the war and in the opinion of the Council are totally inappropriate. Representations have been made to the War Office that these rates should be increased as follows

Full time	from 30s a day (33s 6d a day where there is no Service M.O. at the station) to £5 5s a day
Part time	from 25s a day to £2 2s a day

Remuneration of Admiralty Surgeons and Agents

27 The Council has considered the following Minute 43 of the Representative Body, 1946

Resolved That the Council be asked to take action in order that the scale of fees paid to Admiralty Surgeons and Agents be revised to conform with the revised fees now paid by the Service Departments to Civilian Medical Practitioners in accordance with para 42 of Council's Report

The Council reports that representations on these lines had already been made to the Admiralty, and the Department has now sanctioned a revised scale of fees. The Council does not consider the fees now authorized to be adequate, and representations for their increase have been made

"Doctor" Signs on Cars

28 It will be remembered that as a wartime measure practitioners were encouraged to exhibit 'Doctor' signs on their cars to facilitate their movements in the interests of the public. Many practitioners are still exhibiting these signs on their cars despite the fact that the emergency no longer exists. The Council wishes to remind practitioners, therefore, that this practice can no longer be considered necessary or desirable, and the exhibition of "Doctor" signs on cars should be discontinued

Doctors' Maids

29 Owing to the relaxation of various wartime controls the Ministry of Labour and National Service is now unable to offer the same measure of assistance that was possible during the war to practitioners who experience difficulty in obtaining domestic help

The Council has accordingly asked various medical associations in European countries whether they can offer any help in putting British practitioners into touch with girls resident in foreign countries who are anxious to come to this country for the purpose of taking up domestic service. Unfortunately, the shortage of domestic servants is by no means restricted to Great Britain. The Austrian Medical Association has offered to compile a list of Austrian girls who are anxious to come to England for the purpose, and the Danish and Swiss Associations have also offered a limited degree of help. Practitioners desiring to employ foreign maids have been invited to communicate with the Secretary

Election of a Direct Representative on General Medical Council

30 An election will shortly be held to fill the vacancy on the General Medical Council caused by the death of Sir E. Kaye Le Fleming. As a result of a postal vote taken among the English and Welsh Representatives in the Representative Body Dr J. A. Brown (Birmingham) has been selected to receive the support of the Association in connexion with the forthcoming election

Surgical Corsets

31 The Council has discussed with the Board of Trade the possibility of relaxing the present controls on the supply of

surgical corsets. Owing to shortage of labour and materials the Board does not consider it possible at this stage to relax the restrictions. It has been agreed, however, that practitioners may give certificates for the supply of special corsets required for antenatal and postnatal conditions

Examination of Recruits to the Women's Land Army

32 As a result of representations made by the Council to the Ministry of Agriculture and Fisheries, the Department has agreed to increase the fee for the medical examination of candidates for the Women's Land Army from 5s to 10s 6d

Examinations of Dependants of Airmen

33 Representations have been made to the Air Ministry that the fees payable by the Department in cases where civilian medical practitioners are asked to examine airmen's dependants who are proceeding overseas should be increased as follows

Medical Examination	From 3s 6d for the wife, and 1s for each additional person—to 7s 6d per person examined
Vaccination	From 3s 6d to 7s 6d (including inspection)
Inoculation (No fee)	to 3s 6d (materials to be provided by the Department)
Mileage (No payment)	to 1s per mile each way after the first 2 miles

In reply the Air Ministry has explained that the examination required is simply an inspection to ensure that the individual is free from contagious or infectious disease and is otherwise fit to travel, and that each examinee will already have undergone medical examination to determine fitness for residence abroad. The Department therefore did not consider a fee of 3s 6d unreasonable but had decided to increase the fee for the inspection of additional persons from 1s to 2s 6d per head. Payment for inoculations was the responsibility of the individual, and the instructions were being amended to make this clear. Mileage would not be involved, as the applicants were required to visit the practitioners

In view of this explanation the Council has indicated to the Air Ministry that it is prepared to agree to a fee of 5s provided there is no reduction for the examination of additional persons

Remuneration of Medical Officers to Emergency Training Colleges

34 Consideration has been given to the remuneration of Medical Officers appointed to Training Colleges established for the emergency training of teachers, in connexion with which the Ministry of Education has laid down the following maximum rates for the guidance of Local Education Authorities

- 1 For medical attendance on pupils not eligible for treatment under the National Health Insurance Acts—10s 6d per session
- 2 For routine medical inspections at the end of the course, medical examinations of students referred to the Medical Officer by the Principal, and for giving general advice to the College on medical matters

Per College Session

9s 6d	in respect of each of the first 100 students
7s 6d	" " " " " second " "
5s 6d	" " " " " student in excess of 200

(A College "session" varies between 52 and 56 weeks during which time the students must work for at least 48 weeks)

It is understood that the capitation fee for treatment is now being brought into line with the present N.H.I. capitation fee. As regards the scale for services, other than treatment, the Council feels that the method employed is suitable for assessing remuneration for duties of different kinds in establishments of varying sizes. Alternative methods of payment would be by retaining fee plus a sessional fee, or by inclusive salary, and it would be difficult to lay down either a retaining fee or salary without relation to the size of the establishment. For these reasons the Council does not propose to raise any objection to the scale until it can be seen whether or not it offers an adequate remuneration for the duties involved

National Prescribers' Formulary

35 The Council in conjunction with the Council of the Pharmaceutical Society, has appointed a special Joint Committee composed of members of the medical and pharmaceutical

professions to compile a Standard Prescribers Formulary suitable for all branches of medical practice for use in connexion with the National Health Service. The Ministry of Health has accepted an invitation to appoint representatives to this committee. It is proposed that the Formulary shall be based on the formulary section of the *British Pharmaceutical Codex*.

Proposed National Health Service and the Position of Administrative Staffs and Collectors of Public Medical Services

36 The Council has endeavoured to secure from the Minister of Health an assurance that consideration would be given at the appropriate time to the position of the staffs of Public Medical Services who are likely to be displaced upon the coming into force of the National Health Service, both with regard to re-employment and compensation for loss of office. The Minister has indicated that he does not feel able to extend the provisions of the National Health Service Act regarding compensation for loss of office to the staffs of Public Medical Services. He has however expressed the desire that the fullest use should be made in the new service of experienced staff and that it would be his endeavour to see that the staffs of Public Medical Services should be found suitable employment in the new local bodies to be established.

Supplementary Clothing Coupons

37 The Council has considered the following Resolution of the Representative Body 1946

Resolved That the Council be instructed to press the Board of Trade to take such action as will improve the supply of operating gowns surgeons coats and overalls so that an issue of supplementary clothing coupons can be made with which to obtain these articles.

The Council reports that it has now been agreed by the Board of Trade that any practitioner who needs gowns in his private practice for obstetric work the treatment of venereal diseases operations or necropsies shall be entitled to obtain six surgeons operating gowns. Applications from practitioners in England and Wales should be made to the Ministry of Health from practitioners in Scotland to the Department of Health for Scotland and from practitioners in Northern Ireland to the Association.

Fees for the Administration of Anaesthetics to Persons Receiving Dental Treatment as an Additional Benefit under the National Health Insurance Acts

38 The Council has considered the fees payable to general practitioners for the administration of anaesthetics to persons receiving dental treatment as an additional benefit under the National Health Insurance Acts. The fees laid down for this purpose by the Dental Benefit Amendment Regulations (No. 2) 1946 are as follows

Administration of general anaesthetic fee per case in connexion with the extraction of

1-5 teeth	10s 0d
6-10 teeth	17s 6d
11-15 teeth	£1 5s 0d
16 or more teeth	£1 10s 0d

The Council does not consider this scale to be adequate particularly in view of the fact that the fee is per-case and not per-administration. After consulting the British Dental Association the Council recommends that the scale approved by the Joint Advisory Dental Council should be adopted with the proviso that it should be applied on a per-administration basis.

Recommendation That where practitioners are requested to administer anaesthetics to insured persons receiving dental treatment as an additional benefit under the National Health Insurance Acts the following fees should be paid

<i>Administration of general anaesthetic of 15 or less or</i>	
<i>1-5 teeth</i>	
1-5 teeth	10s 6d
6-10 teeth	£1 1s 0d
11-15 teeth	£1 11s 6d
16 or more teeth	£2 2s 0d

always provided that an increased fee shall be payable in specially difficult circumstances

Fees for Medical Certificates under the Lunacy and Mental Deficiency Acts, and for Recommendations under the Mental Treatment Act

39 The Council has considered the existing policy of the Association relating to the fees payable for certificates under the Lunacy and Mental Deficiency Acts, and for Recommendations under the Mental Treatment Act. The Council recommends

Recommendation (i) That the existing policy of the Association relating to the fees for medical certificates under the Lunacy and Mental Deficiency Acts, and for recommendations under the Mental Treatment Act, be rescinded

(ii) that there be substituted therefor the following

(1) *Fees for Medical Certificates under the Lunacy Acts*
A fee of at least two guineas should be paid

(2) *Fees for Medical Certificates under Mental Deficiency Act*
The fee for medical certificates under the Mental Deficiency Act, signed by the "usual medical attendant," should not be less than two guineas

(3) *Fees for Recommendations under Mental Treatment Act*
In cases where a recommendation is made under the Mental Treatment Act for a private patient the fee should be a matter of arrangement between the relatives and the practitioner concerned, but in public assistance cases a fee of not less than two guineas would appear to be appropriate

Fees for Certificates under the Cremation Act, 1902

40 The Council has reviewed the policy of the Association regarding the fee for the completion of certificates under the Cremation Act, 1902

Recommendation (i) That the following existing policy of the Association be rescinded

The fee for completing Form B under the Cremation Act (Certificate of Medical Attendant) should be a matter for private arrangement between the doctor and relatives concerned

The fee for completion of Form C (Confirmatory Medical Certificate) should be not less than one guinea

(ii) That there be substituted therefor the following

The fee for completing Form B (Certificate of Medical Attendant) and Form C (Confirmatory Medical Certificate) under the Cremation Act should be a matter for private arrangement.

Fees Payable to Examining Surgeons under the Factory Acts

41 The Council is glad to report that, following discussions with representatives of the Ministry of Labour and National Service on the question of the fees payable to Examining Surgeons, the Department has intimated that it proposes to recommend the following increases in the fees now paid to the British Employers Confederation where they are payable by industry, and to the Treasury where payable by the Department

	Existing Rate	Proposed Rate
<i>Examination of Young Persons</i>		
<i>(i) Examination at the factory</i>		
First case	5s 0d	7s 6d
Subsequent cases examined at the same time	2s 6d	4s 0d
<i>(ii) Examination at surgery</i>		
Each case	2s 6d	4s 0d
<i>Investigation and report on cases of Industrial Disease or Accident</i>		
First case	10s 6d	£1 1s 0d
Subsequent cases (where they arise in the same dept. of the factory and are dealt with at the same time)	5s	6d

Examinations of cases under the Dangerous Trades Regulations

First case	2s	6d	7s	6d
Subsequent cases	1s	0d	2s	6d

Mileage

At the rate of 1s per mile or part of a mile (each way) beyond a radius of 2 miles

Remuneration of Post Office Medical Officers

42 Consideration has been given to the following Minute 45 of the Representative Body, 1946

That the Council take steps to secure an increase of the visiting fee from 3s 6d to 5s and the abolition of the over-riding quarterly maximum of 14s paid by the Post Office to Post Office medical officers for attendance on postal employees living out of the district of their employment "

The Council has reviewed the whole question of the terms of service of Post Office medical officers and has made representations to the Postmaster General for a substantial increase in the capitation and other fees payable to Post Office medical officers. It is proposed also to discuss with the chief medical officer a number of administrative matters relating to the work of Post Office medical officers

In the meantime, the Postmaster General has indicated that it is proposed to grant a temporary increase in the capitation payment of 5s (bringing the fee to 18s 3d) with retrospective effect to Jan 1 1946

Remuneration of Ship Surgeons

43 The Council proposes to make representations to the Shipping Federation with a view to securing the adoption by all shipping companies of improved minimum rates of remuneration for ship surgeons employed on a permanent basis together with adequate provision for superannuation benefits for ship surgeons, and for free refresher courses on full pay and allowances

Remuneration of Members of Advisory Panels under the Disabled Persons (Employment) Act, 1944

44 The Council has made representations to the Ministry of Labour that the fee payable to members of Advisory Panels under the Disabled Persons (Employment) Act, 1944 be increased from £1 11s 6d to £2 5s per session

Regional Medical Officers

45 The Council is making representations to the Ministry of Health that the fee payable to Regional Medical Officers employed on a sessional basis be increased from £2 12s 6d to £3 3s per session

Part time Medical Officers to Small Establishments of the Ministry of Supply

46 The Ministry of Supply has decided to discontinue payment of its part-time medical officers to small establishments on a per-case basis, and to remunerate the practitioner concerned on a sessional basis. As a result of representations made by the Council, the Department has adopted the following scale

For an attendance up to half an hour	£1	0s	0d
Over half an hour up to 1 hour	£1	10s	0d
Over 1 hour, up to 1½ hours	£1	15s	0d
Over 1½ hours up to 2½ hours	£2	5s	0d
Over 2½ hours	£2	15s	0d

In cases involving attendance of a casual nature the Ministry has accepted the scale recommended to the War Office for occasional attendances upon soldiers on leave—i.e., consultation, 5s, day visit, 7s 6d, night visit, £1 1s with mileage at the rate of 1s per mile (each way) beyond a radius of 2 miles

INDUSTRIAL MEDICINE

47 The Annual Representative Meeting 1946, set up a new Standing Committee to consider and to report on matters affecting the practice of medicine in industry. The Minister of Labour has asked his Industrial Health Advisory Committee to prepare a practical scheme for the development of an industrial

medical service. The Council is preparing a memorandum on this matter

The Council has been informed of the desire of the National Ophthalmic Treatment Board to make the facilities of the National Eye Service available to the fullest possible extent to workers employed in industrial undertakings, and it has given advice on the practical steps which might be taken to attain this object. It has also considered a scheme for the provision in factories of a comprehensive ophthalmic service, with special emphasis on the treatment of injuries to the eye. It has approved the experimental establishment of ophthalmic services in industry for the examination of refractions, the supply of spectacles and such minor treatment as is at present provided by the National Eye Service, but it considers that the moment is not opportune for the establishment of a comprehensive accident service

National Insurance (Industrial Injuries) Act, 1946

The Council has noted with satisfaction that the National Insurance (Industrial Injuries) Act, 1946, gave effect to many of the proposals made by the Association for the modification of the Workmen's Compensation Act

REHABILITATION**Pensioners and Rehabilitation**

48 The Council has considered the question of the fitness for work and earning capacity of patients who are undergoing rehabilitation treatment in an institution

Under the National Insurance (Industrial Injuries) Act 1945, when an injured person enters any hospital or similar institution for the purpose of receiving approved hospital treatment his incapacity is assessed at 100% even if the degree of disablement in respect of which a pension is payable is less than 100%. Treatment allowances are made accordingly. If however, the patient receives payment for any work he does while he is in hospital a reduction is made in the treatment allowances. This is an important matter in the problem of rehabilitation, and the Council is of opinion that a scheme of graduated remunerative employment should be provided for during the transition stage from hospital to workshop without prejudice to the patient's treatment allowances

The Council has accordingly made representations to the Ministry of Health that

1 Provision should be made for persons receiving rehabilitation treatment in an institution to undertake remunerative employment while under treatment on a scale increasing with his physical capability,

2 The patient should be allowed earnings for such work up to a maximum of 80% of his normal pre injury earnings

3 In view of the fact that such employment offers an incentive to increased working and earning capacity and is likely to ensure earlier return to ordinary employment, no deductions should be made from treatment allowances on account of earnings for such employment

NATIONAL HEALTH INSURANCE**Insurance Capitation Fee**

49 The application, in the early part of 1946, for an increase in the capitation fee was the first of a series of events which reached a climax in the autumn and eventually resulted in a settlement which was acceptable to the general body of insurance practitioners. The Spens Committee's report was issued soon after the application was made, and it was regarded as the basis upon which a settlement of the capitation fee could be reached. The Minister of Health, however, sought to impose the condition that negotiations for remuneration under the future health service must precede consideration of proper remuneration for the current National Health Insurance Service. Interviews and correspondence with the Ministry on the subject concluded with an intimation from the Ministry that, as this condition was unacceptable to the profession, the Minister had decided to increase the fee to 12s 6d (from Jan 1, 1946) while negotiations were proceeding on the long term agreement. This was a challenge which had to be accepted and preparations were made for a general withdrawal from the service unless the Minister was willing fully to apply the Spens report

to the current capitation fee, with effect from Jan 1 1946 or refer the matter to the Spens Committee or a representative section of that committee or other agreed independent body eventually the Minister agreed to discussions taking place on the basis of the Spens report with special reference to the current capitation fee.

The terms of the settlement with effect from Jan 1 1946 are

1 The increase recommended by the Spens Committee excluding the special measures affecting rural practices, is taken as equivalent to an average for all general practitioners of £162 (This if taken in full would equal 3s 3d on the capitation fee.)

2 Of this increase 90% is accepted by the Ministry as attributable to insurance practice. This figure is based on the view that while undoubtedly by far the largest part of the underpayment of doctors before the war as found by the Spens Committee is applicable to health insurance remuneration it is nevertheless fair to attribute a small part of this underpayment to other practice.

3 Allowing betterment at 30% on the gross fee we get	we get
Capitation fee (1939)	s d
Spens increase (90% of 3s 3d)	9 0
	2 11
	11 11
Betterment (30%)	3 7
	15 6

The betterment figure takes account of increases in medical practice expenses and cost of living since 1939.

The Ministry has said that these calculations involve figures which will have a bearing on any future negotiations concerning the new service, but it has been made clear to the Ministry that acceptance by the profession is without prejudice to the remuneration in any future service and to the factors to be employed in its assessment.

Mileage

50 There has also been an increase in the Mileage Fund so as to take account of the special measures for rural practitioners recommended in the Spens report. The amount that is to be added to the Mileage Fund (including the Highlands and Islands Fund) is £236 280 making a total of £615 380 or 72% above the total in 1939.

Dispensing Capitation Fee

51 An application has been made for a substantial increase in the capitation fee for insured patients for whom a doctor is required to supply all necessary medicines and prescribed appliances.

Postgraduate Courses for Insurance Practitioners

52 The Ministry of Health has reintroduced the postgraduate courses for insurance practitioners on the lines of similar courses available in 1938-9 pending the provision of such facilities under the proposed National Health Service. The courses are made possible by the willingness on the part of the universities to continue during 1947 the courses of postgraduate instruction for demobilized doctors.

As in the case of similar courses before the war the syllabus will be subject to the general approval of the Minister of Health. An insurance practitioner will be given freedom of choice of the centres where courses are available. In the case of a specialized subject the Ministry will exercise its veto only in cases where the subject is considered to be inappropriate.

An insurance practitioner will be allowed to take one two week course during 1947 or two one week courses. To be eligible for financial assistance he must (a) have at least 300 insured patients on his list or 100 if practising in an urban area or 150 if practising in a rural area (b) have been registered for at least three years and (c) not have entered one of the courses for demobilized officers.

Financial assistance towards the expenses of insurance practitioners will be paid out of National Health Service funds. Such expenses will include a grant for the provision of a laboratory where necessary, the fee for the course, the cost of travelling to and from the course and the cost of the expenses.

Medical Records of Demobilized Persons

53 Arrangements have been made for doctors to obtain a précis of the medical record of a demobilized person subject to the patient's permission being obtained. These Service medical histories are held by and obtainable from the appropriate Service Department.

Penicillin

54 With a view to ensuring the economic use of penicillin the Ministry has been asked to make available to insurance practitioners direct facilities for the examination of pathological specimens.

Certification

55 An increasing number of employers are requiring the production of NHI certificates as evidence of incapacity for work. This is regarded as an improper practice, especially in view of the statement printed on every official form—"these certificates are to be used for National Health Insurance purposes only." The Insurance Acts Committee has on many occasions asked the Ministry to take appropriate action in this matter, and has recently received a reiteration of previous replies to the effect that the Department does not feel that it is practicable to prohibit this practice, which could and should be stopped. The subject is again being pursued with the Ministry.

Recruitment of Doctors—Protection of Practices

56 At the request of the Panel Conference the question of hardship among doctors who are being called up for the Forces, either as specialists or for general duty, has been under consideration. It is understood that the number of doctors in general practice now being compulsorily recruited is extremely small, and it is doubtful whether the situation calls for any widespread protection of practices arrangement. It is felt that the interests of general practitioners are being carefully watched by their colleagues on Local Medical War Committees and by the Services Committee of the Central Medical War Committee and that satisfactory arrangements of an *ad hoc* nature could be made for the protection of the practice of any doctor who is in need of such assistance.

Shortage of Medicaments

57 The attention of the Ministry of Health has been drawn to the inadequacy of the present supplies of liquid paraffin, olive oil, glucose, and tulle dressings.

SPECIAL PRACTICE

Consultant-Specialist Spens Committee

58 The Minister of Health has expressed his intention of setting up a committee under the chairmanship of Sir Will Spens to consider the range of remuneration of consultants and specialists. It will consist of five representatives of the medical profession, five lay members selected by the Minister of Health and the Secretary of State for Scotland, and an independent chairman. The views of the Association were invited upon the terms of reference of the committee, and after consultation with representatives of the English Royal Colleges and the Scottish Royal Corporations it was suggested to the Minister that the terms of reference should be as follows:

"To consider, after obtaining whatever information and evidence it thinks fit, what ought to be the range of total professional remuneration of registered medical practitioners engaged in the different branches of consultant or specialist practice in any publicly organized hospital and specialist service, to consider this with due regard to what have been the financial expectations of consultant and specialist practice in the past, to the financial expectations in other branches of medical practice, to the necessary postgraduate training and qualifications required, and to the desirability of maintaining the proper social and economic status of specialist practice and its power to attract a suitable type of recruit having regard to other forms of medical practice, and to make recommendations.

The Minister has accepted this suggestion and proposes to set up the new committee without delay. The three English

Royal Colleges and the Association have jointly nominated for membership of the committee Lord Moran of Manton, Prof Harry Platt (Manchester) Dr S Cochrane Shanks (London) and Mr J R H Turton (Hove)

A special committee—the Evidence Committee on Remuneration of Consultants and Specialists—has been appointed to collaborate in the preparation of evidence on behalf of consultants and specialists generally. The committee consists of the Consultant and Specialist Services Subcommittee of the Negotiating Committee (enlarged by the addition of six non-teaching consultants and six additional representatives of the Scottish Royal Corporations) and the Consultant Services Subcommittee of the Consultant Services (Beveridge) Committee

Part-time Consultants and Specialists

59 Consideration has been given by the Council to the following Minute 49 of the A R M 1946

Min 49 Resolved That, whilst approving paragraph 51, this meeting requests Council to take action passed by A R M July, 1945 (Min 71), in order to allay the present widespread apprehension

Minute 71 of the A R M, 1945, requested the Council to inform part-time consultants and specialists on hospital staffs what steps were being taken to safeguard their position and future employment, and was taken into consideration by the Council in establishing the constitution of the new Consultants and Specialists Committee, which provides for representation of part-time consultants and specialists. The Council endorses the opinion expressed in paragraph 51 of the Annual Report to the A R M 1946 that the interests of part-time consultants and specialists are best safeguarded by their representation on the Consultants and Specialists Committee and it is taking steps to ensure that the existence, within the Association, of the Roll of Part-time Consultants, and the right of members included in that roll to participate in the election of five representatives to the Consultants and Specialists Committee are brought to the notice of all concerned

Employment of Junior Specialists Released from H M Forces

60 Arising out of Council's approval of a recommendation of the Dermatologists Group Committee a communication has been sent to the Director of the British Post Graduate Federation drawing attention to the difficulties encountered by ex-Service practitioners under the Government's postgraduate scheme, and emphasizing the need for the training of dermatologists. It urged that supernumerary registrarships should be created wherever possible to provide adequate training facilities in dermatology for junior specialists demobilized from the Services, who should be encouraged while holding these appointments to study general medicine up to the M R C P standard

The Standing Committee on Dermatology of the Royal College of Physicians is being informed of the Council's view that in all dermatological clinics of teaching hospitals there should be available one or more registrarships, to which practitioners would be appointed for one year having annual tenure and subject to the possibility of re-election. The hope was expressed that, while under present circumstances these appointments would usually be given to ex-Servicemen, this class of practitioner would continue to receive special consideration under full peacetime conditions

Training of Dermatologists in H M Forces

61 The Council has approved a recommendation of the Dermatologists Group Committee concerning the training of medical officers in H M Forces who wish to become specialists in dermatology as distinct from venereology. The Directors-General of the three fighting Services have accordingly been invited to recognize the general trend to regard dermatology as a separate specialty divorced from venereology and requested to give consideration to this principle in the planning of the post-war organization of the medical services of the armed Forces

Rules for the Government of Groups and Consultants Part-time Consultants' Rolls

62 In consequence of the replacement of the Specialist Practice Committee by the Consultants and Specialists Committee the Council has found it necessary to revise the Rules for the Government of Groups and to establish new Rules relating to Rolls of Consultants and Part-time Consultants. In this connexion it had before it the following Minute of the A R M 1946

48 Proposed by West Suffolk (H M Bird) That reference to paragraph 50 of the Council's Report local to the Consultant and Specialist Groups should be open to a vote of consultants and specialists whether whole or part time

The Council is of the opinion that, while it is desirable that provision should be made for regional meetings open to whole-time and part-time consultants or specialists and to members and non-members of the Association, it is also desirable that the right of members of the Consultants Roll to hold seats at regional meetings should be maintained

Consultant Services Committee

63 An inquiry has been received from the Royal College of Physicians as to the effect the establishment of the Consultants and Specialists Group Committee would have upon the Consultants' representation on the Consultant Services Committee of the College which had previously included all members of the Consultants and Specialists Group Committee for England and Wales. To meet the new situation the Council has informed the College that members of the Consultants and Specialists Committee elected regionally for England and Wales, together with the Chairman of Council and the Secretary are nominated as members of the Consultant Services Committee

Post mortem Facilities

64 The following principles for the provision of a satisfactory post-mortem service have been agreed with the Association of Clinical Pathologists, the Coroners Society and the Medico Legal Society

(a) That arrangements be made to ensure that all necropsies undertaken at the request of coroners be performed by competent practitioners having special experience and training in the performance of necropsies and further having at their disposal facilities of a pathological laboratory, always providing that the selection of the practitioner shall be made at the discretion of the coroner

(b) That all necropsies should be made in properly equipped post mortem rooms such as are found in hospitals

(c) That the performance of coroners' necropsies should be centralized and so arranged that the cadaver be brought to the practitioner rather than the practitioner to the cadaver

(d) That mortuaries for the temporary housing of cadavers near the place of death will continue to be required but these should not be equipped for the performance of necropsies

(e) That arrangements be made for a copy of the coroners' report on a necropsy to be sent to the practitioner in previous attendance on the case

(f) That the date and time of a necropsy be notified by the coroner to the practitioner in previous attendance on the case in order that he may be given an opportunity to attend the examination

These recommendations will be incorporated in the report of the Association's Coroners Acts Committee

Safeguards for Consultants and Specialists under a National Health Service

65 The A R M 1946 approved a number of proposals submitted by the Council for safeguarding the position of consultants and specialists under a National Health Service. The Council has considered the matter afresh in the light of certain suggestions made at that meeting (Minute 51 of A R M) and has made appropriate amendments to meet the position. The report on this matter has now been referred to the Negotiating Committee, and will be taken into consideration in the discussions with the Department

Pensions Appeal Tribunals Rules

66 In its report to the A.R.M. 1946 the Council indicated that it was not satisfied with the reply received from the Lord Chancellor's office to representations for an increase in fees for medical witnesses and certificates under the Pensions Appeal Tribunals (England and Wales) Rules 1943. On further consideration, however, it was felt that there had been some understanding of the Lord Chancellor's recommendation and approval has accordingly been given to the following increases in the maximum fees payable under Part II of the Second Schedule of the Rules

- (1) To increase from £2 2s to £3 3s the fee for the attendance of a medical witness before the Tribunal
- (2) To increase from 5s to £1 1s the fee for medical certificates and reports obtained by the appellant

Occupational Therapy and Mental Nurses

67 Representations were made to the Ministry of Health in support of a resolution of the Royal Medico-Psychological Association expressing the opinion that occupational therapy when carried out by a mental nurse is a nursing duty and should be recognized as such. In reply the Ministry has stated that by agreement between the Association of Occupational Therapists and the Mental Hospitals Association the question of the salary and conditions of service of occupational therapists has been referred to the Joint Negotiation Committee on Salaries and Wages (Hospital Staffs), and that it has been agreed that a qualified mental nurse holding a post as occupational therapist should be regarded primarily as an occupational therapist rather than as a mental nurse.

The Council has expressed the opinion that, while it is desirable that the mental nurses curriculum should include some training in occupational therapy, only those recognized by the appropriate body as being fully trained and qualified in occupational therapy should be entitled to describe themselves as occupational therapists and to occupy posts as such.

Salaries of E.M.S. Specialists

68 As it is likely that appointments of pathologists under the E.M.S. will continue until the introduction of a National Health Service, representations have been made to the Ministry of Health that such pathologists should continue to receive regular increments of pay on reaching the maximum in their present range of salary. The Ministry has replied that authority had been obtained for further increases in the remuneration of officers remaining enrolled in the Emergency Medical Service pending the inception of the National Health Service. The basic ranges of Specialists (£800-£900), Medical Officers (£550-£650) and the Junior Medical Officers (£350-£450) will be extended by annual increments of £30 until the Emergency Medical Service is wound up.

The Council has also considered the position of E.M.S. officers who have been paid throughout at fixed basic salaries above £800 because of their additional responsibility as Superintendents of Hospitals, Officers-in-Charge of Medical or Surgical Divisions etc. the amounts above £800 being in the nature of allowances. A lump-sum increase of £100 is now authorized for officers in this group who had completed four years in their present posts prior to July 1 1946 £80 for three years and £50 for two years.

The arrangement applies not only to pathologists but also to other specialists and medical officers whose services in the E.M.S. are retained.

Scales of Fees for Radiological Services

69 The Council has approved the following scale of fees for radiological cases referred by local authorities to voluntary hospitals in substitution for that which has been in existence since 1938

	£	s	d
Examination of chest upper and lower extremities (one area)	2	2	0
Pelvimetry antenatal examinations without pelvic examinations of teeth hip pelvis spine (one area) skull urinary tract, and gall bladder	3	3	0

In cases requiring special examinations—e.g., stereography, tomography, and all examinations requiring contrast media the fee shall be arranged between the radiologist and the local authority.

This is a special scale of reduced terms for contract work and should not be taken as constituting the fee for private practice.

Consideration has also been given to the scale of modified charges for radiological services at hospitals approved in 1939. This scale, which was based upon an average of one-half the fees commonly charged for similar private work in the district, recommended minimum charges for patients examined in hospital who were within certain income limits, provided they were being seen by other consultants at similarly reduced fees. As the Council is of the opinion that the scale no longer serves any useful purpose and that the present time is inopportune for the formulation of a revised scale of fees of this kind it has abolished the scale.

Rules for the Government of the Consultants and Part-time Consultants' Rolls

70 The Council has further considered the exclusion from membership of the Roll of those members of the Association who are whole-time officers in the public health service. The Council has decided that clinicians in the public health service should not now be excluded from the Roll and has amended the Rules accordingly.

Access to Ancillary Departments of Hospitals

71 The Council has considered an amendment to paragraph 57 of its last report carried by the A.R.M. 19-6 to the effect that experience having shown that the advantages of the policy of the 'open door' outweigh the disadvantages it should be adopted as a uniform system throughout the country.

The Consultants and Specialists Committee and individual Group Committees have been consulted and the Council is of opinion that a distinction should be made between diagnosis and therapeutic facilities, and considers that facilities for diagnosis and treatment control should be made directly available to general practitioners whether in hospital or elsewhere.

Problems and Needs of Certain Groups in Academic Medicine

72 A memorandum on the problems and needs of certain groups in academic medicine has been prepared by the Committee of the Group of Full-time Non-professional Medical Teachers, Laboratory and Research Workers. This memorandum, with the approval of Council has been sent to the University Grants Committee.

Fees Paid by Government Departments for the Services of Medical Specialists

73 Consideration has been given by the Council to Minutes 55-57 of the A.R.M., 1946 referring back that part of its Annual Report relating to the revised scale of fees offered to the Ministry of Pensions for cases referred to specialists. Information has been obtained from the various Government Departments relating to fees paid by them to consultants and specialists and regard has been had to the agreement with the Ministry of Health and local authorities of the revised scale of remuneration for medical practitioners employed part-time by local authorities. The Council considers this scale to be appropriate one for adoption by all Government Departments employing specialists on a sessional basis and instructions have been given for the necessary representations to be made.

HOSPITALS

Payment of Voluntary Hospital Staffs

74 The Council has continued its consideration of the desirability of adequate salaries being paid to the visiting specialist staffs of voluntary hospitals during the interim period before the introduction of the National Health Service. In November 1946 it decided to recommend that without prejudice to any arrangements these staffs should receive salaries assessed on a basis of five guineas for a session.

d a circular conveying this recommendation was issued to Medical Staff Committees. The matter is now being reconsidered in the light of the agreed scale of fees recently negotiated for part-time work undertaken by consultants and specialists for local authorities and discussions on the subject are being held with the British Hospitals Association. The Ministry of Health has been urged to provide financial assistance to those hospitals which are unable to pay adequate salaries out of their own funds. The Council hopes that it may very soon be in a position to communicate again with Medical Staff Committees, announcing arrangements agreed with the Ministry and with the B.H.A.

Disabled Persons (Employment) Act, 1944

75 The Council has been consulted by the Ministry of Health regarding a new scheme recommended by the Medical Advisory Committee of the National Advisory Council on the Employment of the Disabled for the purpose of bringing hospitals and employment exchanges into close relation in the matter of placing disabled persons in employment. This scheme includes two proposals. The first is to introduce a new and greatly simplified form of medical certificate for use by hospitals in respect of patients about to be discharged with some residual disability. This form will be completed by a member of the medical staff at the hospital and sent to the employment exchange for use in connexion with any application made by the patient under the Disabled Persons (Employment) Act for registration or for advice on training or employment. For the completion of this short form of certificate a fee of 2s 6d is proposed.

The second proposal is to set up Medical Interviewing Committees to advise on cases in which a more detailed examination and report prove to be necessary. Initially these MICs consisting of two members, will be established only experimentally at selected hospitals in a few areas. Two doctors holding responsible positions in the hospital, and having some knowledge of the problem of rehabilitation and resettlement will be appointed to the MIC, the one to act as Chairman and the other as Deputy Chairman in his absence. The second member of the MIC will be a doctor with industrial experience—e.g. a factory examining surgeon, a general practitioner with knowledge of industry and occupational health, or an industrial medical officer. A Disablement Resettlement Officer will attend the Committee and discuss with it the industrial implications of the medical findings and recommendations. Exceptionally, at the discretion of the Chairman, arrangements will be made for a specialist to attend the Committee or for a patient to be referred to him. General medical practitioners will be informed of the MIC facilities and encouraged to refer patients in need of advice regarding employment. The fees proposed for those serving on the MICs are under discussion.

Hospital Treatment of Ministry of Pensions Patients

76 The Ministry of Pensions following the example of the Ministry of Education, offered to pay for hospital treatment of patients for whom it is responsible at the rates set out in Ministry of Education Circular 102 with which the Representative Body expressed dissatisfaction last July. Now that decisions have been taken as to the revised terms to be recommended to the Ministry of Education the Council is urging the Ministry of Pensions to alter its terms in accordance with these new proposals.

House Officers—Restriction on Future Practice

77 The Council has had under consideration the question of restrictions being placed on a house officer in regard to practice in the area served by the hospital after the termination of his hospital appointment. Its view is that it is undesirable that the terms of service of a resident hospital officer should include any restrictive condition relative to future practice in the locality.

Provident Funds

78 The Council has suggested to the Nuffield Provident Guarantee Fund the advisability of the Classification of Operations drawn up by the Fund in agreement with the Association being revised. It has consulted the Guarantee Fund about the possibility of providing provident fund cover for treatment of

mental conditions by some of the newer techniques such as pre-frontal leucotomy and convulsion therapy. The Guarantee Fund has replied that while it considers it impossible to admit liability for treatment of all mental disease the governing body of a provident fund has discretion to make ex-gratia payments, on the advice of its medical referee, towards the cost of treatment of mental disorder before certification. The Council has also taken up with the Guarantee Fund the question of raising the age limit for membership of provident funds above 60 and has suggested the desirability of the age limit being the highest compatible with the actuarial possibilities.

Liaison with the Nursing Profession

79 The Liaison Committee with the Royal College of Nursing, the establishment of which was reported by the Council last year has held a number of useful meetings. Among the matters it is considering are the professional status of the nurse, the doctor-nurse relationship, and the qualifications which should be required of a candidate for admission to a course of training for the nursing profession.

PUBLIC HEALTH

Salaries in the Public Health Service

80 Discussions have just begun between the Negotiating Committee and the Minister of Health on the sections in the National Health Service Act 1946, relating to the Public Health Service including Section 66, which empowers the Minister to make regulations with respect to the qualifications, remuneration, and conditions of service of, among others, medical officers in the service of local health authorities. It is intended that the scales drawn up by the Council and referred to in paragraph 130 of the Supplementary Annual Report of Council to the A.R.M., 1946 should form the basis of the negotiations on remuneration and conditions of service for all medical officers in the public health service. As only County Councils and County Borough Councils are local health authorities under the Act the Negotiating Committee has been requested to deal with these matters in relation to medical officers employed by other local authorities as well.

The Council has received an invitation to participate in discussions between the local authority associations, the employers' side of the National Joint Council for Local Authorities Administrative, Professional, Technical and Clerical Services, and the societies of chief officers on the salaries of chief officers in the local government service, including medical officers of health as distinct from other medical officers. The Council has not accepted the invitation, as acceptance would involve a departure from the policy established by the Askwith agreement of dealing with medical officers as a whole. The Council has however agreed to send observers to the discussions, which are proceeding. As a result of this development it has been emphasized to the Negotiating Committee that in any negotiations the Public Health Service should be regarded as a whole and the remuneration of all its members negotiated together by the same negotiating machinery.

In order that the existence of proposals for future remuneration in the Public Health Service might receive publicity among local authorities, copies of the scales referred to above have been forwarded to all whole time medical officers of health. It was felt that this action might also help to correct any impression that the revised Askwith scales were intended to be permanent.

The Interim Revision of the Askwith scales which came into operation as from April 1 1946, has never been regarded as satisfactory for the senior grades, many of whom under its terms have benefited only to a small extent, while others have not benefited at all. It was accepted as an emergency measure in order to secure an immediate improvement for those in the lower grades. The Negotiating Committee has accordingly been requested to take steps to secure a substantial all round improvement.

Salaries in the Mental Health Service

81 As a sequel to the agreement with the local authority associations on a revision of the Askwith scales on a percentage basis and as an interim measure pending the settlement of new

permanent scales, the following agreement has been concluded with the Mental Hospitals Association for those medical officers employed at mental hospitals and mental deficiency institutions not coming within the scope of the Askwith interim revision

(1) The salaries of medical officers in mental hospitals and institutions for the mentally defective (other than assistant medical officers already dealt with in the interim revision of the Askwith memorandum) shall be increased as follows

(a) if the datum salary does not exceed £700, by 30% of that salary,

(b) if the datum salary exceeds £700, but does not exceed £1,000, by 20% of that salary

(c) if the datum salary exceeds £1,000, by 10% of that salary

provided that no officer shall have an automatic entitlement to a total salary greater than that produced by the addition to the maximum of the scale of pay as at Sept 3 1939, attached to the position he occupies of the appropriate percentage increase of the datum salary for the position

(2) For the purposes of the foregoing paragraph datum salary shall,

(a) subject to adjustment as provided in (c) below, be for officers in service on Sept 3, 1939 (and continuously employed thereafter to the date of issue of this Memorandum) the minimum of the scale of salary attached to the material position at Sept 3 1939,

(b) subject to adjustment as provided in (c) below, be for officers appointed after Sept 3, 1939 the minimum of the scale of salary attached to the material position either at Sept 3, 1939, or at the date of appointment, whichever is the lower

Note to (a) and (b)

(i) Wartime service shall not be regarded as breaking the continuity of appointment

(ii) Where there is no scale and the officer has been in office for some years regard should be had to increments, which he has received during the few years preceding 1939, for the purpose of determining a national scale. If there have been no increments the salary in operation is the commencing salary for the purposes of this agreement

(c) be assessed on a resident basis and shall be the net cash amount remaining after (A) deduction of the individually agreed charges for board, lodging, and washing where gross salaries subject to deductions for residential amenities if provided, are payable and/or (B) exclusion of the value of emoluments provided in kind or services,

(d) not include any payment made in respect of possession of the DPM

(3) Individual cases where there is doubt should be referred for joint consideration by the Mental Hospitals Association (or the employing authority concerned if not a member of the Mental Hospitals Association) and the British Medical Association

(4) The foregoing arrangements, which are without prejudice to any subsequent negotiations upon scales of remuneration in the National Health Service and are in addition to war bonus, are to have effect as from April 1 1946

(5) Marginal adjustments shall be made to ensure that an officer to whom a 20% increase applies shall receive a revised salary of not less than £910 per annum, and that an officer to whom a 10% increase applies shall receive a revised salary of not less than £1,200 per annum, and in the case of incremental scales the amount of the increase, as adjusted be applied throughout the scale

(6) In cases where present salaries are such as to disqualify their recipients either in whole or in part, from receipt of the salary increases now agreed employing authorities clearly have discretion to review existing rates of remuneration

The above revision took effect as from April 1 1946. It is similar so far as the percentages are concerned to the Interim Revision of the Askwith Memorandum and as in the case of the latter revision the Council has requested the Negotiating Committee to endeavour to secure a further interim improvement

Practitioners Employed Part-time by Local Authorities

82 The Council has held conferences, under the aegis of the Ministry of Health with the local authority associations with a view to obtaining their agreement to the scale approved by the ARM 1946 for the remuneration of medical practitioners employed part-time by local authorities. Agreement was ultimately reached on a scale which, although it does not

entirely correspond with that approved by the ARM, does represent a considerable advance on the old scale, and in some respects a very considerable advance on the remuneration actually paid by individual local authorities. The local authority associations have recommended their constituent authorities to adopt the scale with effect from Nov 1, 1946. They realize that this agreed scale like the revision of the Askwith memorandum for whole-time medical officers, cannot be regarded as more than an interim arrangement without prejudice to future negotiations, and they have so informed their constituent authorities

In order that the agreed scale might be circulated and brought into operation at the earliest possible moment the Council gave its approval pending confirmation by the Annual Representative Meeting

Recommendation That notwithstanding the scale adopted by the ARM, 1946, for the remuneration by local authorities of medical practitioners employed by them on a part-time basis, the scale set out below be approved as an interim measure dating from Nov 1, 1946 and without prejudice to future negotiations

REMUNERATION ON A SESSIONAL BASIS FOR SESSIONS OF NORMALLY 1½ TO 2½ HOURS

1 *Consultants and Specialists*—For all regular consultant and specialist sessions at hospitals and clinics, including (a) administration of anaesthetics, (b) treatment of venereal diseases, (c) x-ray examination and treatment, including ringworm, (d) adenoid and tonsil operations, (e) examination and certification of blind school children, (f) ophthalmic work for school children. Regular weekly individual, occasional, or additional sessions and emergency attendances £4 4s per session or attendance. These rates are intended for application to all persons possessing the necessary qualifications and experience, and it is recognized that higher remuneration should be paid where senior consultants are required for work carrying special responsibilities. A reduced fee of 2½ guineas should be paid for sessions of not more than one hour—i.e., which do not normally exceed one hour

Mileage—A mileage allowance of 1s per mile each way should be paid a medical practitioner for every mile outside a radius of two miles calculated from his home or from any centre from which he practises, whichever is the less, and provided that no charge shall be made in respect of any distance travelled for which he receives or has claimed an allowance otherwise

2 *General Practitioners*—Regular weekly individual, occasional, or additional sessions and emergency attendances £2 5s per session or attendance. A reduced fee of £1 10s should be paid for sessions of not more than one hour—i.e., which do not normally exceed one hour

3 *Refractionists*—Where a local authority enters into an arrangement with any medical practitioner to perform clinical refraction work only, the rate of pay for such work should in all cases be £2 17s 6d per session

REMUNERATION ON A PAYMENT-PER-CASE BASIS

Consultants and Specialists

4 *Surgical Operations*—The fee payable to a surgeon not under contract with the local authority and called in to operate in an emergency, including emergency domiciliary obstetrical operations, should be related to the services rendered, and should not in any case be less than £5 5s for a minor operation and £10 10s for a major operation with a mileage allowance as proposed in section 1. Where an emergency operation is performed as an immediate result of a consultation and during the same visit, only the operation fee, and mileage as proposed in section 1 shall be paid

5 *Consultations*—The fee payable for a consultation at the request of a local authority for work not covered under section 1 should be £4 4s and a mileage allowance as proposed in section 1 shall also be paid

6 *X-ray Treatment of Ringworm*—Where the local authority refers cases to the radiologist at his private clinic £4 4s per case

7 *Blind Persons Act Certificates*—In all cases where sessional arrangements are impracticable the fee should be £2 2s and a mileage allowance as proposed in section 1

General Practitioners

8 *Antenatal and Postnatal Examination*—(i) 7s 6d for each antenatal or postnatal examination (ii) 12s 6d for each examination and report to the local authority if requested by the local authority

9 *Diphtheria Immunization*—(i) The material to without cost by the local authority (ii) Fee for

at a doctor's surgery 3s 6d per injection (iii) Fee for visiting a child at home and giving injections there 6s a visit (iv) Mileage would not usually be paid in respect of visits to the patient's home, it being contemplated that normally such visits will occur in the course of the doctor's practice, but in exceptional cases there should be a mileage allowance as proposed in section 1

Administration of Anaesthetics

10 For the administration of an anaesthetic the fee should depend on the length of the operation and on the anaesthetic used and be from £1 10s

Other Services

11 For services not mentioned above, for example, lectures in respect of consultants, specialists, and general practitioners the rate of remuneration should be arranged after consultation between the local authority and the local Division or Branch of the British Medical Association

Advisory Committee

12 The Advisory Committee established under Part X of the Askwith Agreement shall hear and advise upon any applications for the settlement of differences or the clarification of points of obscurity

Saving for Better Conditions

13 Nothing in these recommendations shall prevent a medical practitioner from continuing his present contractual arrangements with a local authority in lieu of those enumerated above

National Joint Council for Local Authorities

83 The Council's attention has been drawn to attempts made by certain local authorities to apply to medical officers a scheme prepared by the National Joint Council for Local Authorities Administrative, Professional, Technical, and Clerical Services relating to the remuneration and conditions of service of such staff. The Council's attitude is that medical officers, for whom the Association is the recognized negotiating body where salaries and conditions of service are concerned, are outside the province of the National Joint Council, on which in any event the Association is not represented. Steps have been taken to secure official recognition of this view

Milk

84 As instructed by the A R M, 1946, the Council has conveyed the following resolution to the Ministry of Health and also to the Department of Health for Scotland

"119 Ideally all milk should be obtained from disease free herds under the best hygienic conditions. In the meantime all milk should be pasteurized or, where efficient pasteurization is not available, boiled, and that this should be emphasized immediately to the Minister as a matter of urgent national importance

The Ministry of Food has appointed a Committee with the following terms of reference

'To examine the distribution of liquid milk from the point at which it leaves the farm to the point at which it is received by the consumer or manufacturer and to advise on any changes which are necessary to ensure that clean, safe milk is delivered as efficiently and cheaply as possible'

At the invitation of the Ministry a deputation from the Council attended before the Committee to present the Association's views on clean milk

Public Assistance District Medical Officers

85 As a result of the National Insurance Act and the National Health Service Act, few, if any, duties will remain to be carried out by Public Assistance District Medical Officers. The Council is of opinion that, in order to avoid any risk of compensation being prejudiced by reduced remuneration resulting from a diminution of duties, it is desirable that the service should be wound up, that the former duties of District Medical Officers should be absorbed into the National Health Service, and that adequate compensation for loss of time should be paid to the medical officers for loss of office, the compensation being based on the remuneration received before the winding up. The Negotiating Committee's attention has been drawn to this view

Education Act

86 The A R M 1946, passed the following resolution

175 That this meeting is dissatisfied with the payments for in patient treatment of children under the Education Act and presses the Council to draw up an equitable scale of remuneration

The Council had intended, when the scale for local authority part time work generally was settled, to reopen with the Ministry of Education the subject of fees payable by local education authorities for the treatment of school children. Now that the scale has been agreed proposals based as far as possible on it have been submitted to the Ministry for the revision of the fees for the treatment of school children

Trade Union Membership

87 As a result of the repeal by the Trade Disputes and Trade Unions Act, 1946, of the Trade Disputes and Trade Unions Act, 1927 it is no longer illegal for a local or public body to require as a condition of employment of any person that he should or should not be a member of a trade union. Certain local authorities have taken advantage of the new Act to impose on their employees, in some cases including medical officers, a requirement, amounting to a condition of employment, that they should become members of a trade union or other organization. Their resolutions fall into three categories (i) requiring membership of a trade union or professional organization, (ii) requiring membership of a trade union, or (iii) requiring membership of a trade union affiliated to the TUC

The Council, after careful consideration of the position created, has drawn up the statement of policy set out in the recommendation below. Pending the approval of the A R M, the Council, in view of the urgency of the matter, is acting in accordance with these principles in connexion with advertisements for the *Journal*

In cases where action has been taken by the Council it usually happens that the local authority concerned eventually rescinds its resolutions or makes them inapplicable to medical officers

Recommendation That the following statement be approved as the policy of the Association in relation to compulsory membership of trade unions and other organizations, so far as medical officers are concerned

1 The B M A, representing the great majority of doctors and enjoying a membership of over 55,000, is the negotiating body for the medical profession, recognized as such by the Ministry of Health and the Associations of Local Authorities in England and Wales

2 In the view of the Association it is undesirable on principle that any practitioner should be required to join any body, B M A or other. The Association prefers that its membership should remain voluntary, the strength of the Association remaining an expression of the profession's confidence in its representative body

3 Where an authority imposes upon its officers or candidates for office a requirement of a membership of a particular body or bodies, B M A or other (but excluding a medical defence society), the Association should protest to such authority, and afford financial help to any practitioner who suffers as a result of accepting the advice of the Association. All advertisements for whole time public health medical officer or part time appointments of such authorities submitted by such authorities for publication in the *British Medical Journal* shall be rejected and the profession advised not to make applications for such posts. The medical Press should be asked to co operate

Fees for Attendance at Confinements

88 The Council has considered the following resolution of the A R M, 1946

'That this meeting is of opinion that the minimum fee for attending a full confinement under local authority arrangements should be £5 5s

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(i) Fee for all attendances of a medical practitioner at any time from the commencement of labour until the child is born, whether or not operative assistance is involved, including all subsequent visits to mother and/or child during the first fourteen days inclusive of

the day of birth, £3 3s. Provided that where only one attendance is made in the period from the commencement of labour until the child is born and the practitioner is not present at the birth or subsequently a fee of £2 2s shall be payable in lieu of the fee of £3 3s aforesaid.

(ii) Fee for attendance of a second medical practitioner to give an anaesthetic, whether on the occurrence of abortion or miscarriage, at parturition or subsequently, £1 1s.

(iii) Fee for all or any of the following, namely, suturing the perineum, removal of adherent or retained placenta, exploration of the uterus, treatment of post-partum haemorrhage or any operative emergency arising directly from parturition, including all subsequent necessary visits during the first fourteen days inclusive of the day of birth, £1 11s 6d. This fee not to be payable when a fee under paragraph (i) hereof is payable.

(iv) Fee for attendance at, or in connexion with, an abortion, miscarriage, haemorrhage in cases of threatened abortion or ante-partum haemorrhage,* including all visits in respect of such attendance during the fourteen days from and including the first visit, £1 11s 6d.

(v) Fee for visits to mother and/or child not included under paragraphs (i) to (iv) hereof.

Where attendance is given to the mother only or to the child only

	s	d
Day (9 a.m. to 8 p.m.)	5	0
Night (8 p.m. to 9 a.m.)	10	0

Where attendance is given to both the mother and child

	s	d
Day (9 a.m. to 8 p.m.)	7	6
Night (8 p.m. to 9 a.m.)	15	0

(vi) The usual mileage fee of the district to be paid for all attendances under paragraphs (i) to (v) hereof.

Provided that one mileage fee only shall be paid in respect of one journey, whether such journey shall have been made for visiting one, or more than one, patient.

(vii) Fee for attendance on mother or child at the medical practitioner's residence or surgery, 2s 6d.

(viii) The practitioner shall be reimbursed the cost of any specially expensive drugs provided by him.

* Haemorrhage after the twenty eighth week of pregnancy.

Children and Young Persons Act, 1933

89 In 1939 the A.R.M. approved fees for the guidance of practitioners and local authorities in connexion with the provision of medical attention for children committed to the care of local authorities and boarded out by them under the Children and Young Persons (Boarding Out) Rules 1933, made by the Secretary of State in pursuance of Section 84 of the above Act. The Council has considered the desirability of revising these fees and has drawn up a scale which is consistent with similar items in the local authority part-time scale (paragraph 82 above) and the scale for practitioners called in by midwives (paragraph 88).

Recommendation. That the following scale of remuneration be approved—in substitution for that approved by the A.R.M. 1939—for practitioners undertaking the initial medical examination and subsequent attendance on children committed to the care of a local authority and boarded out under the Children and Young Persons (Boarding Out) Rules, 1933.

(a) For initial medical examination and report 12s 6d.

(b) For subsequent medical attendance (including supply of medicines),

(i) At surgery, 7s 6d first consultation, 5s each subsequent consultation.

(ii) At home of child 10s 6d first visit 7s 6d each subsequent visit.

In addition a fee of 1s per mile each way outside a radius of 2 miles from practitioner's residence or surgery where a journey cannot be fitted in with ordinary practice.

"BRITISH MEDICAL JOURNAL"

90 At the time of last year's Report the weekly printing order for the *Journal* was 55,500 copies. The printing order is now 62,000. The more readers the *Journal* has the greater is the demand for space in it by members and subscribers. It may be noted that in 1938 the average weekly total of pages amounted to 144, and in 1946 to 68. With the paper ration fixed the *Journal* has managed to include between its two covers all its principal features by reducing the proportion of

pages allocated to advertisements, and by the use of smaller sizes of type. Matters were eased somewhat when the paper ration was increased in October, 1946, and it might have been expected that this favourable turn of events would continue, but the fuel crisis of February, 1947, put the clock back. We were prevented from printing the *Journal* for the two weeks ending Feb 22 and March 1 and when we resumed normal publication we were informed we should not be allowed to use the paper which would have been consumed during these two weeks. On top of this there was a cut of 12½% in the paper ration. The situation is serious, as the continued increase in membership of the Association carries with it an obligatory increase in the print order of the *Journal*. We took advantage of the more liberal allowance of paper towards the end of 1946 to print certain sections of the *Journal* in larger type. During the war there were many complaints from readers that the type sizes used in the *Journal* were too small for visual comfort. If, however, we are faced with the position of a mounting print order and a diminishing supply of paper we may have to revert to the smaller sizes of type familiar to readers during the war years.

At no time since 1939 have those responsible for the *Journal* and the Quarterly Journals been faced with so many difficulties in connexion with paper and printing. In particular, there has been a serious delay in publication of five of the Quarterly Journals published by the Association, and the editors of these journals have expressed their dissatisfaction with the position. The Editor and the Publishing Manager have taken all possible steps to meet a situation unprecedented during the many years the Association has published periodicals other than the *British Medical Journal*. The printer of five of the Quarterly Journals released three of these to another printer in order to ease the pressure. Owing to the extreme difficulty in obtaining art paper it was agreed with the Editors of the Quarterlies that the letter press of their journals should be printed on super-calendered paper such as is used for the *Journal* and that the art paper available should be shared out among them for the reproduction of half-tone illustrations. In spite of these and other expedients there is still delay in the publication of the Quarterly Journals, and it will be some time yet before we can expect to return to normal.

To begin publishing two new monthly journals—*Abstracts of World Medicine* and *Abstracts of World Surgery, Obstetrics and Gynaecology*—in January, 1947, in the face of the difficulties mentioned was a somewhat hazardous undertaking. We had hoped that these journals would appear on the first of each month, and the work was so planned in the *Journals* Abstract Department as to make this possible. But considering the obstacles and frustrations confronting anyone trying to do a job of work in these days we may be satisfied that the delay in appearance of the Abstract Journals has in no instance been longer than 18 days. The quality of printing is high, and the format and arrangement of material seem to have met with approval. It is perhaps out of place for us to say that the quality of the work has also been high but again this seems to be the opinion of those who have received these journals. The acid test is circulation, and this has exceeded expectations in the first three months of publication. Special credit for this new venture is due to the Editor of *Abstracts* Dr G. M. Findlay, and the Assistant Editor Dr S. S. B. Gilder, supported as they are by a competent and hard-working team and a large panel of abstracters, upon whose co-operation the success of the abstracting service depends.

We should perhaps record here a unique event in the history of the *Journal*. On Sunday Feb 9, we learnt that owing to the fuel crisis it might not be possible to print the *Journal* of Feb 15. It was not until Tuesday morning, Feb 11 that we could discover from the Ministry of Fuel and Power whether or not that issue of the *Journal* could go to press. On the same day it was announced that for the two weeks following Feb 15 all weekly periodicals would be suspended. This decision was reached as a result of agreement between the Ministry of Fuel and Power and the Periodical Trade Press and Weekly Newspaper Proprietors Association, an organization which had refused membership to the *Journal* in 1938 on the ground that it was not an independent journal. The ban was extended to publication of...

1 doctor's surgery 3s 6d per injection (iii) Fee for visiting child at home and giving injections there 6s a visit (iv) Mileage would not usually be paid in respect of visits to the patient's home, it being contemplated that normally such visits will occur in the course of the doctor's practice, but in exceptional cases there should be a mileage allowance as proposed in section 1

Administration of Anaesthetics

10 For the administration of an anaesthetic the fee should depend on the length of the operation and on the anaesthetic used and be from £1 10s

Other Services

11 For services not mentioned above, for example, lectures in respect of consultants, specialists, and general practitioners the rate of remuneration should be arranged after consultation between the local authority and the local Division or Branch of the British Medical Association

Advisory Committee

12 The Advisory Committee established under Part X of the Askwith Agreement shall hear and advise upon any applications for the settlement of differences or the clarification of points of obscurity

Saving for Better Conditions

13 Nothing in these recommendations shall prevent a medical practitioner from continuing his present contractual arrangements with a local authority in lieu of those enumerated above

National Joint Council for Local Authorities

83 The Council's attention has been drawn to attempts made by certain local authorities to apply to medical officers a scheme prepared by the National Joint Council for Local Authorities Administrative, Professional, Technical, and Clerical Services relating to the remuneration and conditions of service of such staff. The Council's attitude is that medical officers, for whom the Association is the recognized negotiating body where salaries and conditions of service are concerned, are outside the province of the National Joint Council, on which in any event the Association is not represented. Steps have been taken to secure official recognition of this view

Milk

84 As instructed by the A.R.M., 1946, the Council has conveyed the following resolution to the Ministry of Health and also to the Department of Health for Scotland

"119 Ideally all milk should be obtained from disease free herds under the best hygienic conditions. In the meantime all milk should be pasteurized or, where efficient pasteurization is not available, boiled, and that this should be emphasized immediately to the Minister as a matter of urgent national importance

The Ministry of Food has appointed a Committee with the following terms of reference

'To examine the distribution of liquid milk from the point at which it leaves the farm to the point at which it is received by the consumer or manufacturer and to advise on any changes which are necessary to ensure that clean, safe milk is delivered as efficiently and cheaply as possible'

At the invitation of the Ministry a deputation from the Council attended before the Committee to present the Association's views on clean milk

Public Assistance District Medical Officers

85 As a result of the National Insurance Act and the National Health Service Act, few, if any, duties will remain to be carried out by Public Assistance District Medical Officers. The Council is of opinion that, in order to avoid any risk of compensation being prejudiced by reduced remuneration resulting from a diminution of duties, it is desirable that the service should be wound up, that the former duties of District Medical Officers should be absorbed into the National Health Service, and that adequate compensation for loss of time should be paid to the medical officers for loss of office, the compensation being based on the remuneration received before the winding up. The Negotiating Committee's attention has been drawn to this view

Education Act

86 The A.R.M. 1946, passed the following resolution

173 That this meeting is dissatisfied with the payments for in patient treatment of children under the Education Act and presses the Council to draw up an equitable scale of remuneration'

The Council had intended, when the scale for local authority part time work generally was settled, to reopen with the Ministry of Education the subject of fees payable by local education authorities for the treatment of school children. Now that the scale has been agreed, proposals based as far as possible on it have been submitted to the Ministry for the revision of the fees for the treatment of school children

Trade Union Membership

87 As a result of the repeal by the Trade Disputes and Trade Unions Act, 1946, of the Trade Disputes and Trade Unions Act, 1927, it is no longer illegal for a local or public body to require as a condition of employment of any person that he should or should not be a member of a trade union. Certain local authorities have taken advantage of the new Act to impose on their employees, in some cases including medical officers, a requirement, amounting to a condition of employment, that they should become members of a trade union or other organization. Their resolutions fall into three categories (i) requiring membership of a trade union or professional organization, (ii) requiring membership of a trade union, or (iii) requiring membership of a trade union affiliated to the TUC

The Council, after careful consideration of the position created, has drawn up the statement of policy set out in the recommendation below. Pending the approval of the A.R.M., the Council, in view of the urgency of the matter, is acting in accordance with these principles in connexion with advertisements for the *Journal*

In cases where action has been taken by the Council it usually happens that the local authority concerned eventually rescinds its resolutions or makes them inapplicable to medical officers

Recommendation That the following statement be approved as the policy of the Association in relation to compulsory membership of trade unions and other organizations, so far as medical officers are concerned

1 The B.M.A., representing the great majority of doctors and enjoying a membership of over 55 000, is the negotiating body for the medical profession, recognized as such by the Ministry of Health and the Associations of Local Authorities in England and Wales

2 In the view of the Association it is undesirable on principle that any practitioner should be required to join any body, B.M.A. or other. The Association prefers that its membership should remain voluntary, the strength of the Association remaining an expression of the profession's confidence in its representative body

3 Where an authority imposes upon its officers or candidates for office a requirement of a membership of a particular body or bodies, B.M.A. or other (but excluding a medical defence society) the Association should protest to such authority, and afford financial help to any practitioner who suffers as a result of accepting the advice of the Association. All advertisements for whole time public health medical officer or part time appointments of such authorities, submitted by such authorities for publication in the *British Medical Journal* shall be rejected and the profession advised not to make applications for such posts. The medical Press should be asked to co-operate

Fees for Attendance at Confinements

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we discovered that the ban had no force in law and therefore decided to produce the issues of the *Journal* for Feb 22 and March 1 in duplicated form, and without the use of electricity. This was made possible by the wholehearted co-operation of the Secretary of the B.M.A. and his staff, who put at the disposal of the Editor duplicating machines and willing workers. At the time of the issue of the two *Pennine Journals* there was considerable comment on this in the Press. That the action taken was approved by members of the B.M.A. was shown by the large number of letters received at B.M.A. House. The *Journal* was in fact the only weekly journal of any size and standing not to be deceived by the Government's bluff and by what was nothing more or less than arbitrary censorship through temporary suspension of publication.

FINANCE

91 The interim financial statement for the year 1946 which is subject to audit, shows an increase of income of £11,592 and an increase of expenditure of £40,870.

Balance Sheet

As war risks insurance is no longer payable, the balance of the reserve for this purpose has been added back to the surplus account. The sum of £20,000 has been added to the general contingency reserve. Assets have been increased by the investment of £31,000 in dated Government stock.

Income and Expenditure Account Expenditure

The appointment of new and important committees has necessarily led to an increase in central meeting expenditure and it must be anticipated that this will increase still further in the coming year. Included in the Association General Expenditure is the cost of the Public Relations Department which was considerably less than the sum appropriated by the Council, and legal charges which include the counsel's fees paid for advice in regard to the proposed National Health Service. The increase in income tax on dividends and interest is complementary to the additional revenue received from investments. Capitation grants increased in proportion to the rising membership and to the restoration to the Home Branches of members returning from the Forces. Central staff expenses show an increase, the Council having implemented its proposals in regard to regional development by additions to the secretariat.

As regards premises expenses it is still not possible to obtain licences for work other than that regarded by the authorities as absolutely essential, but during the year the ventilation of the council chamber has been carried out in addition to minor decorations to offices and the maintenance of lifts and other services throughout the building. There was a substantial increase in the cost of printing stationery and postages as a result of the plebiscite and the issue to the profession of statements on the proposed National Health Service.

Income

At the close of 1946 the membership stood at a new record of 54,175, and the revenue from the subscriptions reached £123,356. Through the return of members to civilian practice and the consequential payment of a higher subscription the average subscription received for the year increased from £2 4s 2d in 1945 to £2 5s 6d. There was a small increase in the revenue received from rents which now exceed £20,000 per annum. Decisions which have been taken in regard to the accommodating of various departments in the extensions to B.M.A. House and Garden Court wing will lead to a loss in revenue, but this will be met to a large extent by the application of the new scale of rentals when negotiating new tenancies.

Journal Account

The Journal Account again shows a substantial increase in the revenue from advertisements and publishing. The number of advertisement pages increased from 1,068 in 1945 to 1,218 in 1946. A substantial increase in the number of copies published was again necessary, rising from 2,795,700 in 1945 to 3,021,900 in 1946.

Trust Funds

The Office Staff Superannuation Fund, in common with all holders of gilt edge stock, is having to accept conversions which yield a lower rate of interest. At the same time the financial position of the fund is sound, the market value of investments on Dec 31, 1946, standing at £53,779. The Prize Funds, for which the Council acts as trustees, all hold balances sufficient to meet the cost of the prizes to be awarded during the coming year. The B.M.A. Charities Trust Fund has maintained its income and has been able to make substantial allocations to the medical charities. As a result of a special appeal, the Medical Representation in Parliament Fund has now received support which will enable it to give financial assistance to medical candidates for Parliament.

Estimate of Receipts and Expenditure for the Year 1947

It may reasonably be hoped that the revenue of the Association will increase during the present year to £155,000. It seems certain, however, that, because of the steadily increasing activities of the Association and the increasing cost of commodities and services there will be a considerable rise in expenditure. Nevertheless, it is confidently anticipated that a credit balance will be achieved. The subscriptions of its members are the main source of the Association's income. The extensions of the Association's work to which it is committed will soon bring the level of its expenditure to that of its income. The time is approaching when an increase in the subscription rates, fixed at their present level as far back as 1922, may have to be considered.

MEDICAL ETHICS

Ethical Procedure relative to "Important" Notices

92 The Council has considered Minute 183 of the A.R.M., 1946, which reads as follows:

'That the Representative Body is of opinion (1) that the Central Ethical Committee should have the exclusive power and duty to initiate action against any member who accepts an appointment that was the subject of an Important Notice at the time of its acceptance, (2) that the acceptance of a prohibited appointment shall be construed as *prima facie* evidence of an ethical offence justifying expulsion from the Association, (3) that the member concerned shall be afforded full opportunity to offer explanations to the Central Ethical Committee for his action or to present in argument any extenuating circumstances that appear to him to apply to the case, further, that the Council be requested to regard such action by the Central Ethical Committee as separate and apart from the investigations that are conducted under the existing Ethical Rules, and (4) that in respect of this new power vesting in the Central Ethical Committee, the Council be requested to prepare a report thereon together with Rules of Procedure for presentation to the next meeting of the Representative Body.'

The suggestion that the Central Ethical Committee should be empowered to initiate action in cases of the kind referred to in the above resolution is not new. In 1929 a Branch Council, having considered the conduct of a member who had accepted a public health appointment on terms inconsistent with the Association's policy, resolved to take no further action in the matter, with the result that the Representative Body in that year instructed the Council to consider the advisability of action being taken centrally when there was a *prima facie* case for expulsion and the local Division or Branch had failed to take disciplinary measures. The Council advised against this proposal and the A.R.M. in 1930 rejected an amendment "that in the opinion of the Representative Body the time has now come for the Council to take to itself power to deal with ethical cases which may not have been referred to it by Branches or Divisions."

In 1937 a letter was received from the Society of Medical Officers of Health which pointed out that members of the B.M.A. who accepted prohibited appointments in the public health field injured not so much the interests of local members of the Association as those of the public health service members in all parts of the country. The Society asked the Association "to consider so altering its constitution as to enable the cases of acceptance of public health appointments which have been the subject of warning notices in the *British Medical Journal* to be dealt with by a central committee of the

Association rather than 'local Divisions' The Society had expelled seven of its members who had applied for or accepted appointments not in conformity with the Askwith Memorandum of 1929, but although forty members of the B.M.A. had accepted such appointments, in none of these cases had the Division or Branch concerned made representations regarding expulsion, and the Council was precluded by the Articles of Association from taking any action in the absence of such representations.

In 1937 the Council did not see fit to recommend the adoption of the suggestion made by the Society of Medical Officers of Health. In the following year, however, the Central Ethical Committee reconsidered the position in relation to ethical cases generally and not merely cases of acceptance of prohibited public health appointments and the A.R.M. in 1938 approved a recommendation of the Council that the Articles should be altered by the deletion of the reference to a representation by a Division or Branch as an essential preliminary to the holding of a central inquiry with a view to expulsion. The following is an extract from the report made by the Council to the Representative Body in 1938:

The Council considers that this power is necessary to meet particular circumstances, as for example, in the event of an inactive Division or when complaint is made to the Association of conduct which offends the Association generally rather than any individual member or Division. In short, while leaving as at present any Division or Branch free to initiate and to conduct an inquiry into the conduct of any of its members with the right of such member if he so desires to appeal to the Council, the Council now proposes that it should be empowered to instruct the Central Ethical Committee to deal with complaints which either have not been considered by a Division or Branch or have been referred to the Central Ethical Committee by a Division or Branch without any local inquiry or judgment.

But although since 1938 the Central Ethical Committee has had power to initiate ethical inquiries, in practice the exercise of this power has been restricted by assurances given to the Representative Body that the Division would always be allowed to hold an inquiry locally if it so desired and that it was most unlikely that an inquiry would be initiated centrally in opposition to the wishes of the Division. So far as one particular type of ethical case is concerned the resolution of the A.R.M. 1946 alters this situation. It takes away from the Division the right to hold a local inquiry, and it relieves the Central Ethical Committee of the moral obligation to consult the wishes of the Division before deciding to initiate a central inquiry.

The Council welcomes this change of procedure. As the Central Ethical Committee is responsible for sanctioning the publication of an 'Important Notice' it thinks it right that the Committee should be responsible also for carrying out the logical continuation of that policy by holding an inquiry when the prohibition implied in the notice has been defied by a member. It agrees with the view expressed by the Representative Body that such cases are in a different category from those normally investigated by local Ethical Committees in which there is a personal issue between a complainant and a respondent. Acceptance of a prohibited appointment is an offence not against an individual but against the policy of the Association and it is unreasonable that the central authority which has issued the prohibition should find its future action inhibited by a single local Division, and equally unreasonable that two members guilty of precisely the same offence should receive different treatment according to the differing standards of the Divisions to which they happen to belong. It is only by the new procedure which the Representative Body has proposed that all cases of this kind can be investigated, as they should be investigated in a uniform way. Rules governing the conduct of this type of case are incorporated in the proposed new rules of the Central Ethical Committee referred to in the next paragraph of this report.

Rules of the Central Ethical Committee Relating to Complaints Regarding Professional Conduct

90 As has been stated above an alteration of the Articles of Association in 1938 had the effect of conferring on the Central Ethical Committee the power to initiate an inquiry and as a result of such an inquiry to recommend the expulsion of a

member whose conduct had not been considered by any local Division or Branch. But the A.R.M., 1938, was assured that this new power would not be used to interfere with the right of the Division to hold a local inquiry when it so desired. Anxious to keep faith with the Representative Body, the Central Ethical Committee proceeded to draft, for its own future guidance and that of its successors, rules of procedure defining the circumstances in which inquiries would be initiated centrally, and the procedure to be followed at such inquiries. This work was interrupted by the war but has lately been resumed and the Committee now thinks it desirable to extend the scope of the rules of procedure originally contemplated and to adopt a comprehensive set of rules comparable to those adopted by Divisions and Branches and governing all ethical inquiries conducted by the Committee, whether or not initiated by it. The rules drafted by the Committee, in close consultation with the solicitor, have been approved by the Council which recommends:

Recommendation That the Rules of the Central Ethical Committee relating to complaints regarding professional conduct (Appendix II) be approved.

Alteration of Division Ethical Rule 5 (Branch Rule 6)

94 Under Ethical Rule 5 of a Division (Rule 6 of a Branch) the Honorary Secretary of a Division (or Branch) is required to initiate ethical proceedings against a local member who has accepted an appointment in contravention of a Binding Resolution of the local unit of the Association. But such an appointment may also be the subject of an 'Important Notice' in the *British Medical Journal* in which case the initiation of ethical proceedings is now the exclusive duty of the Central Ethical Committee. It is therefore necessary to alter Rule 5 of a Division (Rule 6 of a Branch) in order to render it inoperative in the latter type of case. The Council recommends:

Recommendation That Ethical Rule 5 of a Division (Rule 6 of a Branch) be amended by the insertion (1) at the beginning of the Rule of the words

Subject as hereinafter provided

(2) at the end of the Rule of the words

Provided that no action shall be taken under this rule by the Honorary Secretary of the Division (Branch) where a member of the Association has accepted an appointment which, in addition to being held upon terms or conditions inconsistent with a Resolution of the Division (Branch), was the subject of an 'Important Notice' in the *British Medical Journal* at the time of its acceptance.

Family Planning

95 The Council has considered the activities of the Family Planning Association, a body conducting clinics throughout the country, and has made suggestions as to the manner in which these clinics should be conducted.

ORGANIZATION

Expenses of Members attending Meetings

96 The Annual Representative Meeting in 1946 passed the following resolutions:

70 Proposed by Leeds (J. A. L. Vaughan Jones) That Representatives, Members of Council, Members of Standing Committees or other Committees set up by the Council be paid a subsistence allowance of £1 ls per day or part of a day when attending the appropriate meetings of the Representative Body, the Council, the Standing and other Committees.

71 Whereupon an Amendment by Eastbourne (P. W. Mathew) That the expense of payment of representatives and others attending meetings of the B.M.A. would place such a large strain on the resources of the central funds of the B.M.A. that these motions should be withdrawn and that Divisions should by means of a local levy individually defray the expenses of their representatives.

With the permission of the meeting the words 'if they so desire' were added to the Amendment.

The Amendment was LOST (by 98 votes to 84).

72 Whereupon an Amendment by J. A. Ireland seconded by J. Griffith Jones That payment of expenses be made

- (a) as to attendance at representative meetings, by local levy
- (b) as to attendance at committees, from central funds

73 Whereupon it was proposed by the Treasurer, seconded by H S Howie Wood, and

Resolved That this matter be referred to the Council for inquiry

The Council has accordingly made inquiry into the matter and submits the following report

The Present Position

Members of the Representative Body, Council, and central Committees when attending meetings are reimbursed the amount of their first-class rail fares (including sleepers where necessary) Allowances are also paid as follows

Chairman of Council	{£1 1s per day, plus £1 1s if
Chairman of RB	{stay overnight is necessary
Members of Office Committee	5 guineas per attendance
Members of Publishing Subcommittee	5 guineas per attendance

The General Principle

The Association owes a great debt to the devotion and self sacrifice of individual members, and without their unselfish labours it could not have attained its present standing as the representative body of the profession Election by colleagues as a member of the Representative Body or the Council or one of the central Standing Committees is regarded as an honour and an expression of esteem and confidence In accepting office the member knows that on his side some sacrifice of his time and leisure will be involved, and that that is his contribution to the corporate work of his Association He gains a great deal from his contact with members from other areas, from the open discussions on topics of current interest, and from the opportunities afforded by visits to London of meeting the headquarters staff He finds his knowledge increased his outlook and point of view broadened, and his value to his constituency enhanced Most members would agree that these more intangible results of their tenure of office are a not unfair return for the financial outlay involved

The reasons, however, which have been advanced for making additional payments to members attending these meetings are as follows

1 The desire to ensure that members of the Association who attend the A R M and Council and Committee meetings shall not suffer financially by absence away from home on Association business Provincial representatives to the A R M may have to spend up to four or five days away from home and members of Council and Committees up to two nights for a whole day meeting in London The payment of the railway fare of members coming from Scotland or the provinces has always been considered a necessary reimbursement, as the burden might prevent adequate attendance by country members but the cost of meals and any necessary hotel accommodation has been borne by the member

2 The feeling that the non payment of subsistence allowances from central funds discourages younger members from accepting service as representatives and from seeking nomination as members of Council There is the implied criticism that the membership of the Representative Body and Council tends to consist of the older, retired, or semi retired members In order, therefore, to throw light on the validity of this criticism the average age of members of the Association attending Representative Meetings and Council has been assessed (basing the average age on qualification as 24) and has been found to be 51.3 (Rep Body 47.9, Council 54.8)

In addition a representative selection of Standing Committees has been assessed on this basis and reveals the following (the figures in parentheses representing the average age less the ex-officio officers)

Consultants and Specialists Committee	52.6 (50.4)
General Practice Committee	55.7 (51.2)
Hospitals Committee	56.0 (51.0)
Insurance Acts Committee	53.6 (51.6)
Organization Committee	60.4 (53.2)
Public Health Committee	61.8 (58.5)

3 It has also been said that the holding of Representative Meetings during the holiday period is a deterrent to the younger man who prefers to spend his holiday with his family rather than sacrifice it to attend B M A meetings

4 The unfairness that the financial loss in attending meetings is very much heavier for a provincial member than for a London member

5 The fear that this unfairness leads to the appointment of an undue proportion of London members on central Committees

6 The anomaly that whilst payment is made for a bed in a train no payment is made for a bed in a hotel

7 The growing complexity of the work demanding more thought and time, and the growing complexity of medical practice itself

Do these reasons make it desirable to establish the principle of payment of subsistence allowances to members attending meetings? The point has been made that the principle has already been conceded by the Council in deciding to pay subsistence allowances to the Chairman of Council and the Chairman of the Representative Body These two officers are required to spend an exceptional amount of time on important day to day Association business, both in attending meetings and in travelling to and from Headquarters Bearing this in mind the Council felt that it would be unreasonable to expect them to shoulder these responsibilities and to pay their own out of pocket expenses

The Legal and Financial Aspect

Apart from the principle there are financial considerations which in the view of the Council ought to receive due weight

Payments made from the Association's funds are subject to the conditions on which the licence is granted by the Board of Trade in pursuance of Section 23 of the Companies Act, 1867 These provide that the income and property of the Association shall be applied solely towards the promotion of the objects of the Association and no portion thereof may be paid or transferred directly or indirectly by way of dividend or bonus or otherwise, by way of profit provided that nothing shall prevent the payment in good faith of remuneration to any officers or servants of the Association or to any member or other person in return for any services actually rendered to the Association (Paragraph 4 of the Memorandum of Association)

The Articles of the Association (Article 49) provide for the payment of expenses to members attending meetings of the Representative Body, Council, and Committees, the term "expenses" being defined in the By laws (By law 86) as first class travelling expenses

Any departure from the existing practice would, therefore necessitate alteration of the By-laws

The proposition of Leeds at the Annual Representative Meeting in 1946 envisaged a payment of £1 1s per day or part of a day It is felt that the Representative Body would wish to have an estimate of additional annual expenses if payment were made on this basis, it is also felt that an alternative method of payment should be considered The cost to the Association of paying first-class return railway fares and subsistence for each meeting on the basis of £1 1s per day or part of a day has, therefore, been calculated in respect of a representative selection of Standing Committees (System A) In addition payment on the basis of the subsistence allowances paid to members of the Civil Service (namely 7s 6d for absence of under 10 hours and 25s for absence over 10 hours) has been calculated (System B)

This reveals the following

SYSTEM A		
Committee	Total cost for each meeting	Average per member
Organization Committee	£11 11s 0d	£1 1s 0d
Hospitals Committee	£13 13s 0d	£1 1s 0d
Insurance Acts Committee	£45 3s 0d	£1 1s 0d

In addition to the £1 1s a day payment each member would receive (as at present) first class return railway fare plus sleeper where needed The total cost in respect of subsistence allowances for all meetings for the complete session would be approximately £5,500

SYSTEM B		
Committee	Total cost for each meeting based on C S Scale	Average per member
Organization Committee	£11 17s 6d	£1 1s 8d
Hospitals Committee	£14 0s 0d	£1 1s 6d
Insurance Acts Committee	£49 7s 6d	£1 2s 10d

For the purpose of the above figures absence from home over 10 hours has been assessed as absence from home for one night—thus the highest Civil Service daily subsistence allowance of 25s has been allowed. Under this system first class return railway fares are refunded. Payment is also made for sleepers if used, but in these cases the subsistence allowance is reduced by one third. The total cost to the Association under System B would be approximately £5 700.

Local Levy

During the discussion at the Annual Representative Meeting in 1946 it was suggested that the payment of subsistence allowances would place a large strain on central funds and that one method of meeting this demand would be for the Divisions to defray expenses by means of a local levy. The Council has always encouraged Divisions to establish voluntary funds from which expenditure which cannot be met from ordinary Division or Branch funds can be defrayed, but so far less than 10 per cent have done so, and less than half this number have used these funds to reimburse, in part, their representatives for attendance at Representative Meetings. The institution of voluntary funds for this purpose does, however raise certain anomalies. Thus, a Division in the North of England or Scotland with a relatively small membership would need to impose a very high levy in order to pay the out of pocket expenses of a representative attending the Representative Meeting as against the case of a Division in the home counties area. There would also be the problem of numerical distribution, it would be difficult to assess the amount of the levy where a constituency comprises more than one Division each with varying memberships.

Proposals of the Organizing Committee and the Council's Decision

The Organization Committee in submitting the above report to the Council proposed that the Council should recommend to the Representative Body that, in addition to first class return railway fares (including sleepers) payment of subsistence allowances be made to members of the Association attending centrally arranged meetings on the following basis:

For absence from home over 8 hours	10s
Where stay overnight is necessary, an additional	£1 0s
Where a sleeper is claimed the overnight payment to be reduced to	10s

Where attendance on consecutive days does not necessitate the use of hotel accommodation payment on the day basis only to be made.

Payment on this scale would mean an annual charge to the Association of approximately £4 750.

The Council is equally divided upon this proposal.

Regional Organization

97 The Council has considered the following Minute 96 of the A R M, 1946:

96 *Resolved* That in view of the possibility of the National Health Service Bill in its final form being unacceptable to the profession this meeting is of opinion that the Council should take further steps to arrange for local organizers preferably medical on a regional basis.

In pursuance of this resolution a plan on the lines of a statement made to the A R M in July 1946 has been evolved for making the services of the central medical staff available to Divisions and Branches. Each of the five Assistant Secretaries has been allotted one fifth of the country, and approximately one third of his or her time is placed at the disposal of the local units. Two additional assistant secretaries are being appointed making seven assistants eventually available for this part time work. This is a first step towards the desired object and the Council is of the opinion that Divisions should have some practical experience of this method and assess its value to them before further arrangements are made to give detailed effect to Minute 96.

The Council points out that, even if the appointment of locally resident Regional Secretaries should prove to be necessary and desirable some time must elapse before this can be

achieved, there are difficulties of accommodation, selection of appropriate centres for each region, etc., which are unlikely to be overcome within a year. Further, the introduction of a National Health Service will raise problems relating to the structure of the Association, and a recasting of the whole of its central and local machinery may be needed.

The Council has therefore put the present plan into operation as a temporary measure, and it will review the whole position at the beginning of the next session in the light of the experience gained.

Proposed Regional Councils within the Association

98 Consequent upon the setting up of Regional Hospital Boards under the National Health Service Act, the Council is considering the establishment within the framework of the Association of regional councils for the purpose of representing the views of the profession in the region in relation to the activities of the Boards. The areas of existing Branches and Divisions are such that it would be impossible to establish suitable regional bodies merely by linking together existing units, and the Council is considering the constitution of the proposed regional councils with a view to securing both election on a geographical basis and representation of the professional interests concerned. This matter will be the subject for a further report by the Council.

Medical Association of South Africa

99 The final agreement for affiliation between the Association and the Medical Association of South Africa has now been completed. The Council is also pleased to report that 942 of the 2,580 members of the MASA removed from the list of members as a result of the affiliation have rejoined the Association as 'unattached members'.

Representation of Divisions and Branches in Representative Body, 1947-8

100 The Council has decided that the grouping for election of Representatives to the Representative Body, 1947-8, shall be on the same lines as for 1946-7.

The Honorary Secretary

101 The essential link between the Council and individual members is the Division Secretary. Upon him Head Office relies to a very great extent both for information on local happenings and for assistance in carrying out the Association's policy. Without the help of the Division Secretaries, the Association could not function as an efficient organization, and the Council is very conscious of the debt the Association owes to them.

Some Honorary Secretaries devote many years of enthusiastic and loyal work in the service of the Association, and during the past year the Council has conveyed its thanks to ten Honorary Division and Branch Secretaries who have resigned office after holding it continuously for periods of from 18 to 26 years.

The Association and Medical Students

102 The Council is in close touch with the British Medical Students' Association with a view to stimulating the interest of medical students in the work of the Association and attracting them to its membership when they qualify. It believes that the younger members of the profession can make useful contributions to the formulation of professional policy and that they should be encouraged to regard joining the Association as an essential part of their entry to their professional career. The Council has set aside the sum of £300 to be awarded to medical students in the form of essay prizes, 6 to the value of £25 each to be awarded on a national basis, and a larger number of small prizes on a regional basis. In this way the Council hopes that the proposal will make the widest appeal to medical students.

The Council has also decided to provide facilities for the giving of BMA Lectures to medical students, on the lines of the present arrangements for Divisions and Branches.

In addition, the Council has extended the reduced subscription to the *British Medical Journal* of 10s 6d per annum to final-year medical students to include all those who have begun their clinical studies.

Amendments of Schedule to the By-laws

103 The Council is of opinion that there should be a liaison between the Journal and Science Committees and between the Organization and Dominions Committees by an interchange of members. The Council also considers that the name of the Naval and Military Committee should be changed to Armed Forces Committee.

Recommendation That the schedule to the By-laws be amended (i) by inserting in the column headed 'otherwise appointed' in the case of the Journal Committee the words 'I by the Science Committee' in the case of the Science Committee the words 'I by the Journal Committee', in the case of the Organization Committee the words 'I by the Dominions Committee', and in the case of the Dominions Committee the words 'I by the Organization Committee'.

(ii) by substituting in the column headed 'Name of Committee' for the words 'Naval and Military', the words 'Armed Forces'.

SCIENCE

Association Prizes

N Bishop Harman Prize

104 The Council has pleasure in reporting that under the will of the late Mr N Bishop Harman, the Association has received a bequest of £1,000, free of duty, for the increase of the Clinical Prize for Research in Consulting Practice, initiated by Mr Harman in 1939. The capital fund is now, therefore, £2,000 and the value of the Prize which is to be offered biennially, will be approximately £100. Owing to the outbreak of the war no award has yet been made, and the Prize will be open for competition for the first time during 1947. It is proposed to alternate this competition with that for the Katherine Bishop Harman Prize.

Sir Charles Hastings Clinical Prize

This Prize, which has for its object the promotion of systematic observation research and record in general practice was again open for competition during 1946 for the first time since the outbreak of the war. 15 essays have been received and in view of the lapse of time since the Prize was awarded and having regard to the high standard of the essays submitted, the Council has decided to make the award to two competitors, namely Frances Charlotte Naish, MB BCh of York, for her clinical study on 'Breast Feeding—A Guide to the Natural Feeding of Infants' and Henry Eric Wilkie Robertson, MA, MD of Christchurch New Zealand, for his clinical study entitled 'The Response of Lassitude, Coldness and Loss of Hair, following Pregnancy, to Treatment with Thyroid Extract, in Christchurch, New Zealand'.

Special letters of commendation have been sent to A N T Aikman, BSc, MB, BCh, Melton Mowbray, 'Pneumokoinosis in a Woollen Mill Operative', C Grantham Hill OBE, MB, FRCS Beccles, 'Midwifery in General Practice', D C Harris MB BS, Oxford, 'Minor or Masked Hypothyroidism', D R Snellgrove PhD MSc, MRCS LRCP, 'A Statistical Survey of the Work Performed and Type of Case met with in a Busy Mixed Practice over a Period of 3 Years'.

The Council has expressed its cordial thanks to Dr R G Gordon and Dr J C Matthews, who examined the essays submitted for the Prize.

Katherine Bishop Harman Prize

This Prize normally awarded biennially and which has for its purpose the encouragement of study and research directed to the diminution and avoidance of the risks to health and life that are apt to arise in pregnancy and child bearing was again open for competition in 1946. The Prize has been awarded to Ernest Rohan Williams MD FRCP FFR DMRE of London, for his essay entitled 'The Contribution of Radiology to the Diagnosis and Management of Obstetric Disproportion'. Letters of commendation have been sent to Cecil Mary Dnlihen MB ChB DCH, of Edinburgh ('Prematurity, Stillbirths, and Neonatal Deaths') and to Archibald Ian Stewart Macpherson MB ChB FRCS Ed of Edinburgh ('The Aetiology of Hypoproteinaemia and the Haemorrhagic Diatheses of the Newborn').

The Council has expressed its appreciation of the services rendered by Prof F J Browne and Prof James Young in examining and reporting upon the essays submitted.

Middlemore Prize

This Prize which consists of a Certificate and a cheque for £50 is awarded triennially for the best essay or work on any subject selected by the Council in any department of Ophthalmic Medicine or Surgery. During 1946 the Prize has been open for competition for the best essay on 'The Aetiology and Treatment of Chronic Endocyclitis'.

Two essays only were submitted, and in view of the fact that neither essay contained any record of original work, the Council does not propose to award the Prize in 1947.

Research Scholarships

When the practice of awarding Research Scholarships was resumed in 1946, it was decided, as a temporary measure, to restrict the tenure of the scholarships to a period of nine months in the first instance. Experience has shown, however, that this does not give the scholar sufficient time in which to complete his work, and the Council proposes, from Oct 1 next, to revert to the normal pre-war custom of awarding the scholarships for a period of twelve months to coincide with the academic year.

In reaching this decision the Council has given consideration to the amount of the present awards and to the question whether a smaller number of full-time scholarships of a higher monetary value would not serve a more useful purpose. In view, however, of the increasing number of junior appointments available under the aegis of the Ministry of Health, it is felt that the financial aid offered by the scholarships still provides a valuable means whereby, young practitioners interested in research but employed on comparatively low salaries may supplement their income. The Council accordingly recommends no change at present in the value of the scholarships.

The following scholarships have been awarded tenable for the first nine months of 1947.

Ernest Hart Memorial Scholarship W G Cross BDS MB, BS, MRCS, LRCP, LDS, RCS, London

Walter Dixon Memorial Scholarship R E Moore, MB, BS MRCS, LRCP, London

Ordinary Research Scholarships J B Brierley, MB, ChB Bristol; Emilie E Guthmann, BSc, MB, ChB, MRCP, London; M Anderson, MB, BS, MD, MRCP, Gateshead; Mary Savory, MRCS, LRCP, MB, BCh, BA, FRCS, London

Library

105 The use made by members of the facilities of the Library has shown a considerable increase since the end of the war, and the number of members using the Library for study purposes has been so great on occasions, particularly during the winter months, that it is becoming increasingly difficult to provide adequate seating accommodation. The number of readers during 1946 was 28,594, as against 25,297 in 1938, and 18,203 in 1945. The number of books borrowed in 1946 was 19,954, an increase of 2,402 over 1938.

The number of periodicals received from the Abstracting Service will undoubtedly prove a great asset to the Library but in view of the limitations of the present accommodation temporary measures have had to be taken to provide additional storage and display facilities. The Council looks forward to the vacation of the Garden Court Wing by the University of London and the re-housing of the Library in that Wing.

During the year 235 books and journals have been presented to the Library and the Council extends its thanks to the donors.

The Council has decided to extend all the privileges of the Library to members of the Canadian and South African Medical Associations visiting the United Kingdom.

BMA Lectures

106 The Council extends its thanks to the following practitioners who have given BMA Lectures during the period from April 1 1946 to Feb 28, 1947: Dr G Bourne, Prof D Dunlop, Lady Florey, Dr R Forbes, Mr D J Guthrie, Dr T Hunt, Prof C F W Illingworth, Dr G D Kersley, Mr C E Naunton Morgan, Dr A L P Peckey, Prof R Platt, Mr R M Titmuss, Dr G A Watkins, Mr D G Wilson, Clvnc.

Divisions and Branches are reminded that they may have one BMA Lecture during the course of a year. The lecturers are nominated by the Division or Branch and the expenses of the lecturer are defrayed by the Council from central funds.

Films

107 The Council has appointed a special committee to inquire into the scope and use of films for postgraduate and undergraduate medical education. The Council hopes to submit a report on this subject in its Supplementary Report.

Postgraduate Study for General Practitioners

108 The Council has given consideration to the following Minute 130 of the Representative Body 1946

That this meeting wishes to emphasize (1) the crying need of general practitioners for postgraduate study to keep abreast of the rapid advances in diagnosis and treatment, all the more so as the opportunities were few and far between during the war (2) that refresher courses should be made available for general practitioners at recognized teaching hospitals and they should be facilitated and encouraged to attend them.

Information has been sought from honorary secretaries of Divisions, secretaries of local medical and clinical societies, and from deans and postgraduate deans of medical schools, and it is apparent that there has been, since the end of the war, a steady development in the reintroduction of facilities for postgraduate study for general practitioners. Refresher courses for ex-Service and insurance practitioners are being provided at many of the university centres throughout the country and in addition a number of protracted courses and week-end courses are now being held and planned. Sunday morning and other periodic ward rounds are held at a number of teaching hospitals and the clinical meetings of Divisions and Branches and lectures and demonstrations arranged by local clinical societies which are, for the most part, designed to meet the need of the local profession make a valuable contribution towards providing the general practitioner with an opportunity of keeping abreast of modern methods of diagnosis and treatment.

The Council is of the opinion therefore that although in most areas the means of obtaining regular postgraduate education is available for the general practitioner it is agreed that the present facilities should be greatly extended, that particular attention should be paid to the areas furthest from teaching centres and that co-ordination between the various bodies providing postgraduate education is urgently needed.

It is felt that intensive refresher courses at intervals of three years or so valuable though they may be do not meet the need of the general practitioner for continuous postgraduate education and they should be regarded only as a part of a general scheme. The Council considers that the holding of regular clinical meetings of the profession at the local hospital is one of the most valuable methods of promoting postgraduate education and should be adopted in every area where there is a hospital with upwards of 200 beds. In the area furthest removed from teaching centres when facilities are most urgently needed it is suggested that instruction should be in the hands of the local consulting staff of the hospital with the aid of visiting teachers. In this way the local 200 bed hospital would become the centre of clinical instruction.

After a careful review of the whole problem, therefore the view of the Council is that postgraduate education should be arranged at a regional level and that a committee should be established in each region for the purpose of co-ordinating and promoting postgraduate study. Such a committee might consist of representatives from the universities, the staffs of local hospitals, local medical societies and the Divisions or Branches of the Association. Similar committees or sub-committees should be appointed within the regions at the level of area hospitals with not less than 200 beds.

GENERAL MEDICAL COUNCIL

Draft Medical Bill

109 In accordance with Minute 53 of the A.R.M. 1945 the Council appointed a special Committee to review the working of the Medical Acts with special reference to the composition, functions and procedure of the General Medical Council. The same subject has been considered concurrently by the GMC itself which has submitted to the Ministry of

Health a draft Bill for the amendment of the Medical Acts in certain respects and by the defence societies, which are mainly concerned with penal procedure.

It is understood that the Minister of Health proposes to introduce, as soon as Parliamentary time permits, a short amending Bill to give effect to the recommendation of the Inter-Departmental Committee on Medical Schools for the requirement of resident hospital appointments before registration and to certain other amendments which are unlikely to arouse controversy. The Council has therefore prepared a statement of its views on such modification of the Medical Acts as it considers to be urgently desirable and such points as practical experience has shown could now conveniently be introduced into the Act or Regulations under it. In order that the profession may present to the Ministry of Health as great a degree of unanimity as possible, conferences have been held with representatives of the General Medical Council and of the defence societies. Many of the original differences of opinion have been overcome by these conferences, but there still remain a few fundamental points of disagreement which must await resolution by the Minister of Health or during the passage of the Bill.

The statement which the Council has submitted to the Ministry of Health of its views on such revision of the composition, functions and procedure of the General Medical Council as might be undertaken forthwith in a short amending Bill is as follows.

1 Penal Procedure

1 Section 29 of the Medical Act of 1858 should be amended to read as follows

29 (i) If any registered medical practitioner shall be convicted in England or Ireland of any felony or misdemeanour or in Scotland of any crime or offence and is judged by the General Medical Council after due consideration to have been guilty of infamous conduct in any professional respect the Council may, if it sees fit, direct the Registrar to erase the name of such medical practitioner from the Register.

(ii) If any registered medical practitioner is judged by the General Medical Council, after due inquiry into any complaint received and supported by affidavit or affidavits, to be guilty of infamous conduct in any professional respect, such offence not amounting to a felony or misdemeanour, the Council may, if it sees fit, direct the Registrar to erase the name of such medical practitioner from the Register.

The amendment means that in the case of an offence which if established, would constitute a felony or misdemeanour, the Council should not make any investigation unless and until the offender has been tried in a court of law and that evidence of professional misconduct emerging from a trial for a felony or misdemeanour should be capable of being made the subject of complaint to the Council.

2 The General Medical Council should, by Statute, be empowered and required to establish two distinct and separate Committees to be known as (a) the Penal Cases Committee, and (b) the Discipline Committee.

No member of the Penal Cases Committee should be permitted to sit as a member of the Discipline Committee hearing any case which had appeared before the Penal Cases Committee at which he was present as a member.

3 Twenty members of the GMC should be appointed to be a Discipline Committee of which not more than twelve and not less than seven members should be appointed to hear any particular case. The Committee should sit with a legal assessor. If any member of the Discipline Committee engaged in the hearing of a case shall absent himself from any part of the proceedings he shall take no further part in the hearing of such case. If for any reason the numbers of the Committee be reduced below seven the hearing of such case shall be abandoned and if further proceedings be directed by the General Medical Council they shall be commenced *de novo*.

4 A decision of the Discipline Committee to erase the name of a practitioner from the Medical Register should not be valid unless it is supported by a vote of not less than two thirds of those members present.

5 It is undesirable that the Council's own solicitor should present a complainant's case either by himself or through Counsel.

6 If a practitioner is accused of an offence for the investigation of which there exists machinery under the National Health Service Act or other Act of Parliament, that machinery should be fully used before a complaint is submitted to the Council.

It does not necessarily follow that if, after inquiry through the official machinery, the practitioner's name is removed from the National Health Service or other special register, the Council should remove his name from the Medical Register.

7 The Council should not institute any inquiry without the receipt of a formal complaint except in matters arising out of the findings of a court of law or a legally constituted tribunal.

8 The attendance of witnesses and the production of documents before the Discipline Committee should be enforceable by *subpoena*.

9 All oral evidence before the Discipline Committee should be given on oath, save for good and sufficient reason, except evidence as to character, which may be given in writing.

10 There should be a right of appeal to the High Court on points of fact or of law against a decision of the GMC to remove a practitioner's name from the Medical Register.

11 In the event of an appeal any Order for erasure should be suspended until after the disposal of the appeal, subject to the appeal being entered within 21 days from the date of the Order.

12 The Discipline Committee should be empowered to award costs against a Complainant or Respondent and machinery should be established for taxing the costs.

13 The appropriate provision of the Medical Act should be amended to permit of the imposition of a maximum penalty of £500 and the alternative of a term of imprisonment for persons convicted of falsely holding themselves out to be registered medical practitioners.

14 Every complaint made to the Council should be supported by an affidavit or statutory declaration setting out the material facts.

15 A copy of the affidavit or statutory declaration should be sent to the practitioner concerned, and he should be allowed ample time to prepare his explanation or defence.

16 Provision should be made by regulation to enable applications for postponement of inquiries by the Discipline Committee to be made to the President and to be dealt with at his discretion.

17 Each party should furnish to the other, not later than 10 days before the hearing of the case, a list of documents on which they propose to rely.

18 Notice to produce and admit should be permitted.

19 The parties should be at liberty to ask the Discipline Committee to call a witness whose attendance is desired.

20 Only those documents which are agreed by the parties and such others as are proved in evidence should be placed before the Discipline Committee.

21 If any points of law be raised by, or on behalf of either party or by the Discipline Committee, the Legal Assessor should give his opinion upon them in the presence of both parties if present at the inquiry, and of their legal representatives if any.

22 An applicant for the restoration of his name to the Medical Register after penal erasure should be permitted to present his application personally and to make a personal declaration.

(Note—It is considered that the substance of paragraphs 1–13 should be included in the Act while paragraphs 14–22 could be made the subject of Regulations.)

II Direct Representatives

23 In order to provide a more suitable proportion of Direct Representatives on the GMC and also to ensure that a sufficient number of members with particular knowledge of general practice problems shall be available for the two disciplinary committees it is desirable that the number of Direct Representatives to the GMC be increased from seven to twelve, namely seven for England, one for Wales, two for Scotland and two for Ireland (one for Northern Ireland and one for Eire).

III Registration of Specialists

24 It is both undesirable and unnecessary at the present time to establish a statutory list of consultants and specialists.

IV Visitation of Medical Schools

25 It is desirable that visitors should be appointed by the GMC to visit medical schools.

Women Representatives

110 The Council has expressed its agreement with the principle that one of the Direct Representatives of the profession on the GMC should be a woman practitioner. It has inquired whether the Medical Women's Federation would prefer that steps be taken to recommend statutory provision for one of the Direct Representatives to be a woman or that the BMA should, so far as possible, ensure that at least one woman is included among the candidates selected for its support.

The Federation has replied that it prefers the latter alternative. The Council is therefore modifying its procedure for the selection of candidates in the election of Direct Representatives for England and Wales so as to ensure that support is given to a woman candidate.

PUBLIC RELATIONS

The Plebiscite and After

111 During the passage of the National Health Service Bill through Parliament the Council concentrated on stressing the reasons for the profession's objections to certain parts of the Bill and on the efforts to secure amendments.

In September, 1946, Mr A W Haslett, Public Relations Officer to the Association, resigned. Mr John Pringle was appointed to succeed him, taking up his duties in November.

Early in November the National Health Service Bill passed into law and the Association took its plebiscite of the profession on whether it was desired to negotiate with the Government on Regulations. Full publicity was arranged in the Press and on the wireless about the plebiscite and considerable public interest was aroused. As soon as the results of the plebiscite had been discussed by the Council a Press Conference was held to inform the Press of the Council's decision to recommend the Representative Body not to negotiate. This decision was on the whole unfavourably received by the Press. When the correspondence between the Royal Colleges and Mr Bevan was published, nearly all the Press welcomed Mr Bevan's letter as a conciliatory move which ought to be reciprocated by the profession. The Council's further resolution, confirmed by the Representative Body, to hold discussions with the Minister provided the possibility of further legislation was not excluded was well received by the Press.

The Council's protest against the action of the Minister of Food in blaming the medical profession for improper certification in respect of the supply of milk for invalids was widely publicized in the Press. Public sympathy was also secured in the publicity given to the overriding by the Ministry of Food of doctors' prescriptions of extra rations for certain categories of invalids. On Feb 8, 1947, the Minister of Food announced that 'a more lenient view' could in future be taken of individual applications for extra rations.

The Council regards the present stage of discussions with the Minister as an interim period unsuitable for intensive medico-political publicity. The Public Relations Officer has been instructed to develop long term plans for encouraging a better understanding by the Press and the Public of the work of the profession. To this end he will work in close co-operation with Divisions and endeavour to stimulate greater interest and activity in public relations work. It is planned to hold a series of local Public Relations Conferences to which groups of Division Public Relations secretaries will be invited.

Information Service at BMA House

112 The Council has decided to establish at BMA House an extensive Information Service primarily for the use of the Press, though it will also be used internally by the various departments.

Anginal Paine

In view of the now generally accepted theory that the pain of Angina Pectoris is due to myocardial anoxaemia a potent coronary vasodilator such as Cardophylin, may be of value in relieving the anoxaemia when this is due to an inadequate blood supply to the myocardium especially where coronary constriction is the main factor in interfering with the blood supply

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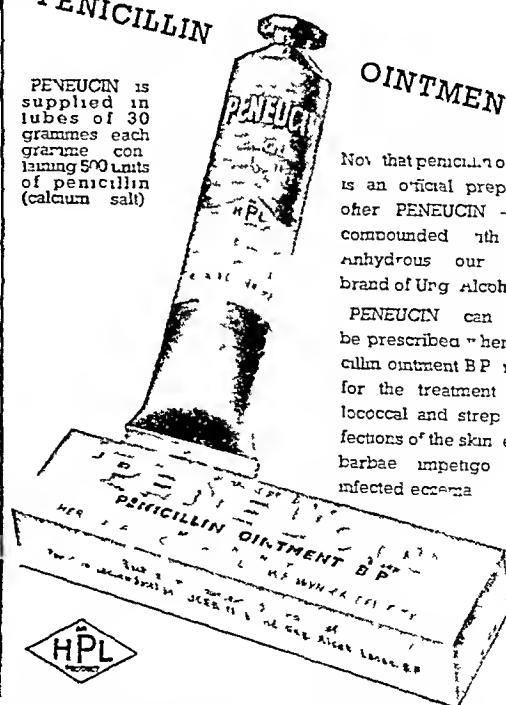
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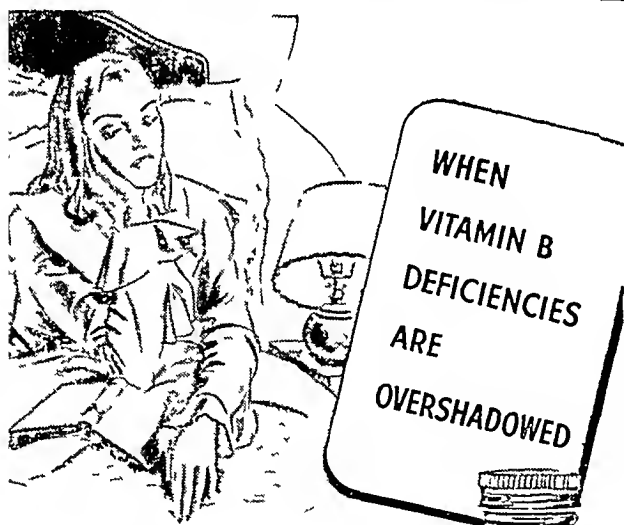
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in the office. The Public Relations Officer has drawn up plans for the organization of this service. These plans have been approved by the Council and it is expected that the service will be functioning, if initially on a modest scale, by the autumn of 1947.

In order that the position of the Association as a scientific body should be more fully recognized by the Press and the Public, the Council has decided to institute a series of lectures to be given in this country by distinguished medical men from abroad specially invited here by the Association. The Public Relations Officer will draw up a scheme. Valuable suggestions have already been received from the Science and International Relations Committees.

The Public Relations Officer is also exploring the possibility that the Association might organize an international medical Summer School in this country. As a further means of enhancing the Association's scientific prestige and of increasing public good will for the profession the Council has considered the following Minute 14 of the Annual Representative Meeting, 1946. *Resolved* That the publication entitled *Charter for Health* should be subsidized by the B.M.A. and sold to the public at a considerably reduced price. Because of paper shortage and other difficulties in the publishing trade neither the original publishers of *Charter for Health* nor other publishers of whom inquiries have been made have been able to undertake republication. Further attempts are however being made to secure publication of a cheaper edition.

INTERNATIONAL RELATIONS

World Medical Association

113 In its last Annual Report the Council stated that it was arranging in co-operation with the Association Professionnelle Internationale des Médecins an international medical conference to discuss the means of bringing about closer ties between the national medical associations in the different countries. A very successful conference at which 32 countries were represented, was held at B.M.A. House on Sept. 25 to 27, 1946, under the Chairmanship of the President, Sir Hugh Lett and at that conference a World Medical Association was formed with the following provisional objects:

- (i) To promote closer ties among the national medical organizations and among the doctors of the world by personal contact and all other means available in order to assist all peoples of the world to attain the highest possible level of health.
- (ii) To study the professional problems which confront the medical profession in their different countries.
- (iii) To organize an exchange of information on matters of interest to the medical profession.
- (iv) To establish relations with and to present the views of the medical profession to the World Health Organization, Unesco and other appropriate bodies.

The members of the World Medical Association will be national medical associations.

Dr Charles Hill was appointed provisional Joint Secretary with Dr P. Cibrice of Paris. An Organizing Committee of nine members who included Dr J. A. Priddyham was appointed to prepare a draft Constitution and to proceed with the organization of the World Medical Association. The first annual meeting of the World Medical Association is to be held in Paris in September 1947.

The Council on behalf of the Association has accepted membership of the World Medical Association. So far the following countries have joined: Austria, Belgium, Canada, Denmark, France, Great Britain, Netherlands, Norway, Peru, Portugal, Switzerland and U.S.A.

B.M.A. Lectures Abroad

The Council decided in 1946 that the medical profession in many European countries, especially in those which had been occupied by the Germans, had lost touch with developments in medicine and surgery and that they were looking to Great Britain for help in filling the gap. To meet this demand for information the Council has set aside the sum of £10,000 for the years 1946-57 for the purpose of providing lectures by the B.M.A. and distinguished British practitioners in the profession in Europe. A special subcommittee

has been appointed to administer the scheme, in which close co-operation will be maintained with the Royal Colleges and the British Council.

The first B.M.A. Lecture abroad was given by Dr S. C. Dyke of Wolverhampton, in Czechoslovakia in November, 1946.

British Medical Literature in Europe

115 Another effect of the war was the suspension in Europe of the circulation of medical books and periodicals. European doctors are now looking to Great Britain not only to revive its pre-war export of books and periodicals but also to fill the place in the dissemination of knowledge formerly taken by Germany. The Association's new Abstracting Service will be a valuable help, and already a large number of B.M.A. publications are distributed, free of charge, to European countries through the British Council. The Journal Committee is exploring the possibility of distributing more through the Central Office of Information.

International Postgraduate Centres

116 A desire has been expressed in some foreign countries for the establishment in London of an international postgraduate centre consisting of a large general hospital and a school with laboratories and other facilities for teaching and research. It is suggested that such a centre would meet a strongly felt need in Europe, and that it could take the place filled by Vienna before the war. The matter is being discussed with the British Postgraduate Federation.

NAVAL AND MILITARY

Indian Medical Service

117 Representations have been made to the India Office emphasizing the importance of an early declaration of policy to allay the anxiety of officers in the Indian Medical Service regarding the future employment of or the compensatory terms to be granted to, officers of the Service consequent upon constitutional changes in India.

The India Office has been informed that while a number of officers employed in the Indian Medical Service would be prepared to accept transfer to the R.A.M.C., retaining their present rank and seniority, a number of officers who entered the Service with a view to civil employment are likely to find the prospect of further military service unacceptable. The Council is of the opinion that officers retiring from the Service should receive in addition to any gratuity ordinarily accruing to them, reasonable compensation for their long absence from civil practice and be given an opportunity of attending postgraduate courses before their retirement. It has asked the India Office to receive a deputation to discuss the matter and has received an assurance that consultations with the Association on questions of compensation and future employment of officers of the Indian Medical Service will be welcomed when the policy regarding the future of the Service is being determined.

Post-war Code of Pay—Encouragement and Reward of Specialization

118 Information has been received from the War Office regarding the regulations to be made for the encouragement and reward of specialization by Service medical officers. Under the regulations previously in force additional pay was granted in the Navy and the Army to medical officers with the necessary qualifications when filling specified specialist appointments, while in the R.A.F. a system of accelerated promotion was applied.

In the Army the grant of additional pay to a specialist medical officer, admissible only while he filled an established specialist appointment, has been abandoned in favour of a scale of qualification pay for subalterns, captains, majors and lieutenant-colonels. This pay will be drawn continuously by officers who possess the required qualifications regardless of the nature of their employment and irrespective of whether they are filling an established specialist post. The qualification standards will be such that the number of officers who attain them will be limited. In effect a medical officer who

by his qualifications and experience has been classified as a specialist will now receive qualification pay at the rate of 4s a day, which he will draw continuously until he is promoted above the rank of lieutenant colonel.

In the Navy and the R A F the existing systems are being retained. In the Navy, therefore, a specialist medical officer not above the rank of surgeon commander, will continue to be eligible for additional pay while he is actually filling a specialist appointment. The rate will be 5s a day. In the R A F officers who are recognized as specialists will receive a credit of two years seniority in the ranks of flight-lieutenant and squadron-leader. The standard required for the grading of an officer as a specialist will be the same in all three Services, and comparable limitation of numbers will apply.

The War Office has been asked for information as to the "qualification standards" to be attained by Service medical officers for the issue of specialist pay.

Demobilization

119 Council has considered the following Minute 190 of the Annual Representative Meeting, 1946

Min 190 Resolved: "That this meeting does not regard the release from the Services as satisfactory, and considers that establishments are overstaffed."

The Council is informed that while no complaints are being received about the rate of release of general duty medical officers, who are being released at a faster rate than officers of other arms of the Service, the release of specialists is particularly difficult. The Central Medical War Committee has made representations to the Government on the question of the over-staffing of Service hospital establishments, and this matter has been considered by the Medical Personnel Committee, which appointed three teams of two of its members to visit Service establishments in Germany, the Middle East, and India. Consideration of Minute 190 of the A R M has been deferred pending publication of the report of the Medical Personnel Committee.

Future Conscription

120 The Council has considered the application of the National Service Bill to the medical profession.

The Bill provides that all men between 18 and 26 years of age shall be liable to 18 months' full time military service (this may be amended to 12 months) to be followed by 5½ years part-time service during which they may have to undergo a total of 60 days' further training. The Bill does not specify whether doctors or intending doctors will be required to undergo their conscripted service as combatants in the ranks before qualification or as commissioned medical officers after qualification, and although postponement of service is referred to in Clause 17 the grounds are not defined, and an 8-year period of liability will leave the medical student uncertain as to when he will be required to serve.

Clause 9 of the Bill provides that registered medical practitioners undergoing training for the purpose of acquiring further qualifications or special experience may defer their conscripted service until attaining the age of 30.

After consideration, and having obtained the views of the British Medical Students Association, the Council has expressed the opinion

(1) That young men intending to enter the medical profession and within the age limits of conscription (18 to 26) should be given the option of completing their conscripted service before or after qualification, provided

(i) if they elect to be conscripted before qualification they be given the definite option of being called up on their eighteenth birthday,

(ii) if they elect to be conscripted after qualification they must continue to receive satisfactory reports from the Deans of their Medical Schools.

(2) That recruitment of specialists should be upon a voluntary rather than a conscript basis, terms of service being made sufficiently attractive to ensure an adequate supply of volunteers of specialist status.

The Council has approved the action taken by the Naval and Military Committee in sending to the medical members of both Houses of Parliament a statement outlining the Association's views.

SCOTLAND

121 Dr George McFart and Dr I D Grant were appointed Chairman and Deputy Chairman of the Scottish Committee for the session 1946-7.

Retirement of Scottish Secretary

122 The Council desires to put on record its cordial thanks to Dr Craig for his outstanding and devoted services to the Association as Scottish Secretary from 1931 until Sept 30, 1946, when he retired under the age limit. Scottish members of the Association and the Scottish Committee expressed their appreciation to Dr Craig at a farewell function held at the Scottish House on Oct 4, 1946 when he was presented with a cheque in token of their regard.

Interim Increase in Salaries of Medical Officers of Health

123 In collaboration with the Scottish Branch of the Society of Medical Officers of Health an endeavour is being made to secure interim increases in the Scottish scale of salaries of whole time medical officers of local authorities approved by the Representative Body in 1927, similar to those agreed in England and Wales in respect of the Askwith Memorandum. There is no arrangement with the Scottish Associations of Local Authorities similar to that which exists in England and consequently there is no agreed scale. Representations have, however, been made to the three Scottish Associations of Local Authorities, and it is hoped that the matter will be the subject of discussion at an early joint meeting.

Motherwell Town Council—"Closed Shop" Policy

124 The Motherwell Town Council has applied the "closed shop" policy to its whole time employees. It is not yet known whether the medical practitioners and nurses in the whole time employment of the town council will be included among the exceptions allowed in a resolution of the local authority. The situation is being closely watched, in collaboration with the Scottish Branch of the Royal College of Nursing, and appropriate action will be taken, pursuant to the policy of the Association, in the event of the position of medical officers and nurses being affected by the resolution of the town council.

Organization of Consultants and Specialists and Whole-time Members of Public Health Service in Scotland

125 Hitherto there has been no machinery in Scotland analogous to that which exists through the Central Consultants and Specialists and Public Health Committees for ascertaining the views of the members of the profession in Scotland employed in these two branches of medical work. In view of the approach of the National Health Service it is essential that such machinery should be available, and the Scottish Committee has therefore appointed (i) a Consultants and Specialists Subcommittee representative not only of the various specialties but also of the Royal Corporations and the Universities, (ii) a Public Health Subcommittee composed of representatives of the various types of Public Health Service (including Superintendents of Hospitals and the Mental Hospital Service) and representatives appointed by the Scottish Branch of the Society of Medical Officers of Health. These subcommittees have already proved exceedingly useful in the discussions on the relevant sections of the National Health Service (Scotland) Bill.

National Health Service (Scotland) Bill

126 The provisions of the Bill have been the subject of close scrutiny by the Scottish Committee, and its recommendations have been submitted to the Scottish Negotiating Committee, which has met the Secretary of State by deputation on two occasions. The Secretary of State was not prepared to make any concessions in respect of the basic principles adopted by the Association, but he made concessions in respect of other matters put forward by the Negotiating Committee and expressed his willingness to meet the Committee for further discussions. The views of the profession in Scotland have been presented to the Scottish Unionist Members of Parliament and Scottish Labour Group Members in an endeavour to secure

amendment of the Bill in accordance with the basic principles of the Association, during the Scottish Grand Committee stage which is now proceeding

Scheme for Loans for Purchase of Practices in Scotland

127 There have been legal difficulties associated with the advance of loans for the purchase of medical practices in Scotland and the subject has been fully examined in conjunction with officials of the Medical Insurance Agency. Insurance and finance experts have been consulted and several insurance companies have been approached with the result that the Medical Insurance Agency in Scotland is now able to arrange facilities similar to those available under the Agency's Practice Loan Scheme in England and Wales.

Linkson Committee with Scottish Branch of the Royal College of Nursing

128 A Linkson Committee with the Scottish Branch of the Royal College of Nursing has been established for the purpose of discussion of and co-operation in matters of mutual interest.

Annual Scottish Function

129 It is proposed in the future to hold under the joint auspices of the Scottish Committee and Insurance Acts Subcommittee (Scotland) an annual social function. Members will be entitled to bring guests and a number of official guests will be invited. It is felt that such a function could not fail to be of considerable propaganda value to the Association in Scotland.

WALES

130 The Welsh Committee met at Shrewsbury on Dec. 5 and reappointed Dr. H. R. Frederick as its Chairman. The Committee is anxious that its activities should be national in character and that every effort should be made to interest Branches and Divisions in Wales in its work in order that local problems and difficulties may be referred to the Committee for its consideration and where necessary support.

A new function devolved upon the Committee last month when it met to select the names of six Welsh practitioners from those nominated by Divisions in Wales as the Association's nominees for membership of the newly constituted Welsh Regional Hospital Board.

In this connexion the Committee has welcomed the announcement that Wales and Monmouthshire have been recognized as an autonomous region for the purpose of the National Health Service but considers that temporary and special arrangements are necessary in respect of areas more readily worked with university centres in England.

OVERSEAS BRANCHES

Colonial Advisory Medical Committee

131 As reported to the Representative Body in 1946 the Council suggested to the Colonial Office that the Association should be represented on the Central Advisory Medical Committee which advises the Secretary of State in the formulation of policy. The Secretary of State replied that apart from certain representatives of Government Departments or of quasi-official bodies appointments to the Committee are made in a personal capacity and not on the basis of representation of particular associations and moreover that the Committee does not normally concern itself with questions relating to terms of service in the Colonial Medical Service in which the Association would be particularly interested. The Secretary of State intimated, however, that he was anxious to continue to have the opportunity of considering suggestions or advice from the Association. In particular should the Advisory Committee be asked to advise on questions relating specifically to terms of service he would be glad to invite the Association to send a representative to the meeting to submit the Association's views.

The Secretary of State has been pressed to reconsider his decision and as a result he has indicated that if the Association could submit a list of persons who in his view are fitted by their experience to be of service to the Committee, he would be pleased to consider their names when making further

appointments to the Committee. The Council proposes to take advantage of this invitation.

Co-operation with the Dominions

132 The Council is anxious to establish a closer link with the profession in the Dominions, and it believes that this desire is shared by practitioners overseas. It has therefore appointed a special committee to consider and report upon the question of contacts and co-operation between the profession in the Dominions and in this country.

Ex-gratia Payments to Doctors Interned in Malaya

133 The Council reported to the Representative Body in 1946 the action which had been taken in an endeavour to secure more favourable treatment for a number of practitioners in private and estate practice in Malaya, who were mobilized in the Malayan Auxiliary Services and who were subsequently captured and interned by the Japanese. The initial offer indicated by the Colonial Office was to the effect that those members of the Civil Defence Services of Malaya and Hong Kong who were not eligible as Government servants or otherwise for accrued pay during internment might be granted ex-gratia payments equivalent to three months pay of their Civil Defence posts. In consequence of representations by the Council the Department next intimated that ex-gratia payments equivalent to accrued pay for the period of internment, at the rate appropriate to rank, might be granted subject to (i) a deduction of 10% (ii) a maximum of £1,500 in any one case (iii) deduction of payments already made. Further representations have been made to the Colonial Office and it is now understood that the 10% deduction (which was intended to represent local taxation to which the payments would normally have been subject) will be waived in respect of payments up to £1,250.

The Department, while acknowledging that the maximum of £1,500 was an arbitrary figure, maintained that no one who was temporarily employed in Government service on account of the emergency could reasonably expect to receive as an ex-gratia payment, a sum in excess of £1,500 in respect of the period of internment. The Colonial Office also drew attention to the fact that all internees were given free passages to their homes and those who wished to return to Malaya were being sent back without cost, that free medical and hospital treatment had been afforded and that internees were eligible for the benefits of the Personal Injuries Scheme operating in the United Kingdom.

The Council, while of the opinion that the terms offered are far from generous, feels that no useful purpose will be served by pursuing the matter further with the Colonial Office.

Salary Scales—East Africa

134 The Council has considered a complaint from one of the East African Branches regarding the salary scales of Medical Officers in the Colonial Medical Service. The Council is strongly of the opinion that the salaries of Medical Officers in East Africa are totally inadequate at the present time both in the light of the findings of the Spens Committee and as compared with the rates of remuneration now obtaining in the profession in the United Kingdom and that they are not such as to attract to the Colonial Service practitioners of the calibre required for the Service. The Council therefore proposes to make representations to this effect to the Colonial Office.

Opportunities in the Colonial Medical Service

135 As reported to the Representative Body in 1946 the Council has received a number of complaints from Overseas Branches that the statement appearing in advertisements of vacancies in the Colonial Medical Service, that the Service offered ample opportunities for work in special branches of medicine and surgery in Public Health and Medical Research, was misleading as, in fact, few such opportunities existed. The evidence available did not show that there was universal dissatisfaction on this question in the Colonial Medical Service, and it was felt that some of the complaints resulted from restrictions necessarily imposed by the war. It was apparent, however, that in a few areas opportunities were by no means all that could be desired.

The Council has pursued this question with the Colonial Office and has asked it to consider the possibility of providing better professional opportunities in the Service. It is now understood that as a result of the appointment, since the end of the war, of many new practitioners to the Service, a considerable number of those already in the Service have been able to take the leave due to them, and many have completed or are now pursuing postgraduate courses leading to higher qualifications. The Colonial Office is satisfied that as further appointments are made the opportunities for study leave will become more favourable even than before the war.

Malayan Medical Service

136 The Council has received disturbing reports of the difficulties experienced by medical officers of the Malayan Medical Service on account of the extremely high cost of living in that country at the present time. The attention of the Colonial Office has been drawn to the position and the Department has been asked to give urgent consideration to the problem.

H GUY DAIN
Chairman

APPENDIX I

RETURN OF ATTENDANCES OF MEMBERS OF COUNCIL

Chairman Dr H GUY DAIN

Name	Attendances	
	Actual	Possible
Chairman of Council H Guy Dain Birmingham	8	8
President Sir Hugh Lett Bart Richmond	7	8
Chairman of Representative Body J B Miller Bishopbriggs	7	8
Treasurer J W Bone Luton	8	8
Past President H S Souttar London	6	8
Deputy Chairman of Representative Body E A Gregg London	8	8
Abel A Lawrence London	8	8
Aitken Janet K London	8	8
Anderson J H Ruthin	4	8
Arthur J C Low Fell	5	8
Brodie P Martin Edinburgh	4	8
Brown J A Birmingham	6	8
Burgess A H Cheshire	7	8
Chadwick J Doxford Doncaster	8	8
Dawson E C Derby	7	8
Dornan W E Sheffield	7	8
Edgar W H Alverstoke	3	8
Esslemont Mary Aberdeen	7	8
Fenton James London	7	8
Forbes Robert London	7	8
Frederick H R Port Talbot	8	8
Frew W D Kilmarnock	1	8
Golding H M Bristol	7	8
Gough A Staveley Watford	7	8
Grant J D Glasgow	6	8
Gray F London	8	8
Hall I Simson Edinburgh	4	8
Henderson L H London	6	7
Howells W V Swansea	7	8
Hunter J M Portrush	3	8
Ireland J A Shrewsbury	7	8
Jolly R H Wolverhampton	2	8
Jones Isaac London	5	8
Jones J A L Vaughan Leeds	7	8
Kennon R Liverpool	8	8
Leslie R W D Nottingham	4	8
Macdonald Peter York	6	8
MacFeat G Douglas Lanarkshire	7	8
Martin C G London	4	8
Moore A M A London	7	8
Nelson J J Harper Isle of Mull	5	8
Newell R L Cheshire	5	8
Nixon W C W London	2	5
O Farrell P T Dublin	5	8
Owen D R Chester	5	8
Pool A Smith Glasgow	4	8
Porritt A E London	7	8
Pridham J A Weymouth	6	8
Robinson J A Ipswich	7	8
Rowe J A Ipswich	7	7
Steele W D Worcester	6	8
Stevenson C M Cambridge	8	8
Sutherland H H D London	8	8
Thwaites J G Brighton	7	8
Ward S Birmingham	8	8
Waterfield N E Little Bookham	8	8
Watts Weldon P T Newcastle-on Tyne	7	8
Woodside C J A Belfast	3	8
Wright A Dickson London	6	8
Vacancy for Representative of I M S		

APPENDIX II

RULES OF THE CENTRAL ETHICAL COMMITTEE RELATING TO COMPLAINTS REGARDING PROFESSIONAL CONDUCT

Rule 1

Where a complaint is brought to the notice of the Head Office of the Association regarding the professional conduct of a member of the profession, a direction shall be obtained by the Secretary of the Association from the Chairman of the Central Ethical Committee as to whether in his opinion there is a *prima facie* case for investigation by the Association.

Rule 2

Where the Chairman is satisfied that there is a case for investigation, the Secretary shall inquire (subject to Rule 4 hereof) of the Honorary Secretary of the Division* of which the practitioner whose conduct is the subject of complaint is a member, as to whether the Division is willing to deal with the complaint in accordance with the procedure specified in its Ethical Rules. Where the practitioner whose conduct is the subject of complaint is not a member of the Association, a similar inquiry shall be made (subject to the provisions of Rule 7 hereof) of the Honorary Secretary of the Division in which the practitioner resides.

Provided that, where the complainant and the respondent reside in different Divisions of a Branch composed of several Divisions the Chairman of the Central Ethical Committee shall have power to direct that inquiry be made of the Honorary Secretary of the Branch as to whether, subject to the provisions of Rule 7 hereof in the case of a non member, the Branch Council is willing to deal with the complaint in accordance with the procedure specified in the Ethical Rules of the Branch and any such reference of a complaint to a Branch Council shall be deemed for the purpose of Ethical Rule 7 (d) of the Branch to be a reference from the Central Ethical Committee. Provided further that where the complainant and respondent reside in different Branches the complaint shall be dealt with by the Central Ethical Committee and no such inquiry shall be necessary.

Rule 3

Subject as hereinafter provided, the Central Ethical Committee may undertake the investigation of any complaint which is the subject of an inquiry of the Honorary Secretary of a Division or Branch under Rule 2 hereof unless the Division (or Branch) concerned, within twenty one days after the Central Ethical Committee has communicated with the Honorary Secretary of the Division (or Branch) in accordance with Rule 2 hereof shall have informed the Central Ethical Committee that it will deal with the complaint in accordance with its Ethical Rules.

Provided that, save in exceptional circumstances no investigation shall be undertaken by the Central Ethical Committee contrary to the wishes of the Division (or Branch).

Rule 4

Notwithstanding anything contained in Rules 2 and 3 hereof inquiry into the professional conduct of any member of the Association who is known to have accepted an appointment which was the subject of an 'Important Notice' in the *British Medical Journal* at the time of its acceptance shall be undertaken only by the Central Ethical Committee and acceptance of such an appointment by a member of the Association and/or refusal to resign from the same on a request being made in accordance with Rule 9 hereof, shall be construed as *prima facie* evidence of an ethical offence justifying expulsion from membership of the Association. In making inquiry into any such case the Central Ethical Committee may act on its own motion and without any formal complaint being received by the Association.

Rule 5

Complaints regarding the professional conduct of individual members of the profession shall be considered by the Central

* Including a Branch composed of one Division

Ethical Committee otherwise than in accordance with the provisions of Rules 3 and 4 hereof in the following circumstances only

(a) Upon a reference from a Division or a Branch Council or from the Ethical Committee of a Division or Branch

(b) Upon an appeal by a member of the profession to the Council of the Association from a decision of a Branch Council

(c) Upon a report being made to the Council of the Association by a Division or a Branch Council in order that the propriety of a member of the Association remaining a member may be considered

(d) Where the Division (or Branch) to which a complaint would ordinarily be referred under Rule 2 hereof has not adopted the Revised Rules governing procedure in ethical matters as approved by the Representative Body of the Association—provided that save in exceptional circumstances no investigation shall be undertaken in such a case by the Central Ethical Committee contrary to the wishes of the Division (or Branch)

(e) Where the parties concerned reside in different Branches of the Association

Rule 6

An appeal to the Council of the Association from a decision of a Branch Council under Rule 24 of the Branch shall be allowed only on one or both of the following grounds

(a) that an ethical principle has been wrongly interpreted or applied,

(b) that the decision given is against the weight of the evidence

In the event of such appeal to the Council of the Association the matter shall be dealt with by the Central Ethical Committee as a hearing *de novo* but no party shall be entitled to adduce evidence additional to that called before the Committee or Committees by whom the case has previously been investigated without the permission of the Chairman of the Central Ethical Committee. Any application for permission to adduce additional evidence shall be made to the Chairman not less than seven days before the date fixed for the hearing of the appeal

Rule 7

Save in exceptional circumstances no investigation shall be undertaken of a complaint by a non member of the Association or regarding the professional conduct of a non member of the Association unless the written consent of the non member and his agreement to be bound by the Ethical Rules of the Association a copy of which shall be sent to him, and to accept the decision of the Association as final and conclusively binding on him in all respects are first obtained

Rule 8

In a case submitted by a member of the profession who declares that he has been (or is) directly affected by what he alleges to be the unprofessional conduct of another practitioner it shall be the duty of the Secretary of the Association before appointing the direction of the Chairman of the Central Ethical Committee referred to in Rule 1 hereof unless the provisions of Rule 8 of the local Division (or Rule 9 of the Branch) have already been carried out to ascertain whether the complainant has either personally or by letter afforded the practitioner against whom he makes complaint a reasonable opportunity of explanation and if this has not been done to call upon him to do so. If the complainant fails to take this step within a reasonable period of his own making having made the complaint he shall be deemed to have withdrawn the complaint

Rule 9

In a case where a member of the Association is known to have accepted an appointment which was the subject of an ethical complaint in the *British Medical Journal* at the time of his appointment it shall be the duty of the Secretary of the

Association to request such member to take the necessary steps within a period of one calendar month to terminate such appointment in accordance with the terms of his engagement and no further action shall be taken under these Rules with respect to such member until the expiration of such calendar month

If the member shall within such period satisfy the Secretary of the Association that he has given such notice as is required under the terms of his engagement to terminate such appointment, no further action shall be taken under these Rules with respect to such member until the expiration of such notice

Rule 10

In a case of inquiry held for the purpose of considering the propriety of a member of the Association remaining a member the Secretary of the Association shall inform the member that the inquiry will be held in accordance with the Articles of Association* relating to expulsion and shall furnish him with a copy of the relevant sections of the Articles

In no case shall the Central Ethical Committee recommend to the Council of the Association that a member be expelled from membership of the Association except after an inquiry of which the member shall have received notice is provided in this Rule

Rule 11

An inquiry regarding the professional conduct of a member of the profession may be held either at an ordinary meeting of the Central Ethical Committee or at a special meeting, at the discretion of the Chairman of the Committee. Not less than twenty one days' notice of the meeting shall be given to every member of the Committee and to all parties concerned

Rule 12

(a) In all cases other than cases of appeal to the Council of the Association from a decision of a Branch Council, the Secretary of the Association shall inform the practitioner whose conduct is under consideration that a complaint regarding his conduct has been brought to the notice of the Central Ethical Committee and shall invite him to submit his written observations on the matter or to supplement any explanations he has given on any previous occasion

(b) The Secretary shall invite the complainant and the respondent to attend with their witnesses (if any) at the meeting of the Central Ethical Committee at which the case is to be investigated, and it shall be the duty of the Committee wherever practicable to arrange for the attendance of both parties at such meeting

(c) Each party shall send to the Secretary not less than fourteen days prior to the date of the meeting of the Committee at which the complaint is to be investigated copies of all documents on which he intends to rely

(d) Copies of, or relevant extracts from, all such documents furnished to the Secretary by either party shall be supplied by the Secretary to the other party

(e) The Committee shall investigate the facts of the case and shall take such evidence as shall be deemed by the Committee necessary for the purpose. Such evidence may, at the discretion of the Committee, be written or oral

Rule 13

The Committee shall after due investigation, adopt a Resolution in one of the following forms or in such other form as it may consider appropriate

(i) That, in the opinion of the Committee, the complaint has not been established

(ii) That in the opinion of the Committee there has been no violation of the Rules (or Resolutions) of the Association (or of the Division or Branch) or of the generally accepted principles of professional conduct and that no action be taken

* Relevant extracts of the Articles of Association would be inserted here as a footnote

(iii) That, in the opinion of the Committee, the complaint is frivolous, and that the case be dismissed

(iv) That, in the opinion of the Committee, has committed an indiscretion and error of judgment, but that his conduct does not call for censure

(v) That, in the opinion of the Committee, has violated

* (a) the Rules (or Resolutions) of the Association (or of the Division or Branch) and

* (b) the generally accepted principles of professional conduct,

but that, in consideration of faults on the part of others concerned, the case be dismissed

(vi) That, in the opinion of the Committee, has violated

* (a) the Rules (or Resolutions) of the Association (or of the Division or Branch), and

* (b) the generally accepted principles of professional conduct

and that he be, and hereby is, censured

(vii) That in the opinion of the Committee the conduct of has been (or is)

* (a) in violation of the Rules (or Resolutions) of the Association (or of the Division or Branch) and

* (b) detrimental to the honour and interests of the Association and

* (c) detrimental to the honour and interests of the medical profession,

and (in the case of a member) (1) that he be informed of this finding of the Committee and allowed until to reconsider his position, (2) that the Secretary of the Association be instructed to report in due course to the Committee upon his reply, if any, and (3) that, if upon such further report the Committee shall consider his reply unsatisfactory, or if no reply be received within the time specified, the matter shall forthwith be reported to the Council of the Association in order that the propriety of his remaining a member may be considered

(viii) That, in the opinion of the Committee, the conduct of has been (or is)

* (a) in violation of the Rules (or Resolutions) of the Association (or of the Division or Branch), and

* (b) detrimental to the honour and interests of the Association, and

* (c) detrimental to the honour and interests of the medical profession

and (in the case of a member) that the matter be reported forthwith to the Council of the Association, in order that the propriety of his remaining a member may be considered

The following resolutions are to be adopted only after inquiries held in accordance with the Articles of Association relating to expulsion

(ix) That it be recommended to the Council of the Association that the Council do not in the exercise of its powers under the Articles of Association, expel from membership of the British Medical Association of a member of the Division of the Branch

(x) That it be recommended to the Council of the Association that the Council in the exercise of its powers under the Articles of Association do expel from membership of the British Medical Association of a member of the Division of the Branch, on the ground that his conduct is deemed by the Council to have been (or to be)

* (a) detrimental to the honour and interests of the Association, and

* (b) detrimental to the honour and interests of the medical profession and

* (c) calculated to bring the profession into disrepute, and

* (d) such that he has wilfully and persistently refused to comply with the Regulations of the Association (or the Rules of the Division or Branch)

Rule 14

A copy of the Resolution of the Committee shall be sent by the Secretary of the Association to each of the parties concerned, and to the Honorary Secretary of any Division or Branch immediately concerned

Rule 15

If a practitioner shall make amends or express regret to the satisfaction of the Central Ethical Committee, it shall be competent for the Committee, after due notice, to rescind the Resolution of censure passed under Rule 13 (vi), and any such decision of the Committee shall be reported forthwith to any other authority of the Association which has already considered the case and shall be circulated in the same manner as the original Resolution of censure

Rule 16

The Resolution of the Committee upon a case, other than a case of inquiry in accordance with the Articles of Association relating to expulsion, shall be final unless new facts shall subsequently be brought forward which, in the opinion of the Committee, justify the case being reopened. Should such new facts be brought forward in a case which came before the Committee after a local investigation, the case shall be referred for reinvestigation by the Division or Branch concerned

Rule 17

After a case has been referred to the Central Ethical Committee for investigation, no person concerned shall make complaint to any other professional authority until such case has been disposed of by the Committee or, in a case of inquiry in accordance with the Articles of Association relating to expulsion, by the Council of the Association and if any such person shall do so the Committee or the Council (as the case may be) may at its discretion adjourn or refuse to proceed with the investigation

Rule 18

Any member of the Ethical Committee of a Division or Branch or of the Council of a Branch who shall have taken part in the previous consideration of any case referred to the Central Ethical Committee shall be debarred from taking part in the consideration of such case as a member of the Central Ethical Committee or the Council of the Association but he shall not be debarred from giving evidence as to facts if called upon to do so

Rule 19

(a) In every case in which the Central Ethical Committee shall after due inquiry in accordance with these Rules, have passed a Resolution declaring that in the opinion of the Committee the conduct of any medical practitioner, whether by contravention of the Rules and Resolutions of a Division or Branch or otherwise, has been (or is) detrimental to the honour and interests of the medical profession, it shall be the duty of the Secretary of the Association, subject to the approval of the Committee, to cause such Resolution to be brought directly to the knowledge of every member of the Division (or Branch) in the area of which such practitioner resides, and every member of such other Divisions or Branches as the Committee may specify, by means of a Notice in the form appended hereto which Notice it shall be the duty of the Secretary of the Association to authenticate by his signature

(b) In any case in which the Central Ethical Committee shall at the time of or subsequently to, the adoption of a Resolution of the nature contemplated by paragraph (a) of this Rule, have also resolved that, in the opinion of the Committee, it is desirable that such Resolution shall be brought officially to the notice of any specified Divisions or Branches of the Association

* Strike out (a), (b) or (c) if not required

* Strike out (a), (b), (c) or (d) if not required

shall be the duty of the Secretary of the Association to transmit copies of the said Resolution to the Honorary Secretaries of the Divisions or Branches so specified

Form of Notice referred to in Paragraph (a)

BRITISH MEDICAL ASSOCIATION

(Private and Confidential)

NOTICE

In pursuance of Rule 19 of the Rules of the Central Ethical Committee of the Association relating to Complaints regarding Professional Conduct, Notice is hereby given that at a meeting of the Committee held at on the day of a Resolution in the following terms was duly passed

That in the opinion of the Committee the conduct of of has been (or is) detrimental to the honour and interests of the medical profession

Signed in pursuance of the Rules of the Central Ethical Committee of the British Medical Association relating to Complaints regarding Professional Conduct

SECRETARY

APPENDIX III

MOTIONS REFERRED TO COUNCIL BY A.R.M. 1946

<i>Min of A.R.M.</i>	<i>Subject</i>	<i>Paragraph of Council's Report</i>
14	A Charter for Health	112
24	Life Insurance Examinations	21
36	Supplementary Clothing Coupons	37
42	Fees for Admiralty Surgeons and Agents	27
44	Telephone Facilities for Doctors	23
45	Fees of Post Office Medical Officers	42
46	Coroners Acts	25
48	Meetings of Consultants and Specialists	62
49	Part time Consultants and Specialists	59
56	Examination of Pensioners referred to Specialists	73
73	Expenses of Members attending Meetings	97
88	Plebiscite	20
95	Regional Organization	97
109	National Maternity Service	{ Under consideration by Negotiating Committee
111	National Maternity Service	
114	Fees paid to Practitioners called in by Midwives	88
119	Milk	84
12	Public Relations	111
126	Study Groups	11
127	Compensation	{ Under consideration by Negotiating Committee
130	Pocket Practice for General Practitioners	
131	Academy of Practitioners	105
132	Education and Training	15
137	Education and Training for Junior Practitioners	18
138	Education and Training of Children	86
139	Education and Training of Members	
140	Education and Training of Members	
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PROCEEDINGS OF COUNCIL

Adjourned Meeting, Wednesday April 16 1947

A meeting of the Council of the Association to complete the business adjourned from the meeting of April 2 (*Supplement* April 12 p. 53) was held on April 16. Dr H. Guy Dain presiding.

A report from the Consultants and Specialists Committee was presented by Mr A. M. A. Moore and contained recommendations, which were agreed to, for certain slight alterations in the rules relating to the roll of consultants and to the method of election of group committees. A recommendation transmitted from the Orthopaedic Group Committee was that the group should be composed of members of the Association practising exclusively or predominantly in orthopaedic surgery and who had been so practising for a period of not less than five years. It was pointed out that no other Association group had laid down a minimum limiting period, but as each group enjoyed autonomy and this was the wish of the Orthopaedic Group Committee, the Council acceded to the recommendation.

The principal subject in a report presented from the Services Committee was conscription, in particular a proposal that specialists might be permitted to defer their period of national service up to the age of thirty. This plan was not favoured by the committee, and it was pointed out that under such an arrangement there would be no necessary correlation between the number of specialists coming into the Services and the number actually needed. The feeling was that it was for the Services themselves, by their terms and conditions of service, to attract as permanent officers the specialists required. The Secretary said that in the Bill itself no option was provided whereby a man could take his period of service either before or after qualification although such option was referred to in a letter from the Ministry.

In presenting the report of the Charities Committee, Dr Janet Aitken proposed that from the unearmarked subscriptions to charities there be paid a sum of £250, being one third of the amount required to meet the return fare of fifty children of British doctors killed in the war who are to be the guests for three months of the Swiss medical profession. The proposal was agreed to.

Dr J. Thwaites reported for the Committee on Psychiatry and the Law. This is a joint committee of the British Medical Association and the Magistrates' Association. The report embodied a memorandum on the interpretation of the definitions in the Mental Deficiency Act, 1927, with an appendix on the psychopathic personality. The memorandum was approved by the Council for publication in the *Journal*. Dr Thwaites also stated that at the request of the Council the committee had considered the desirability of an alteration of the law relating to attempted suicide. It appeared to the medical members of the committee that there was a strong case for such alteration, so that attempted suicide—excluding 'suicide pacts' or the incitement of another person to commit suicide—would not be dealt with as a legal offence, but there were certain other legal issues which might arise, such as the question of life assurance, with which the members did not feel competent to deal. This report also was approved. The committee was complimented on it, and it was agreed that it be published in the *Journal*.

In the absence of the chairman of the Public Health Committee Dr J. A. Ireland brought forward a report recommending approval of a revised scale of fees for practitioners called in by midwives, such scale to be sent to the Ministry of Health with a request that the regulations be amended accordingly. This recommendation was approved, as was also a recommendation for a revised scale of remuneration for practitioners undertaking the examination of and attendance on children committed to the care of local authorities and boarded out.

Fees for Treatment of School Children

A report from the special committee on fees for the treatment of school children was brought forward by Mr Lawrence Abel. The committee had been asked to formulate proposals

for the revision of the scale of fees in the Ministry of Education circular 102. A deputation had attended at the Ministry of Education in support of the Association proposals. The Ministry had put forward counter-proposals, but these in certain respects appeared to be far from satisfactory.

The Council resolved to express its dissatisfaction at the Ministry's proposals (not yet confirmed) and to restate its case.

Mr H S Souttar, for the Science Committee brought forward recommendations which were agreed to for the award of two Sir Charles Hastings Clinical Prizes and for other prizes of the Association. Mr Souttar also reported on efforts made to interest medical students in the work of the Association. It was agreed to award six prizes, each of the value of £25, for essays by students in open competition in the country in general and in addition to award a number of regional prizes, the Students Association to decide on the selection of regions. A series of BMA lectures to medical students were also agreed to.

The Science Committee further reported on arrangements for postgraduate education, which it recommended should be arranged at regional level, with a committee established in each region for the purpose of co-ordinating and promoting postgraduate study, the committee to consist of representatives from the university the staffs of local hospitals, local medical societies, and the Divisions and Branches of the Association. A recommendation which set out these and other details was agreed to, and the Council in adopting the report endorsed a remark by the committee placing on record its appreciation of the very valuable contribution made by local medical societies and the clinical activities of Divisions and Branches over a number of years.

Colonial Advisory Committee

Dr J B W Rowe presented a report from the Dominions Committee, the principal matter in which concerned a suggestion first made a year ago that the Secretary of State for the Colonies should be asked to consider the appointment of a representative of the Association on the Colonial Advisory Medical Committee which advised the Secretary of State in the formulation of policy. The Secretary of State had replied that appointments to the committee were personal and not representative, but after further approach he had agreed that if the Association cared to submit a list of persons who, in its view, were fitted by their experience to be of service he would be very glad to consider their names when making appointments to the committee. The Council agreed to recommend the names of suitable practitioners.

A preliminary report from the Committee on the Care and Treatment of the Elderly and Infirm was presented. It was stated that, among other matters the committee was considering the special provision for the care and treatment of cases of senile dementia.

A resolution from the West Middlesex Division was received and noted that the executive committee viewed "with grave disquiet" the pressure brought to bear on representatives at the Special Representative Meeting by members of Council to persuade them to vote contrary to the instructions given them by their constituents.

In view of the possibility of active steps being taken shortly to bring about health centre development experimentally or otherwise, the Council considered as a matter of some urgency a proposal that an investigation be made forthwith into group practice and similar arrangements and various types of general practitioner collaboration. It was agreed to set up an *ad hoc* committee of nine members on this subject. The selection of the members of the committee was left in the hands of the Chairman of Council and the chairmen of certain standing committees.

The final task of the Council in a meeting which lasted rather more than two hours was to approve the Annual Report which is published in the *Supplement* at p 61.

RETURN TO PRACTICE

The Central Medical War Committee announces that the following have resumed civilian practice: Mr Ian Jackson, FRCS at 104 Harley Street, W1 (Welbeck 1801), Dr W Eric Gibb MRCP at 47, Queen Anne Street Cavendish Square W.1 (Welbeck 1011).

GENERAL MEDICAL COUNCIL

ELECTION OF DIRECT REPRESENTATIVE

In addition to Dr J A Brown, whose manifesto was published in the *Supplement* of April 19 (p 57), the following are standing as candidates for the vacancy on the G M C

JAMES EDGAR OUTHWAITE, M B, Ch B (Leeds)
ISAAC ROSE M B, Ch B (Leeds)

NEWLY QUALIFIED ASSISTANTS

POSITION IN RELATION TO MILITARY SERVICE

The Central Medical War Committee thinks it desirable to draw the attention of general medical practitioners to the fact that newly qualified practitioners liable to military service, although now free to accept assistantships in general practice are not free to remain in such appointments after they have been qualified for six months. The committee urges all newly qualified practitioners, in their own interests and the interests of the hospitals, to seek junior hospital appointments of the A category. A practitioner liable to military service is granted deferment to enable him to hold such a post for six months *provided that he has obtained the post within three months of qualification*. He is then granted a further six months deferment if selected for a B2 post, and if, on completing this post, he is appointed to a B1 post, his recruitment is again deferred, normally for twelve months at least, and he may eventually be recommended for recruitment as a graded specialist. If, however, he enters general practice on qualification, his recruitment is initiated about five months after the date of qualification with a view to call-up when he has been qualified for six months, and the committee will not then entertain an application for deferment for the purpose of gaining hospital experience before undertaking military service.

At the present time male practitioners are liable to military service as general duty medical officers if they were born on or after July 1, 1916.

HEARD AT HEADQUARTERS

Transatlantic Centenary

The American Medical Association celebrates its centenary this year. It is junior to the BMA by fifteen years. Societies unlike individuals, do not grow old, and both on this side of the Atlantic and on the other the bodies which represent the medical profession are youthful and aspiring. The Council is sending a delegation to convey greetings to our American colleagues in their week's celebration at Atlantic City, New Jersey in the middle of June, thereby returning the compliment which the AMA paid its elder brother in 1932.

National Health Bill American Version

The delegates to the American Medical Association centenary will find a National Health Service Bill under consideration in the United States—a Bill almost as lengthy and complicated though not as revolutionary, as the one which has lately passed through the British Parliament. A Bill has just been introduced into the Senate to co-ordinate the health functions of the Federal Government in a single agency. Its other purposes are to extend the activities of the public health service and to promote and encourage medical and dental research. In the preamble it is explained that health and medical functions are widely scattered at present with resulting confusion and duplication of effort, and that there are inadequacies in the distribution of public health services. The policy is to aid the individual States, which have a good deal of autonomy in the matter through consultative services and grants in aid 'to make available medical hospital, dental, and public health services to every individual, regardless of race or economic status. The Bill is to be an administrator appointed by the President on the advice of the Senate. He will be a medical man, licensed to practise in one or more States, and is expected to be outstanding.

in the field of medicine. His salary, or compensation as the Americans call it is to be at the rate of \$15,000 a year

The Aged and Infirm

The problem of the care and treatment of the elderly and infirm which is at present engaging the attention of a special BMA committee presided over by Dr A Greig Anderson is proving a bigger problem than it seemed to be at the outset. The committee has begun by classifying the elderly and/or infirm (it seems impossible to escape the ugly double conjunction) and has found that there are at least five classes to be considered—namely, the elderly the elderly and infirm the long term and short term sick and the senile psychiatric case. As to speak of other special groups in equally cumbersome phrases. The long term and short term sick have again to be subdivided into acute sick, prolonged acute sick, long term sick potentially remediable and long term sick irremediable. Senile psychiatric cases again have to be divided into those not requiring admission into a mental institution and those suitable for such admission. The committee is pursuing its task so thoroughly that an important contribution to social medicine is likely to emerge from its discussions. One matter to which it is devoting itself especially is the ascertainment of the provision and the need of homes and hostels for the elderly and it has had before it particulars of some interesting enterprises of this kind.

Correspondence

Municipal Medical Officers

SIR—Doubtless you are aware that from April 1948 the majority of the municipal health services are being transferred to the Regional Boards of the National Health Service. Doctors in the municipal services, whatever their political leanings, view with mixed feelings the trends of the negotiations at present being conducted with the Minister. They can think of many aspects of municipal medical practice which they dislike and do not wish to see perpetuated. For example experience in the public service has convinced them that unless the profession is powerfully and completely represented at all levels good will and hard work are ineffective against the tremendous inertia of a preoccupied Authority. If asked they would certainly say "No concessions without representation." On the other hand they have no desire to be taken over by colleagues who, however enthusiastic and professionally well equipped, look upon municipal practice as a means to an end rather than a service to the public in which there are no disjunctions drawn between "lectures" and "interesting cases."

Quite apart from these future political conditions in the municipal services are far from ideal. Medical officers feel that they have lost out much more for dealing directly with their consulting bodies on day-to-day matters and questions of policy. They have no voice in their terms of service or remuneration and with few exceptions their approval of the conditions suggested for transfer has been their willingness to bear the burden of the change.

A National Association of Municipal Medical Officers is being formed to bring before the attention of the Ministry of Health the views of medical officers of non-NHS services. Will you do me the honor to please communicate this to the Hon. Secretary, S. Castle Bar Road, Ealing, London W.5. I shall be pleased to send further particulars and would be glad to hear of any further developments.

J J HAMILTON

"Doctor" Sign on Cars

SIR—The fact that a doctor's car is the only one in the street which is not liable to be stopped by the Police for a "doctor's sign" is a very curious one. It is a pity that the Police do not seem to be aware of this. The Police should be made aware of this and the fact that a doctor's car is the only one in the street which is not liable to be stopped by the Police for a "doctor's sign".

great white shining specialist attitude is one of the things which has allowed the public to think of us as it does—I am, etc

London W 1

C K VARTAN

SIR—Your correspondent Lieut-Col F A Barker (*Supplement* March 22 p 41) who referred to the usefulness of these labels in getting us sympathetic treatment by the police has brought up one of their most useful functions. Many of my patients live in blocks of flats in the area of London within which parking is strictly controlled. Before I had a Doctor label on my car I was constantly having trouble with the police, but since my car has been labelled I have met with every possible kind assistance. I see every reason therefore to continue using the label since so far as parking is concerned a state of emergency still exists—I am, etc

London SW

J H B BRAT

National Service

SIR—The conscription age for doctors under the National Service Bill will be about 25 years, with a deferment to 29 for intending specialists. Other professions will have to do their term of conscription at the age of 17½. I suggest that doctors should also do half their service at that age so that they will have served in the ranks and will be able to understand Service life from that aspect. If deferment is granted until after qualification doctors will be the only persons almost who will not have served in the ranks if called up later in an emergency.

If half of their service was done at the age of 17½ their medical education could start at 18, and the student would have a wider outlook on life. Eighteen anyway, is considered to be the most advantageous age for starting. During this six or nine months the intending student would learn discipline, drill etc., and also, if in a medical branch, some nursing-orderly duties. Even this slight experience of nursing would give a doctor some idea of the work that has to be done in a ward. The second half of the conscription period would be done after qualification and would include the learning of officers' administrative duties and instruction in anti-gas and anti-bacterial warfare, tropical medicine, and hygiene. All of these are very scantily taught in the present medical curriculum. All doctors in my opinion, should do their second half of service soon after qualification, and there should be no further deferment for specialists. I would have thought that the drafting of conscripted specialists into any hospitals in peacetime would have spoiled the field for intending specialists in the regular R A M C.

I think any medical officer who was drafted into the Army and went straight from his training depot to a regimental or field ambulance unit will agree that he required more instruction in Army routine and administration than he got at his training depot. He usually found that he had to learn it from his medical orderlies or brother officers. By this splitting of the conscription periods for doctors I consider that all doctors will be more valuable to the service if called up in an emergency in that they will be conversant with all sides of Service life and will not have used their conscription time in only extending their clinical knowledge—I am, etc

Colonel Medical Service
The Guards

W E HADDEN

The Superannuated and the NHS

SIR—One must admire and applaud the spirit of service shown by the various negotiating bodies of the BMA in undertaking thankless tasks and giving much precious time on behalf of their professional brethren. All praise to them therefore for their unselfish and heroic labours. That acknowledgment having been made I should like to support emphatically Dr C H Barber's plea (*Supplement* April 5 p 50) for adequate pensions for the superannuates-designate who are about to be "axed" out of further medical service to the community. No doubt the subcommittee concerned is pursuing this matter with all diligence and so I would urge them to continue to force it on the Ministry's attention in season and out of season until such elementary justice is secured—I am, etc.,

Heath Town, Dorset

J O BARCLAY

Association Notices

Diary of Central Meetings
MAY

8 Thurs Journal Committee, 2 p.m.

Branch and Division Meetings to be Held

NORTH WALES BRANCH—At Royal Oak Hotel, Bettwsycoed, Wednesday May 7, 2.30 p.m. Dr Robert Coope (Liverpool) Suppurative Pneumonias and Lung Abscess.

MID ESSEX DIVISION—At St John's Hospital, Wood Street Chelmsford, Sunday, May 4, 10.30 a.m. Mr Alan Brews Obstetrics in General Practice

Meetings of Branches and Divisions

WESTMINSTER AND HOLBORN DIVISION

A general meeting took place on March 27 to discuss the present hospital position in London. Dr W. A. Milligan was in the chair. Those present included the medical officers of health for Westminster and Holborn, the Hon. Arthur Howard, M.P., Dr Harkness, medical officer for London County Council, and Mr C. M. Power, house governor of Westminster Hospital.

Dr Harbour said it was obvious that the hospital bed position had broken down, especially for the chronic sick. He acknowledged the help of the district nurses and home helps, but found both too limited in number. Westminster with at least ten thousand old people living alone could rely only on St Mary Abbots Hospital which now had 240 beds for the chronic sick. The reasons for the lack of L.C.C. beds were lack of nurses and domestic staff and lack of repair to war damage. He urged persuasion of nurses to the L.C.C. hospitals and away from the voluntary hospitals which appeared to him to be overstaffed. As regards domestic staff, foreign labour must be imported, some domestic work might be done by relatives of those in hospital. Regarding building difficulties he deplored that the Ministry of Health did not give every facility for such work. He suggested the revival of emergency hospitals and rest centres. As regards voluntary hospitals the rebuilding problem was not so large, but the domestic difficulty remained. He regretted that the voluntary hospitals would not admit their proper proportion of the chronic sick. Another point he made was the encroachment of all private beds on public ones, the former being wasteful to all non-medical personnel.

Mr J. S. Batchelor said that there must be a selection of cases for the teaching hospitals. The chronic sick were catered for as outpatients, so that a greater number of nurses were needed for the teaching hospitals to run the clinics.

Dr Shinnie said the problem was not purely medical. Thirty years ago the population of Westminster was much larger and there had been no difficulties in getting beds at St Stephen's. Nowadays more people desired to be in hospitals and old people had no one to look after them—the result of two generations of small families. The preventive services for old persons, such as Westminster Council were providing, was a partial solution.

Dr Harkness said he had not heard anything he did not already know, but the L.C.C. knew the position. There had been only one previous nursing breakdown, during an influenza epidemic. Some beds were lost from war damage but there was plenty of accommodation and there were not the nurses to serve them. Hospital repairs had priority and the lack of rebuilding was not urgent. He agreed that nurses went to voluntary rather than to L.C.C. hospitals, the fundamental difference being the type of work—that met with in L.C.C. hospitals being unpopular. As regards the part time campaign, 600 or so nurses had applied. This would not allow more beds to be opened but it would relieve the strain on the present nurses.

Mr C. M. Power spoke for the voluntary hospitals and deplored the conditions especially for the chronic sick. His hospital—Westminster—had no nursing shortage, no domestic shortage, nor rebuilding difficulties. Private wards did not detract from hospital accommodation and he refuted that the staff had priority of beds for fees. The L.C.C. had 10,000 out of 23,000 beds shut down. He thought that their shortage of nurses was due to the fact that nurses are not willing to spend long periods nursing the same type of cases such as cancer or tuberculosis and that the nurses' living conditions were bad.

Mr Arthur Howard, M.P., said that he was encouraged by the fact that all present had put the patients' troubles first but repeated that party politics should not be brought up in this connexion. He thought the L.C.C. were over-centralized and over-rigid in their organization.

It was decided not to pass any resolution on the matter but Mr Howard volunteered to get in touch with the Minister of Health with a report on the meeting.

POSTGRADUATE NEWS

The Edinburgh Postgraduate Board for Medicine announces that in connexion with the postgraduate courses in medicine and surgery a series of open lectures on subjects of wide biological interest will be given during the Summer term in the West Medical Lecture Theatre of the Royal Infirmary on Tuesdays April 29, May 13 and 27, and June 10 and 24, at 5 p.m. All graduates and students are invited to attend the lectures details of which will be published in the next column of the Supplement.

DIARY OF SOCIETIES AND LECTURES

ROYAL COLLEGE OF SURGEONS OF ENGLAND Lincoln's Inn Fields, W.C.—Lectures in Anaesthesia. Fee for whole course £5 5s or £3 3s. Monday, April 28, 5 p.m. Dr Frank Evans. Spinal Analgesia. Tuesday, April 29, 5 p.m. Dr A. D. Marston. Anaesthesia in Obstetric Practice. Lectures in Otolaryngology. Fee for whole course £5 5s or £3 3s. Monday, April 28, 6.15 p.m. Prof. R. Willis. The Pathology of Tumours of the Nose and Throat. Tuesday, April 29, 6.15 p.m. Chemotherapy and Antibiosis in Otolaryngology, Wednesday, April 30, 6.15 p.m. Mr C. Gill Carey. The Treatment of Chronic Maxillary and Ethmoidal Sinusitis. Friday, May 2, 6.15 p.m. Mr F. C. W. Capps. Malignant Disease of the Paranasal Sinuses.

ROYAL SOCIETY OF MEDICINE

Section of Odontology—Monday, April 28, 6 p.m. (Cases at 5.30 p.m.)

Section of Neurology—Thursday, May 1, 8 p.m. Annual General Meeting. Election of Officers and Council for 1947-8. Paper by Dr Erik Lindgren (Stockholm). The Normal Temporal Horn and its Deformities by Tumours in the Middle Cerebral Fossa.

Section of Otolaryngology—Friday, May 2, 10.30 a.m. Annual General Meeting. Election of Officers and Council for 1947-8. Paper by Mr E. C. Naylor Strong. The Design and Application of Electronic Hearing Aids.

Section of Laryngology—Friday, May 2, 2.30 p.m. Annual General Meeting. Election of Officers and Council for 1947-8.

Section of Epidemiology and State Medicine—Friday, May 2, 3 p.m. Meeting at Common Cold Research Unit, Harvard Hospital, Salisbury. Short Papers by Dr W. H. Bradley. The History of Harvard Hospital and of the Common Cold Research Unit. Dr C. H. Andrewes. The Plan of Research into the Aetiology of the Common Cold. Dr D. K. M. Chalmers. Routine of Experiments with Human Volunteers. Dr F. Fulton. Interim Report on the Results of Transmission Experiments. Volunteers' flats and the M.R.C. Air Hygiene Unit will be demonstrated.

Section of Anaesthetics—Friday, May 2, 5.30 p.m. Annual General Meeting. Election of Officers and Council for 1947-8. Short Papers by Dr E. Trier Moersch. Controlled Respiration by means of Special Automatic Apparatus as used in Denmark and Sweden. Dr J. Clutton Brock. Skin Temperature as a Clinical Aid During Anaesthesia. Dr R. P. Shackleton. Anaesthetics in Yugoslavia.

Section of Surgery—Friday, May 2, 2 p.m. Meeting at Royal Sheffield Infirmary and Hospital. Saturday, May 3. Meeting in Sheffield continued. Election of Officers and Council for 1947-8.

CAMBRIDGE UNIVERSITY REGENT HOUSE—Friday, May 2, 5 p.m. British Association's Radford Mather Lecture by Sir Howard Florey. Penicillin and other Antibiotics.

LONDON UNIVERSITY COLLEGE—Friday, May 2, 5.15 p.m. Dr J. F. Danielli. Surfaces and Drug Actions.

EDINBURGH UNIVERSITY—Monday, April 28, 5 p.m., Dr Douglas Guthrie. Medicine in Greece and Rome.

ROYAL PHOTOGRAPHIC SOCIETY MEDICAL GROUP, 16, Princes Gate, S.W.—Thursday, May 1, 6.30 p.m. Mr E. B. Brain. Some Aspects of Medical Photography.

WEEKLY POSTGRADUATE DIARY

EDINBURGH POSTGRADUATE BOARD FOR MEDICINE—At West Medical Lecture Theatre, Edinburgh Royal Infirmary, Tuesday, April 29, 5 p.m. Dr J. Russell Greig. Studies in Comparative Medicine.

GLASGOW UNIVERSITY DEPARTMENT OF OPHTHALMOLOGY—Wednesday, April 30, 8 p.m. Dr A. Mellick. Heterophoria.

LONDON SCHOOL OF DERMATOLOGY 5 Lisle Street, Leicester Square, W.C.—Tuesday, April 29, 5 p.m. Dr R. M. B. MacKenna. Principles and Practice of Treatment. Thursday, May 1, 5 p.m. Dr H. Corsi. Diseases of the Nails.

BIRTHS, MARRIAGES, AND DEATHS

The charge for an insertion under this head is 10s. 6d. for 18 words or less. Extra words 3s. 6d. for each six or less. Payment should be forwarded with the notice, authenticated by the name and permanent address of the sender and should reach the Advertisement Manager not later than first post Monday morning.

BIRTHS

BECKETT—On April 20, 1947, at St Mary's Hospital, London, to Lyn, wife of Dr H. Dale Beckett, a son.

CURRIE—On April 13, 1947, at the North Middlesex Hospital, to Ysobel (née Garland), wife of Donald Currie, M.B. Ch.B., a daughter—Margaret Anne.

DUNLOP—On April 9, 1947, at Queen Charlotte's, to Monica, wife of Dr Eric Dunlop, a daughter—Jane Elizabeth.

ILAND—On March 24, 1947, to June, wife of Dr C. N. Iland, Sedgfield, two daughters.

MARRIAGE

HOWAT-HARKER—On April 18, 1947, at Goath and Yorkshire, James M. L. Howat, M.B. Ch.B., to Margaret E. Harker, M.R.C.P.

DEATHS

COPEMAN—On April 11, 1947, at 8 King's Gardens, Hove, S. Monck, Copeman, M.D., F.R.S., F.R.C.P., T.D., Knight of Grace of Order of St. John of Jerusalem in his 86th year.

DEACON—On April 18, 1947, at Carlisle, Mary, Ariel Stewart Deacon, M.B. Ch.B., D.P.H., aged 75, of Rannardale, Cockermouth, and late of Esplanade, Waterloo, Liverpool.

EMIN—On April 8, 1947, at 16 Cheyne Walk, N.W. 4, Michael Emin, C.M., aged 79.

LONDON SATURDAY MAY 3 1947

FOLIC ACID AS A THERAPEUTIC AGENT

BY

L S P DAVIDSON, BA, MD, FRCPEd & Lond, FRSEd
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AND

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Lecturer in Medicine University of Edinburgh

has been amply demonstrated in animal experiments by numerous workers that a deficiency of folic acid, however induced, has a profound depressing effect on the production of red cells, white cells, and platelets. The clinical application of this work was immediately recognized by physicians, but therapeutic trials were unsatisfactory until preparations of folic acid derived from natural products of vegetable and animal origin were replaced by *Lactobacillus* factor synthesized by Angier *et al* (1945). Reports of the therapeutic value of this substance in certain types of anaemia and intestinal syndromes have been published in America (Berry and Spies, 1946, Zuelzer and Ogden, 1946, Lopez, Spies, *et al*, 1946, Doan, 1946) and in Great Britain (Wilkinson, Israels, and Fletcher, 1946, Davidson and Girdwood, 1946). By courtesy of Messrs Lederle, Inc., we have been supplied with sufficient synthetic folic acid to treat 48 patients suffering from a variety of disorders of the blood and alimentary tract. This paper comprises a report on the therapeutic results obtained, a discussion of the mechanism underlying the action of folic acid, and a comparison of our findings with those recorded by other workers. The haematocritometer used in this investigation was of the type used by Angier *et al* (1945) and gave a reading of 13.8 g per 100 ml.

Pernicious Anaemia

Seventeen cases have been treated with folic acid given in various doses and by different routes of administration. The results are shown in Table I. An effective

Anaemia treated with Folic Acid

Case	Sex	Age	Hb	RBC (Mill's)	Reticulocyte	Folic Acid	
						Peak	Days
1	M	21	52	1.25	40.0	9	20 mg orally
		20	50	3.51			
		70	100	3.78			
2	M	1	36	2.05	10.0	10	10 mg
		81	104	2.92	9.0	5	5 mg
				2.85			
3	M	1	6	1.20	2.9	8	2.5 mg
		29	90	2.05			
4	M	1	46	1.55	2.0	8	1 mg
		14	72	1.56			
5	F	1	70	1.0	25.2	13	1 mg
		37	15	3.57			
6	F	1	6	1.50	7.2	27	5 mg
		25	72	1.5		20	mg

haemopoietic response was obtained from the daily oral administration of folic acid in doses of 2.5 mg in four cases, 5 mg in two cases, 10 mg in three cases, and 20 mg in one case. It is clear that folic acid alone in a dosage of 5 mg daily can restore the blood level quantitatively and qualitatively to normal (see Case 3). Folic acid in a daily dose of 1 mg by mouth was given to two patients. In one no change in the blood level occurred, whereas in the other there was an excellent haemopoietic response as shown in Table I (Case 6). In a third case no response was obtained from the daily intravenous administration of 1 mg for 14 days. A marked fall in the blood level occurred, necessitating a blood transfusion. A subsequent response to 5 mg of folic acid intravenously resulted.

200 mg of folic acid intramuscularly and 400 mg orally in a single dose given to two cases of pernicious anaemia produced no unpleasant side-effects, and there were excellent initial haemopoietic responses, which however, lasted only for 14 days. Large single doses appear to be a wasteful method of administration, since the same quantity of folic acid given in 5- or 10-mg doses daily produces a much greater total rise in the red cell count.

Sensitivity to Liver Extract—Case 1 was sensitive to parenteral liver therapy, as indicated by severe local and general reactions. But no such reactions occurred when synthetic folic acid was given orally, intracutaneously, or intramuscularly to this case and to three others of our cases of pernicious anaemia sensitive to parenteral liver therapy.

Failure to Respond to Folic Acid—Case 7 was the only one which failed to respond to folic acid, although it was typical of pernicious anaemia in every respect. The patient's erythrocytes reached a level of 5,660,000 per cmm on subsequent treatment with "anahaemin". Other points of particular interest in this case were:

1 That severe agranulocytosis developed during treatment with folic acid the white cell count falling to 800 per cmm and the temperature rising to 105° F (40.6° C) accompanied by marked prostration.

2 The febrile reaction responded to penicillin therapy and the white cell count started to rise after 48 hours' treatment with 150 mg of pyridoxine daily by mouth, reaching a peak of 9,000 per cmm after 8 days' treatment. Three days after cessation of treatment with pyridoxine the patient developed multiple peripheral neuritis which progressed to a complete paralysis of all four limbs with total loss of reflexes. Eventually she made an excellent recovery. The cause of the peripheral neuritis remains obscure. The

possibility that the metabolic effect of vitamin B₁ was antagonized by the preceding administration of folic acid and pyridoxine, both members of the vitamin B₂ group, was considered, but was rejected in favour of a diagnosis of infective polynucritis. No satisfactory explanation of the failure of Case 7 to respond to adequate amounts of folic acid is available unless it be postulated that the virus causing the infective polynucritis inhibited the expected therapeutic response and was also responsible for the development of the agranulocytosis.

Subacute Combined Degeneration of the Cord

Three patients suffering from subacute combined degeneration of the cord were treated with folic acid. In two of these cases no subjective or objective improvement resulted, while in the third case the neurological features deteriorated rapidly coincidentally with a marked improvement in the blood level. The features of this case were as follows.

The patient was a woman aged 30. Her haematological findings were Hb, 36% red cells 1,500,000 per cmm, CI 1.2. The bone marrow was megaloblastic, and gastric analysis showed a histamine fast achlorhydria. She gave a history of weakness of several years duration. For four weeks she had noticed that she was unsteady on her legs and she had suffered from paraesthesia of the arms. The neurological abnormalities on admission were as follows. Generalized muscular weakness in the legs without any wasting, loss of vibration sense below the level of both knees with loss of position sense, dorsiflexor plantar reflex on the left side with a doubtful reflex on the right side. Both ankle-jerks were absent, and the knee jerks were impaired. There was ataxia of both legs. During folic acid therapy the patient became completely incapacitated. Both plantar reflexes became dorsiflexor, the incoordination became extreme and the knee-jerks could not be elicited. Marked improvement in the symptoms and signs referable to the central nervous system resulted from intensive parenteral treatment with anahaemin. The significance of these observations is discussed later.

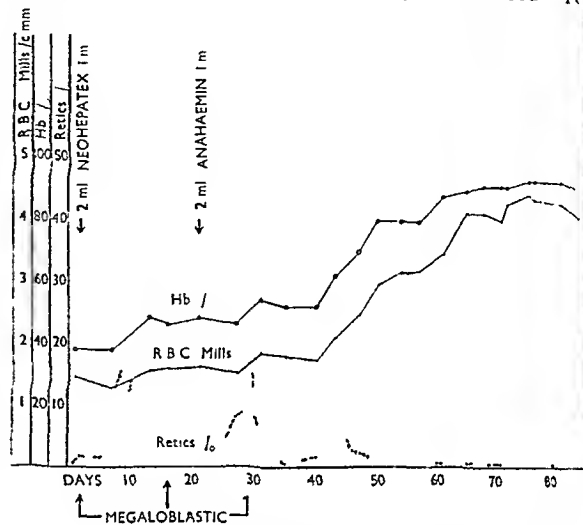
Refractory Megaloblastic Anaemia

We have previously reported the response of three cases of refractory megaloblastic anaemia to folic acid (Davidson and Girdwood, 1946). Further information is now available about the subsequent course of two of them. Case 8 in our previous report, which had been completely refractory to large doses of anahaemin, showed an initial response to folic acid therapy followed by a further improvement on proteolysed liver, the blood count reaching 50% Hb and 2,780,000 red cells per cmm. During the next six months he had three courses of folic acid at intervals, which resulted in a slow but steady rise in the red cell count to 4,990,000 per cmm.

In Case 9 in our previous report the Hb rose to 96% and the erythrocytes to 4,150,000 per cmm on folic acid. The macrocytic blood picture, however, persisted. His blood count was restored to complete normality with proteolysed liver ("hepamino"). Two further cases of refractory anaemia are now reported. The blood findings and treatment of one of these are shown in the accompanying graph. The patient was a woman aged 63. She had complained of progressive weakness over a period of two years. A year before admission she developed symptoms of angina pectoris on exertion. She had had loose motions for two years. The stools were watery but never large, bulky, or greasy in appearance. Sometimes her tongue was very sore. On examination she was pale with a yellowish tinge in the skin, the tongue was clean, shiny, and atrophic, no abnormality was found in the central nervous system, she was passing from 2 to 5 stools a day. A fat balance test which was carried out according to the method of

Cooke, Elkes, *et al* (1946) showed 31.4% total fat and 89.7% absorption. There was therefore no definite evidence of poor absorption of fat. Free hydrochloric acid was present in the test meal after histamine, and the marrow was megaloblastic.

A study of the graph shows that the patient was refractory to parenteral liver therapy, as there was no alteration in the blood level or in the megaloblastic character of the bone marrow despite the fact that after each injection liver extract an increase of reticulocytes occurred. For



Graph of a case of refractory megaloblastic anaemia treated with 20 mg of folic acid orally per day.

acid produced a third rise in reticulocytes and a gain of 2,330,000 red cells per cmm and 40% Hb in 51 days. Since the blood picture still remained slightly macrocytic (CI, 1.12) and the blood level subnormal after 51 days treatment with folic acid the haemopoietic response cannot be assessed as entirely satisfactory.

The second case was that of a woman aged 70 whose blood picture and clinical findings were typical Addisonian pernicious anaemia. She had received parenteral liver therapy for months, including six injections of anahaemin in the six weeks before admission, but the bone marrow was still megaloblastic. After admission she was given a single injection of 4 ml of anahaemin. This produced a reticulocyte crisis of 14.2% and a slight rise in the blood level, but the bone marrow remained megaloblastic. The haemoglobin was now 44% and the red cell count 1,930,000 per cmm. Folic acid in a dose of 25 mg daily by mouth produced a second reticulocyte crisis and a gain of 1,300,000 red cells and 34% haemoglobin in 30 days. The bone marrow was changed to a normoblastic state.

Aplastic and Hypoplastic Anaemia, Leucopenia, and Thrombocytopenia

The results of treatment in aplastic anaemia, leucopenia and thrombocytopenia are given in Tables II, III, and I respectively. It will be noted that no therapeutic benefit ensued either in the cases whose causation could not be determined (i.e., idiopathic) or in those arising secondary to some recognizable cause (i.e., symptomatic).

The Sprue Syndrome

Ten cases of the sprue syndrome have been treated with folic acid. They comprise four cases of tropical sprue, three cases of idiopathic steatorrhoea, and three cases of coeliac disease. The character of the anaemia present and the effect of treatment with folic acid, together with det-

of the case histories, clinical features, and fat-balance tests before and after treatment, have been recently recorded (Davidson, Girdwood, and Innes, 1947). Accordingly it is only necessary to give a short summary of the results obtained.

TABLE II—*Aplastic and Hypoplastic Anaemia treated with Folic Acid*

Case	Age	Sex	Diagnosis	Folic Acid (Oral)		Hb%		R B C (Mills)	
				Dosage	Days	Before	After	Before	After
16	75	F	Idiopathic hypoplastic anaemia	20 mg 10 mg	1-21 22-28	78	54	3 50	2 97
19	65	M	Idiopathic aplastic anaemia	20 mg	1-8	46	40	2 0	1 63
24	14	F	Idiopathic aplastic anaemia	20 mg (2 pints blood on 5th day)	1-17	40	38	1 96	2 02
18	68	M	Hypoplastic anaemia (after sulphonamides)	20 mg	1-15	50	56	2 07	2 06
17	42	M	Aplastic anaemia (following x ray therapy for reticulosis)	20 mg (1 pint blood on 3rd day)	1-14	64	44	3 11	3 24

TABLE III—*Leucopenia treated with Folic Acid*

Case	Age	Sex	Diagnosis	Folic Acid (Oral)		White Cell Count	
				Daily Dosage	Days	Before	After
7	49	F	Idiopathic agranulocytosis	5 mg	2-15	2 000	800
16	75	F	Idiopathic hypoplastic anaemia	20 mg	16-25	3 400	3 000
19	65	M	Idiopathic aplastic anaemia	20 mg	1-21	1 600	1 400
24	14	F	Idiopathic aplastic anaemia	10 mg	22-28	2 800	2 400
18	68	M	Hypoplastic anaemia (after sulphonamides)	20 mg	1-15	1 900	1 400
17	42	M	Aplastic anaemia following x ray therapy (Reticulosis)	20 mg	1-14	2 000	2 000
20	52	M	Leucopenia following x ray therapy (Reticulosis)	20 mg	1-11	2 800	2 200
21	25	F	Leucopenia following x ray therapy (Cerebral tumour)	20 mg	1-13	3 200	2 200
43	38	M	Leucopenia following x ray therapy (Spondylitis ankylopoietica)	20 mg	1-14	2 000	3 100

TABLE IV—*Thrombocytopenia treated with Folic Acid*

Case	Age	Sex	Diagnosis	Folic Acid (Oral)		Platelets per c mm	
				Dosage	Days	Before	After
22	25	F	Idiopathic thrombocytopenic purpura	20 mg	1-14	40 000	30 000
23	14	F	Idiopathic thrombocytopenic purpura	20 mg	1-10	20 000	10 000
19	65	M	Idiopathic aplastic anaemia	20 mg	1-8	60 000	35 000
24	14	F	Idiopathic aplastic anaemia	20 mg	1-17	20 000	10 000
18	68	M	Hypoplastic anaemia (after sulphonamides)	20 mg	1-15	115 000	95 000
17	42	M	Aplastic anaemia following x ray therapy (Reticulosis)	20 mg	1-14	75 000	25 000
20	52	M	Leucopenia following x ray therapy (Reticulosis)	20 mg	1-11	95 000	75 000
21	25	F	Leucopenia following x ray therapy (Cerebral tumour)	20 mg	1-13	190 000	105 000
43	38	M	Leucopenia following x ray therapy (Spondylitis ankylopoietica)	20 mg	1-14	85 000	83 000

1 Haematological Response—This was considered to be unsatisfactory in nine out of ten cases since treatment either produced no significant rise in the red cell count or failed to restore the blood level and haematological picture to normality.

2 Fat absorption as estimated by the fat-balance test of Cooke, Elkes *et al* (1946) was unaltered in five out of six cases.

Dramatic control of the diarrhoea and rapid clinical improvement occurred in the cases of tropical sprue and idiopathic steatorrhoea. In contrast no beneficial effects were noted in the cases of coeliac disease.

We should like to draw attention to one particular point which so far as we are aware has not been presented

before—namely, that a most remarkable alteration in intestinal function occurs on or about the fifth day of treatment with folic acid, at a time when no alteration of the blood level or even a rise in the reticulocyte count may have resulted. Moreover, this dramatic clinical change may occur in patients who subsequently show a complete or partial failure in their haematological response to continued folic acid therapy. This finding suggests that folic acid has at least two entirely separate actions—the control of the normal functioning of the haemopoietic and of the alimentary system. Since there may be a coincidental deficiency of other factors that are undoubtedly required for the normal functioning of these systems in addition to folic acid it is understandable why the correction of one deficiency may not result in the expected improvement. Only on such a basis is it possible to explain the findings discussed above and the failure of folic acid alone to restore the blood picture qualitatively and quantitatively to normal in certain patients suffering from the sprue syndrome and from idiopathic refractory megaloblastic anaemia.

Idiopathic Ulcerative Colitis

In view of the remarkable effects claimed by Carruthers (1946) in five cases of severe diarrhoea of unknown aetiology treated with folic acid for a few days we decided to assess its value in idiopathic ulcerative colitis. Five cases were accordingly selected for treatment because of their prolonged history and typical stool and sigmoidoscopic findings. After a carefully controlled observational period folic acid was given in doses up to 60 mg daily for periods varying from six to eleven days. Neither the clinical state of the patients nor the sigmoidoscopic appearances of their bowel were significantly altered. In fact, two of the cases were definitely worse at the end of treatment.

Discussion

The investigations reported above are in general agreement with those of other workers in this field—namely, that a haematological response to folic acid will be obtained only in patients suffering from a megaloblastic form of anaemia. When leucopenia and thrombocytopenia are part of a nutritional syndrome resulting from a deficiency of folic acid an increase of leucocytes and thrombocytes will result from folic acid therapy. When anaemia is of the normoblastic type, or when leucopenia or thrombocytopenia develops from causes other than a specific nutritional deficiency, folic acid will be found to be ineffective as a therapeutic agent.

Evidence recently accumulated by Welch *et al* (1946) and by Bethell *et al* (1947) helps to throw light on these clinical findings and affords a basis for explaining the mechanism by which folic acid functions. There now appears to be little doubt that free folic acid (pteroyl-glutamic acid) is the factor which is essential for the continuation of normoblastic blood formation, and a deficiency causes a reversion of the bone marrow to the megaloblastic state.

Free folic acid is liberated in the body from its conjugated form, which is present in various foodstuffs. A deficiency of free folic acid may arise in various ways—e.g., a failure in intake of conjugated folic acid (nutritional macrocytic anaemia), a failure in absorption of conjugated folic acid (sprue syndrome), or a failure in the liberation of free folic acid from its conjugate form (Addisonian pernicious anaemia). In this last disease it should be noted that the haemopoietic response to folic acid and purified liver extracts given parenterally is identical, although such extracts contain only minute traces of folic acid. This apparently anomalous finding can be explained on the

following basis. When free folic acid (pteroylglutamic acid) is given to patients with pernicious anaemia a haemopoietic response occurs accompanied by a transformation of the megaloblastic bone marrow and a marked increase of excretion of free folic acid in the urine. When conjugated folic acid (pteroylheptaglutamic acid), as contained in natural foods such as yeast is given in equivalent doses no transformation of the megaloblastic marrow occurs and no increased excretion of free folic acid results. When purified liver extract is given parenterally to a case of pernicious anaemia the classical haemopoietic response occurs together with a marked excretion of free folic acid. Hence it can be assumed that purified liver extracts contain a factor which enables the conversion of conjugated folic acid to free folic acid to take place. This liberating factor, which is the product derived from the interaction of Castle's intrinsic and extrinsic factors in the alimentary tract, is absorbed from the intestine and stored in the liver. It is present in the liver of normal individuals but not in the liver of patients with pernicious anaemia. This liberating factor is hereafter referred to as L.F. The cause of pernicious anaemia therefore does not lie in some inherent abnormality of the bone marrow but in the inability of the body to convert conjugated folic acid to the free form through lack of L.F. The administration of preformed free folic acid to a patient with pernicious anaemia circumvents the need for this conversion and accordingly the expected haemopoietic response occurs.

It is well recognized that patients suffering from nutritional macrocytic anaemia, the sprue syndrome, pernicious anaemia of pregnancy, and idiopathic refractory megaloblastic anaemia may be partially or completely refractory to the injection of potent purified liver extracts despite the presence of a megaloblastic marrow. Such patients will respond to the oral administration of whole liver (Fullerton, 1943), proteolysed liver (Davis and Davidson, 1944), or liver extract (Watson and Castle, 1946). The introduction of folic acid has added another therapeutic weapon effective in this group of diseases. Megaloblastic blood formation in the above conditions is not primarily conditioned, as in Addisonian pernicious anaemia, by a defective production of L.F. but by a deficiency in the body of conjugated folic acid as a result of direct dietary deficiency or a failure in absorption. Hence it is understandable why parenteral liver therapy fails and why free folic acid is effective under these circumstances.

The mechanism by which proteolysed liver and oral liver extracts achieve similar results to those obtained by folic acid is not so simple of explanation. The folic acid content of the effective daily dose of such preparations is stated to be considerably less than 1 mg, a quantity which by itself is unlikely to produce the maximal haemopoietic responses which we regularly obtained. Such oral liver preparations, however, contain, in addition to folic acid, L.F., other members of the vitamin B complex, and amino-acids. It may be found in the future that the combination of folic acid and parenteral or oral liver therapy will be effective in doses which, when given individually, are inactive. That substances other than folic acid and L.F. may be required to bring blood formation completely back to the final stage of normoblastic blood formation is suggested by our findings that some cases of the sprue syndrome and idiopathic refractory megaloblastic anaemia continue to have a macrocytic anaemia and a primitive type of normoblastic marrow, despite continued administration of potent parenteral liver extracts and folic acid. In some of these cases, but by no means all, a final and complete transformation to normality was secured by the addition of proteolysed liver (hepamino).

Folic acid is a vitamin, a member of the B₁₂ complex. Hence it is not unreasonable to suppose that the general principles covering the therapeutic administration of vitamins are also applicable to folic acid. These principles may be summarized as follows.

1 A beneficial result will occur only if the body is deficient in the vitamin. Attention is drawn to the dramatic effect of ineurine in beriberi and to its complete failure to influence the course of infective polyneuritis.

2 When an individual has a sufficiency of a vitamin the giving of excessive amounts is valueless and wasteful. It is justifiable during the initial period of treatment of a vitamin deficiency disease to give from 10 to 20 times the amount required for normal maintenance purposes in order to replace the body's depleted stores as rapidly as possible. Thereafter the daily amount prescribed should be reduced to the accepted optimal daily requirements and be given where possible in the form of natural foods.

3 In vitamin deficiency disease replacement therapy produces a therapeutic result rapidly. The beneficial effects will be obvious within a few days and sometimes within a few hours. Failure to achieve therapeutic success within one or two weeks accordingly indicates a mistaken diagnosis, and the continued administration of the vitamin is an expensive and unwarranted procedure.

If these principles are applied to folic acid a rational basis for treatment will be forthcoming. It is believed that the daily requirement of folic acid is in the neighbourhood of 0.5-1 mg, and that normal individuals partaking of an average mixed diet can easily obtain this amount from their food. The same remarks apply to patients with Addisonian pernicious anaemia. Since, however, such patients are unable to obtain free folic acid from the conjugated form in food they require injections of liver extract. Provided they are taking a satisfactory mixed diet the addition of free folic acid will not be required so long as they are receiving adequate parenteral liver therapy.

Since it has been shown by ourselves and by Spies and Stone (1947) that folic acid is unable to prevent or cure subacute combined degeneration of the cord, folic acid cannot be recommended as the sole therapeutic agent for maintenance treatment in pernicious anaemia or when neurological changes are present. It may be used as a temporary measure in the initial treatment of pernicious anaemia and in patients sensitive to liver extracts awaiting desensitization. The suggested dose is 5-10 mg daily by mouth. Until the factor required for the maintenance of the integrity of the nervous system is isolated and combined with folic acid, parenteral liver therapy must continue to be the accepted routine method of treatment of pernicious anaemia.

Since subacute combined degeneration of the cord very rarely develops in nutritional megaloblastic anaemia, pernicious (megaloblastic) anaemia of pregnancy, idiopathic refractory megaloblastic anaemia, or the sprue syndrome, folic acid can be safely advocated both for initial and for maintenance therapy in doses of 5-10 mg daily. In the first two diseases the administration of folic acid can be stopped when the blood count is normal provided a satisfactory well-balanced diet is eaten. In the third disease maintenance treatment (suggested dose 5 mg daily) will be required for life. In the sprue syndrome maintenance requirements will vary in individual cases according to the course of the disease. If the blood level or blood picture in patients with any of the above diseases fails to return quantitatively and qualitatively to normal a supplement of oral liver extract or proteolysed liver (1 oz daily) should be given. There is sound evidence for the belief that for the treatment of any megaloblastic anaemia quantities of folic acid in excess of 10 mg daily are unnecessary and

wasteful. Moreover, if haematological and clinical improvement does not occur within two weeks it can be assumed that the disorder is not due to deficiency of folic acid and that continued administration of the vitamin is contraindicated.

Summary

An account is given of the results of treatment with folic acid of (a) 16 cases of pernicious anaemia, (b) 5 cases of refractory megaloblastic anaemia, (c) 10 cases of the sprue syndrome, (d) 3 cases of subacute combined degeneration of the cord, (e) 5 cases of aplastic and hypoplastic anaemia, (f) 9 cases of leucopenia, (g) 9 cases of thrombocytopenia, and (h) 5 cases of ulcerative colitis.

A haemopoietic response was obtained only in the cases in which the bone marrow was megaloblastic—i.e., cases in groups a, b and c.

No therapeutic changes were obtained in cases of aplastic anaemia, leucopenia, or thrombocytopenia.

In the sprue syndrome folic acid controlled the diarrhoea and produced general clinical improvement in adult patients suffering from tropical sprue and idiopathic steatorrhoea. Folic acid by itself seldom restored the blood level or blood picture to normal. In none of the cases of coeliac disease was any haematological or clinical improvement noted.

The clinical and sigmoidoscopic appearances in 5 cases of idiopathic ulcerative colitis were unaffected by folic acid therapy.

The rationale of the action of folic acid and the principles underlying its therapeutic administration are discussed.

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The New Health Club in which the late Sir William Arbuthnot Lane was a prominent figure, revived its activities after wartime dormancy on March 19 with a tea time *causerie* at which Sir Albert Howard for many years imperial economic botanist to the Government of India, gave an address on "Soil, Food, and Health". Sir Albert Howard has had a large experience of the food habits of primitive peoples which enable them to withstand some of the ills besetting civilization. He admitted that in a community such as ours it was not possible to revert to an entirely primitive dietary: the easiest thing to concentrate upon, he said, was bread. It was possible even in London to obtain properly grown wheat—properly grown meaning the cultivation of the soil having regard to its natural properties and without dependence on artificial manures. Such wheat, roughly ground and made into bread or porridge gave a perfect food quite different from anything ordinarily obtainable in the shops. It was now open for anyone to take out a licence to buy properly grown wheat from the farmer mill it on his own premises and make his own bread. A breakfast cup of roughly ground wheat soaked in milk and eaten raw was extraordinarily satisfying and beginning the day with such a meal he himself could go on happily without troubling about food until evening. It was not quantity that mattered but absence of sophistication. He hoped to see in England a new type of baker in which something quite different from ordinary flour was used, the wheat going in at one end and being ground out roughly, with no separation of bran. If the product was put straight into bread the impurities in quality obtained was almost unbelievable.

THE PHYSICAL HEALTH OF CHILDREN ATTENDING DAY NURSERIES

A REPORT TO THE DAY NURSERIES COMMITTEE OF THE MEDICAL WOMEN'S FEDERATION

BY

MARGARET E. McLAUGHLIN, M.B., B.S., D.C.H.

PART I

Aim and Method of Investigation

In 1944–5 an investigation was made under the auspices of the Medical Women's Federation to obtain data concerning the effect of life in wartime day nurseries on the physical health of children under 5 years old. The investigation was made in two parts. In the first part a comparison was made of children attending day nurseries and children attending welfare centres, and the records were based on the results of a single examination of each child by 73 medical officers in different parts of the country in the course of their normal work. The results of this section of the investigation have been published already (*Journal*, Aug 17, 1946, p. 217).

The present report describes the results of the second part of the investigation, carried out by me, this has been a comparison over a period of twelve months in 1944–5 of a group of children attending Ministry of Health wartime day nurseries in Birmingham with a control group of children living in their own homes. Periodic examinations of the children in both groups were made during the survey.

Selection of Clinical Material

The nursery group of children was composed of the entire population of eight Ministry of Health wartime day nurseries in different parts of the city, thus various social and economic groups were represented. The nurseries were open from 7 a.m. to 7 p.m. for 5½ to 6 days a week and nearly all the children spent their whole day in the nursery, as their mothers were mostly engaged on full-time war work. Each nursery was under the care of a fully trained nurse with a staff of trained and student nursery nurses and nursery assistants and a certificated or non-certificated nursery teacher. The approved complement of staff, excluding domestic staff, was one nurse to four children but owing to the wartime conditions this was not always attained. Each nursery accommodated from 48–60 children aged 0–5 years (one nursery accommodated 80 children). The premises ranged from specially constructed one story buildings of a semi-permanent character to converted old houses or portions of the premises of infant welfare centres. The children were provided with three full meals or two meals and mid-morning lunch every day. These meals, which were generous and well planned, were provided without the surrender of any of the children's own ration coupons, which were thus still available for their use at home. The rationed food which could be obtained for children attending nurseries was thus nearly double that available to children having all their meals at home—i.e., they could have twice the quantity of meat, butter, bacon, eggs, cheese, etc. An isolation room was provided in each nursery, and all children were examined each morning on arrival by a senior member of the staff admission being refused to children obviously ill and those with infectious skin diseases. Children with colds could not, however, be excluded as a routine measure. A child-welfare medical officer was available on call for any sick child and routine medical inspections of all the children were periodically made. A medical certificate of fitness was necessary before admission or readmission to a nursery.

The control group of children was composed of those living at home and attending no nursery school or class for young children. They were classified into eight subgroups each drawn from the same residential area as one of the eight nurseries chosen for the survey. The children were selected at random from the health visitors' official lists of all those under 5 living

in the district. Apart from choosing children to give an age distribution similar to that in the corresponding nursery the children in the home group were picked entirely at random to ensure a representative sample of all types of population in the district. The selected children were then visited at home by health visitors from the nearest infant welfare centre the purpose of the survey was explained to the mothers and a request was made that they would bring their children to the centres periodically for examination. Subsequently appointments were given by post. Naturally a considerable number of the children were already attending the centres, but it is a tribute to the efforts and eloquence of the health visitors that such a good response was obtained from mothers who had never previously made use of the facilities of the welfare centres. To allow for the inevitable defaulting 40% more children were selected in the home group than attended the nurseries.

Comparability of Nursery and Home Groups.—Every effort was made as explained above, to ensure that the children in the home group had so far as possible similar social and economic backgrounds to those of the nursery group. It was recognized however that many factors affected the attendances and influenced the economic status of children in both home and nursery groups. Thus there was a distinctly higher proportion of illegitimate children and children from homes broken up by desertion separation, or death in the nursery group than in the home group. In the nurseries 8% were illegitimate and 4.6% from broken homes, in the home group 1.8% were illegitimate and 1.4% from broken homes. In estimating the importance of this fact it must be remembered that the infant mortality rate among illegitimate babies in Birmingham approximates to the rate for legitimate babies, and in one recent year was actually lower. There are special arrangements for the care of illegitimate children in the city, and the morbidity rate among them may be reasonably assumed to show similar results. Whether economic status was higher among day nursery families or among families of the home group is not known. Economic need was certainly one cause leading mothers to seek paid work and place their children in nurseries, and the family income was markedly increased by the mother's whole time earnings. On the other hand, the home group contained all those families with more than two young children who were thus not eligible for admission to the nurseries and whose mothers were unable therefore, to seek whole-time paid work and it is notorious that as the number of children increases so does the incidence of poverty. The extra allowance of foodstuffs of animal origin available to children attending day nurseries must also be taken into account when considering economic status and nutrition in the two groups. Reported attendances were more likely in the home group if a child was ailing and also if a mother was over-anxious. A strong financial inducement existed for mothers of nursery children to ensure their regular attendance but, on the other hand mothers of nursery children were instructed not to bring them if they had coughs bronchitis etc., and there were no such injunctions for children of the home group.

No definite conclusions can be drawn from these points as it is impossible to assess the relative effects of all these factors on the results of the survey.

Method of Observation and Examination

Every child was examined at intervals of eight weeks. The investigation lasted 12 months (November–October) and the majority of the children attended for the first time in November and December. Replacements were made in each group throughout the year—to maintain numbers as far as possible. Each nursery was visited on the same day as the corresponding welfare centre. All the examinations were carried out by me. At each visit a full physical examination was made with the child stripped, and a full history taken of previous illnesses. The history was obtained direct from the mother in the home group and usually indirectly from the mother through the matron in the nursery group. Any account of infectious fevers was verified by reference to private doctor or hospital or by full inquiry into the clinical features of the illness. All

physical findings were recorded, including normal ones. Lastly, each child was weighed on checked scales of the pan-and-weights type. The numerical details of the investigation are given in Table I.

TABLE I—Numerical Details of Investigation

	Nurseries	Home Group	Total No
Total number of children in survey	557	641	1 198
Boys	275	302	
Girls	282	339	
Total number of examinations	1 734	1 516	3,250
Boys	857	709	1 566
Girls	877	807	1 684
Total examined twice or more	432	409	841
Total examined once only	125 (22.4%)	232 (36.2%)	357
(a) Actual examinations per child	3.1	2.4	
(b) Excluding single examinations	3.7	3.1	
Age distribution of examinations of children in survey			
(1) Under 1 year { 0–6 mths	49 (2.8%)	58 (3.8%)	
6–12	149 (8.5%)	186 (12.3%)	
(2) 1–2 years { 12–18 mths	186 (10.7%)	203 (13.4%)	
18–24	204 (11.8%)	252 (16.7%)	
(3) 2–3	431 (24.9%)	328 (21.6%)	
(4) 3–4	379 (21.9%)	293 (19.3%)	
(5) 4–5	336 (19.4%)	196 (12.9%)	

Physical Findings Comparison between Nursery and Home Groups

In the following tables the percentage figures are based, except where otherwise stated, on the total number of examinations made in each group. The data on infectious fevers, however, are based on the total number of examinations only of children attending more than once, since data for infectious fevers were obtained from histories of illnesses between the current and previous examinations. With this exception all figures are based on the results of 1,734 examinations of 557 nursery children and 1,516 examinations of 641 home children.

1 General Condition

The clinical impression of general condition was recorded at each examination in one of four grades: (a) *Very good*—where nutrition, growth, and posture were excellent and no signs of respiratory tract or other infection were present, beyond perhaps a very slight head cold. (b) *Good*—where nutrition growth and posture were satisfactory but not outstanding, or where signs of respiratory tract or other infection of more than slight degree were present. (c) *Fair*—where nutrition posture or growth was considerably subnormal (due to present or past disease) or where fairly severe respiratory or other infections were present. (d) *Poor*—where growth and nutrition were grossly subnormal, or with signs of severe past or present infection or other disease.

Results.—Table II compares the percentages in nursery and home groups of examinations where the general condition was recorded as good or very good, thus for a child attending on three occasions the general condition was recorded three times.

For all ages together, boys and girls of the home group had a higher percentage whose general condition was very good or good, the difference between nursery and home groups being significant for both boys and girls. The children were subdivided into age groups. Under 2 years of age the girls in the home group had a higher percentage whose condition was very good or good, and the differences from the nursery group were significant in all four age subdivisions. The boys under 2 years old in the home group had a higher percentage in the very good or good category, the difference from the boys under 2 in the nursery group being significant in two of the four age subdivisions. Over 2 years old there were no significant differences between home and nursery groups, but in four out of six age subdivisions (boys and girls) the nursery group had a slightly higher percentage of examinations of children in good or very good condition.

TABLE II—Percentages of Examinations where General Condition was Very Good or Good

Age	Group	Boys	Girls
0-6 months	Nursery	86.3	73.1
	Home	80.8	100.0
	Difference	5.5 ± 10.8	-26.9 ± 8.6*
6-12 months	Nursery	82.8	76.0
	Home	96.2	96.3
	Difference	-13.4 ± 5.0*	-20.3 ± 4.9*
12-18 months	Nursery	71.7	77.4
	Home	94.6	89.3
	Difference	-22.9 ± 5.2*	-11.9 ± 5.5*
18-24 months	Nursery	90.3	79.1
	Home	96.0	93.0
	Difference	-5.7 ± 3.5	-13.9 ± 4.4*
2-3 years	Nursery	88.0	84.6
	Home	89.1	86.4
	Difference	-1.1 ± 3.3	-1.8 ± 3.7*
3-4 years	Nursery	85.3	83.0
	Home	81.6	81.4
	Difference	3.7 ± 4.3	1.6 ± 4.0
4-5 years	Nursery	82.7	91.4
	Home	78.7	84.3
	Difference	4.0 ± 5.2	7.1 ± 4.0
All ages	Nursery	84.2	82.8
	Home	89.1	88.4
	Difference	-4.7 ± 1.7*	-5.6 ± 1.7*

* Significant differences

2 Condition of Tonsils

Tonsillar enlargement was recorded as of slight, moderate, and gross degrees. In addition the incidence of tonsillectomy was recorded. Acute or subacute tonsillitis was not included in this section, which refers only to chronic conditions.

Results (Table III)—(a) The incidence of slight and moderate tonsillar enlargement was at all ages considerably higher in the nursery group than in the home group among both boys and girls. (b) The incidence of gross tonsillar enlargement was also significantly higher in the nursery group than in the home group for all ages together, among boys and girls. (All degrees of tonsillar enlargement together were more than twice as frequent in the nursery boys than in the home group. Among girls they were nearly four times more frequent in the nursery

TABLE III—Percentages of Examinations where Tonsillar Enlargement was Found

Age		Boys		Girls	
		Slight and Moderate	Gross	Slight and Moderate	Gross
0-6 months	Nursery	0	0	7.7	0
	Home	0	0	0	0
	Difference	0	0	7.7 ± 4.8	0
6-12 months	Nursery	15.8	0	9.3	0
	Home	2.5	0	0.9	0
	Difference	13.3 ± 4.7*	0	8.4 ± 3.1*	0
12-18 months	Nursery	28.3	5.4	20.4	3.2
	Home	10.0	0.9	5.4	0
	Difference	18.3 ± 5.5*	4.5 ± 2.4	15.0 ± 4.9*	3.2 ± 1.8
18-24 months	Nursery	26.5	13.2	35.8	5.8
	Home	16.3	0	7.0	1.6
	Difference	10.2 ± 5.7	13.2 ± 3.2*	28.8 ± 5.2*	4.2 ± 2.4
2-3 years	Nursery	15.6	11.6	35.3	8.4
	Home	21.8	5.9	8.0	3.1
	Difference	13.5 ± 4.7*	6.1 ± 2.9*	27.3 ± 4.4*	5.3 ± 2.5*
3-4 years	Nursery	30.4	9.5	25.1	1.9
	Home	17.6	12.0	16.2	5.4
	Difference	12.5 ± 5.0*	-2.2 ± 3.6	18.9 ± 4.6*	9.5 ± 3.2*
4-5 years	Nursery	0.5	14.0	29.1	7.9
	Home	2.8	11.3	7.5	7.3
	Difference	1.5 ± 6.1	3.7 ± 7.6	21.3 ± 4.9*	3.6 ± 3.0
All ages	Nursery	20.0	10.2	29.6	7.9
	Home	14.8	7.8	7.6	2.6
	Difference	1.2 ± 2.1*	5.7 ± 1.4*	22.0 ± 1.9*	5.3 ± 1.1*

* Significant differences.

group than in the home group) (c) The incidence of tonsillectomy was higher in the nursery group. No child under 2 years old in either group had had the tonsils removed. Between 2 and 5 years of age 5.1% of the boys and 2% of the girls in the nursery group had had the tonsils removed, in the home group the figures were 0.8% for boys and 0.9% for girls. The difference was significant for the boys, but the difference for the girls might have arisen by chance.

3 Enlargement of Cervical Glands

This was recorded as (a) slight or moderate, and (b) gross. The former category included all glands distinctly palpable at the angle of the jaw, and in the majority of cases only the anterior cervical group of glands was involved. All results refer to chronic enlargements, those cases occurring, for example, during a subacute infection being excluded.

Results (Table IV)—There was a much higher percentage of enlarged cervical glands in the nursery group, among both boys and girls. (a) For slight and moderate degrees of enlargement there were significantly higher rates in the nursery group for all ages together (0-5) and in 5 out of 7 of the individual age groups both for boys and girls. (b) For gross degrees of

TABLE IV—Percentages of Examinations where Cervical Gland Enlargement was Present

Age		Boys		Girls	
		Slight and Moderate	Gross	Slight and Moderate	Gross
0-6 months	Nursery	9.1	0	0	0
	Home	3.8	0	0	0
	Difference	5.3 ± 7.0	0	0	0
6-12 months	Nursery	30.3	1.3	12.0	1.3
	Home	6.3	0	4.7	0.9
	Difference	24.0 ± 6.2*	1.3	7.3 ± 4.0	0.4
12-18 months	Nursery	50.0	7.6	40.9	6.5
	Home	15.5	3.6	11.8	0
	Difference	34.5 ± 6.5*	4.0 ± 3.2	29.1 ± 6.5*	6.5 ± 2.6*
18-24 months	Nursery	50.6	6.0	58.3	3.3
	Home	30.9	0.8	13.2	2.3
	Difference	19.7 ± 6.9*	5.2 ± 2.4*	45.1 ± 6.0*	1.0
2-3 years	Nursery	55.7	7.4	52.6	3.3
	Home	26.7	6.7	20.4	3.7
	Difference	29.0 ± 5.1*	0.7 ± 2.7	32.2 ± 5.1*	-0.4 ± 1.9
3-4 years	Nursery	47.3	12.5	46.4	10.3
	Home	28.0	8.0	24.0	2.4
	Difference	19.3 ± 5.7*	4.5 ± 3.6	22.4 ± 5.0*	7.9 ± 2.6*
4-5 years	Nursery	57.4	10.8	50.3	4.6
	Home	45.0	7.5	17.4	4.3
	Difference	12.4 ± 6.7	3.3 ± 4.0	32.9 ± 5.9*	0.3 ± 2.6
All ages	Nursery	49.6	8.4	45.3	5.2
	Home	28.8	4.5	15.6	2.4
	Difference	24.8 ± 2.5*	3.9 ± 1.3*	29.7 ± 2.3*	2.8 ± 0.9*

* Significant differences

enlargement there was a significantly higher rate among nursery boys and girls at all ages combined (0-5), but (c) the proportion of grossly enlarged glands to all enlarged glands was slightly greater in the home group. In the nursery group 13.8% of all boys with enlarged glands and 10.3% of all girls with enlarged glands were recorded as having glands grossly enlarged, the corresponding figures for the home group were 15.4% for boys and 13.3% for girls. Cervical gland enlargement was however, about 2½ times as common in the nursery group as in the home group.

4 Nasopharyngeal Infections

These were recorded in two categories (a) subacute and acute (b) chronic. The former included cases of subacute coryza, laryngitis, nasopharyngitis, etc., actually observed at examination, the latter included cases of chronic nasal discharge, sinusitis, adenoid enlargement, etc., in which the chronic nature of the condition was confirmed either by repeated examination or history.

Results (Tables V and VI)—(a) Subacute and acute nasopharyngeal infections—For all ages together (0-5) there was a higher incidence in the nursery group but the difference was significant only among boys, that for girls being within the limits of chance occurrence. **(b) Chronic nasopharyngeal infections**—The incidence was eight times as great in the nursery

developed mouth breathing tended to do so at a slightly earlier age in the nursery group than in the home group

5 Bronchitis

Only those showing physical signs of bronchitis at examination were included. As was expected the highest incidence was in infants under 2 years old.

Results (Table VII)—For all ages together (0-5) the incidence was about twice as large in the nursery group, the difference between nursery and home groups being statistically significant for both boys and girls.

TABLE V—Percentage of Examinations where Nasopharyngeal Infections were Recorded

Age		Boys		Girls	
		Subacute and Acute	Chronic	Subacute and Acute	Chronic
0-6 months	Nursery	13.6	0	3.8	0
	Home	7.7	0	6.3	0
	Difference	5.9 ± 8.8		-2.5 ± 5.9	
6-12 months	Nursery	14.4	18.4	14.7	2.6
	Home	8.9	2.5	9.3	0.9
	Difference	5.5 ± 5.2	15.9 ± 4.8*	5.4 ± 4.8	1.7 ± 1.9
12-18 months	Nursery	18.5	27.2	24.7	20.4
	Home	12.7	4.5	12.9	3.2
	Difference	5.8 ± 5.1	22.7 ± 5.0*	11.8 ± 5.7*	17.2 ± 4.7*
18-24 months	Nursery	20.5	44.6	14.2	30.8
	Home	13.0	0.8	13.2	2.3
	Difference	7.5 ± 5.2	43.8 ± 5.5*	1.0 ± 4.4	28.5 ± 4.6*
2-3 years	Nursery	17.2	23.2	18.0	18.6
	Home	10.3	5.5	12.3	3.1
	Difference	6.9 ± 3.6	17.7 ± 3.7*	5.7 ± 3.8	15.5 ± 3.4*
3-4 years	Nursery	10.9	22.8	10.8	15.9
	Home	8.0	0.8	11.4	2.4
	Difference	2.9 ± 3.4	22.0 ± 4.0*	-0.6 ± 3.3	13.5 ± 3.1*
4-5 years	Nursery	12.4	12.9	4.6	7.3
	Home	10.0	2.5	6.1	0
	Difference	2.4 ± 4.3	10.4 ± 4.0*	-1.5 ± 2.8	7.3 ± 2.6*
All ages	Nursery	15.0	22.6	13.6	16.0
	Home	10.4	2.8	10.8	2.0
	Difference	4.6 ± 1.7	19.8 ± 1.7*	2.8 ± 1.6	14.0 ± 1.4*

* Significant differences

TABLE VI—Percentage of Examinations where Mouth breathing was Recorded

Age		Boys		Girls	
		Nursery	Home	Nursery	Home
0-6 months	Nursery	5.6		3.8	
	Home	0		0	
	Difference	5.6 ± 4.2		3.8 ± 3.4	
6-12 months	Nursery	9.2		1.3	
	Home	3.8		0	
	Difference	5.4 ± 3.4		1.3 ± 1.2	
12-18 months	Nursery	19.6		7.5	
	Home	3.6		1.1	
	Difference	16.0 ± 4.4*		6.4 ± 1.0*	
18-24 months	Nursery	33.8		21.7	
	Home	8.9		1.6	
	Difference	24.9 ± 5.6*		20.1 ± 4.0*	
2-3 years	Nursery	32.5		21.4	
	Home	15.2		3.7	
	Difference	17.3 ± 4.5*		17.7 ± 3.6*	
3-4 years	Nursery	32.1		25.8	
	Home	9.6		9.0	
	Difference	22.5 ± 4.9*		16.8 ± 4.1*	
4-5 years	Nursery	30.8		19.2	
	Home	15.0		7.0	
	Difference	15.8 ± 5.9*		12.2 ± 4.3*	
All ages	Nursery	25.5		18.3	
	Home	9.5		4.1	
	Difference	19.0 ± 2.4*		14.2 ± 1.6*	

* Significant differences

group as it was in the home group, among both boys and girls. No child under 6 months old in either group was found to have chronic nasopharyngeal infections. **(c) Mouth-breathing**—Only chronic and confirmed mouth breathers were included in this category. For all ages together (0-5 years) the incidence of mouth breathing was three or four times higher in the nursery group than in the home group for both boys and girls. The age of maximal incidence for boys was 18-24 months in the nursery and 2-3 years in the home group for girls it was 3 years in both groups—suggesting that children who

TABLE VII—Percentage of Examinations where Bronchitis was Found

Age		Boys		Girls	
		Nursery	Home	Nursery	Home
0-6 months	Nursery	13.6		26.9	
	Home	3.8		3.1	
	Difference	9.8 ± 8.0		23.8 ± 9.1*	
6-12 months	Nursery	19.7		8.0	
	Home	8.9		8.4	
	Difference	10.8 ± 5.6		-0.4 ± 4.1	
12-18 months	Nursery	9.9		7.5	
	Home	1.8		3.2	
	Difference	8.1 ± 3.2*		4.3 ± 3.3	
18-24 months	Nursery	14.4		10.0	
	Home	2.4		3.1	
	Difference	12.0 ± 3.7*		6.9 ± 3.1	
2-3 years	Nursery	5.1		7.9	
	Home	4.8		2.5	
	Difference	0.3 ± 2.2		5.4 ± 2.4*	
3-4 years	Nursery	4.9		0.5	
	Home	2.6		1.8	
	Difference	2.3 ± 2.2		-1.3	
4-5 years	Nursery	1.1		0.7	
	Home	0		0.9	
	Difference	1.1		-0.2	
All ages	Nursery	7.1		5.8	
	Home	3.4		3.1	
	Difference	3.7 ± 1.1*		2.7 ± 1.1*	

* Significant differences

[Part II with references, will appear in our next issue]

The Medical Advisory Committee (Scotland), chairman Sir John Fraser, has now submitted its report on laboratory services to the Secretary of State (H.M. Stationery Office, 2d). In considering whether the laboratory service should cover all branches of laboratory medicine or exclude public health work, the committee chose the former course. Certain allied services would be incorporated in the laboratory service, in particular a specialist service for conducting medico-legal necropsies and a service for the bacteriological examination of milk, food, and water supplies. "The service we recommend would be a national one, under central administration with a regional grouping of laboratories centred on the four university medical schools with appropriate arrangements for Inverness and the Northern Counties. Each regional group of laboratories would represent a self-contained section of the service but this would not exclude inter-regional co-operation and mutual assistance where necessary, and the whole time members of the professional and technical staffs of the service would be interchangeable among laboratories." It is assumed that the Director of Health for Scotland will administer the service. In the first place as many as possible existing laboratory resources will be utilized. A central laboratory organization would be centred in the university medical school, teaching hospitals, and public health department, and district laboratories would be established in association with either a general or infectious diseases hospital. As regards the training of staff the committee recommend that there should be a period of five years postgraduate training before recognition as a specialist in laboratory medicine is granted. In the medical schools aspirants to this branch might be encouraged to take courses for combined degrees in medicine and honours in science. The first year of training should be spent as house physician and house surgeon, six months of this year possibly being spent in an infectious diseases hospital. The committee points out that in certain parts of Scotland laboratory services must be mobile and it recommends that mobile units be established at various centres.

POTASSIUM THIOCYANATE IN THE TREATMENT OF HYPERTENSION

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Potassium thiocyanate has been used in the treatment of hypertension since Treupel and Edinger (1900) and, later, Pauli (1903) recommended it. In spite of considerable clinical experience of its use there is still some doubt of its value. The risk of toxic symptoms is its main drawback. Recent American opinion on the subject expresses this conflict of opinion. Thus Fishberg (1944) writes "I have seen little, if any, actual benefit to the patient, and, in view of the risk of toxic symptoms, have abandoned the use of thiocyanate", whereas Page and Corcoran (1945) conclude "a review on the subject with the statement, 'Yet long experience has shown that, with control of the thiocyanate level in the blood, dangerous toxic manifestations will be rare—sufficiently rare to justify its intelligent use'". They also report that "most evidence indicates that thiocyanate is useful in the management of many patients with hypertension".

We submit that the reasons for this difference of opinion are (1) the narrow margin on occasion between the therapeutic and the toxic dose of the drug, as also the fact that a toxic rash may appear when the drug concentration in the blood is at a low level, and (2) the coincident arteriosclerotic disease is not as yet either recognized or understood. It is our object to present some further observations on the use of potassium thiocyanate in patients with hypertension, and especially to attempt to correlate our results with the phase of the underlying arteriosclerotic disease.

Outline of Treatment

A constant serum thiocyanate concentration of between 5 and 12 mg per 100 ml of blood is the objective. A concentration or level of 15 mg may be toxic, and a level of 40 mg is potentially fatal. Barker (1936) recommends that the initial level to be attained should be 5–8 mg, and that if there is no clinical improvement the dose should be increased until a level of 8–12 mg is reached. He states that some cases respond to the higher dosage, though they have not shown any improvement at the lower concentration. We have been able to confirm this observation in several instances; nevertheless, our usual practice is to work at the lower concentration of 5–8 mg. The method of serum thiocyanate estimation used is a modification of Ravin's (1940) method. A comparator disk was specially prepared for our use by Messrs Tintometer Ltd.

The dosage is that recommended by Barker (1936), and used by D Silva and Evans (1944). The initial dose is potassium thiocyanate 0.1 g, chloroform water to 1/2 oz (14 ml). It is given with water three times daily after food and amounts to 2.1 g weekly. If it causes nausea or other symptoms of gastric irritation it is taken with food instead of after. The drug may be given in enteric-coated capsules if it causes nausea. Repeated estimations of serum thiocyanate are essential, at first weekly, then at two-weekly and monthly intervals and later at three- and six-monthly intervals. The amount of potassium thiocyanate necessary to maintain the required concentration in the blood varies

widely in different individuals. It may be as low as 0.8 g or as high as 4.2 g a week.

The patient is best treated at rest in bed for the first fortnight or three weeks, with such symptomatic treatment as is required to provide peaceful sleep, regulation of bowel function, suitable diet, and so on. The effect of the treatment on the patient's well-being and blood pressure is noted. After four to ten days the potassium thiocyanate is given, if the necessary indications for its use are still present, in a dose of 2.1 g weekly. At the end of one week's treatment the serum thiocyanate concentration is estimated. Cases are then divided into four groups.

1. *Serum Level of 4 mg or less per 100 ml of Blood*—The weekly dose is increased to 2.4 g. A second estimation must be done after a week on this increased dosage, because it occasionally happens that there is a rapid increase of thiocyanate concentration in the second week of treatment. Thereafter the dose is increased or decreased by 0.4 g weekly until a satisfactory level is maintained.

2. *Serum Level 5–7 mg*—The weekly dose remains at 2.1 g. The serum thiocyanate estimation is repeated in a week.

3. *Serum Level 7–10 mg*—The weekly dose is reduced to 1.4 g, and the serum thiocyanate estimation is repeated at the end of a further week.

4. *Serum Level 12 mg or Over*—Withhold the drug for 14 days, and repeat the serum thiocyanate estimation. Occasionally a high serum concentration may persist for three weeks after the drug is discontinued. According to result the drug is given again, probably at the rate of 1.2 g weekly. Subsequent dosage depends on experience gained in this first fortnight of treatment, and the dose of potassium thiocyanate remains the same during the third week of treatment, or is increased or decreased by 0.4 g weekly according to indications provided by the second serum thiocyanate estimation. The dose should never be increased at one time by more than 0.4 g weekly. A third serum estimation is made at the end of a further week or fortnight, and after this it may be possible to make the interval a fortnight or a month.

Control of Treatment—The quantity of potassium thiocyanate administered should be based on serum estimations. Blood-pressure readings are no criterion of dosage. A brief written record must be kept of the potassium thiocyanate intake, the serum thiocyanate concentration, and the blood-pressure readings, and a statement made as to symptoms, in order that the practitioner may have a bird's-eye view of the treatment of the case, which is likely to extend over months or years.

Indications—(1) Treatment with potassium thiocyanate is indicated for the relief of symptoms due to hypertension, especially headache and giddiness, when rest in bed and other conservative symptomatic treatment have failed. (2) Potassium thiocyanate may be effective when surgical treatment has failed. We have confirmed the observation of Page and Corcoran that, prior to sympathectomy, the drug may be a good pre-operative agent in minimizing the hypotensive crisis that sometimes follows the operation. (3) It is also indicated for patients whose diastolic pressure is 130 mm Hg or over and who have not responded to treatment on conservative lines.

Contraindications—Severe renal damage is generally regarded as a contraindication. In these cases the drug is apt to accumulate rapidly and may soon reach a toxic level. Provided frequent serum thiocyanate estimations are made, it can, however, be safely given, and occasionally some benefit is obtained. Myocardial disease, anginal pain, and heart failure, though not actual contraindications to the careful use of thiocyanate in patients with hypertension, are conditions in which the drug is of little value. The danger of toxic effects is said to increase with age and Vassie (1941) has advised that the drug should not be given to patients over 60 years of age. We have not confirmed

this observation. In our present series the 15 patients over 60 years old showed no particular intolerance to the drug.

Material and Clinical Observations

The cases reviewed here consist of 60 patients with persistent hypertension, and include most of the cases of hypertension admitted to an E.M.S. medical unit (Cell Barnes Hospital) during four years.

A detailed history was obtained of every case. A careful clinical examination was made and repeated blood-pressure readings taken. It is common knowledge that appreciable variations of blood pressure may occur both in normal and in hypertensive individuals (Allen, 1942). On this account the pressures were recorded in the forenoon, with the patient at rest, and the patient was kept under observation for a week before thiocyanate treatment was started. By this means daily fluctuations of blood pressure and the effect of rest in bed were noted. The further investigation of a patient also included a microscopical examination of the urinary deposit, renal function tests, and intravenous pyelography. In only one of the 60 cases was unilateral renal disease discovered—namely, a tuberculous kidney of three years' standing, associated with severe malignant hypertension in a young woman aged 22. An electrocardiogram was also done, and in many of the very ill patients myocardial disease was disclosed.

Classification

The crux of the problem of hypertension on which both the response to therapy and the prognosis depend is the opinion based on the patient's history and clinical examination as to whether the disease is active or quiescent. Whereas Moschowitz (1945), for example, regards arteriosclerosis as a progressive and irreversible condition, our conception is of an arteriosclerotic process characterized by periods of activity and periods of quiescence. To make this matter clear, though it is not completely established as yet by factual knowledge, we postulate a functional equivalent in terms of vascular spasm and a structural equivalent which is arteriosclerosis. According to this conception a widespread arteriolar constriction in the systemic circulation will cause hypertension, and local vascular spasm may be responsible for cerebral, cardiac, renal, and other symptoms. Such functional disorders of vascular tone are not necessarily permanent or progressive, but when there is a coincident or resultant change in structure of the vessel walls an irreversible stage in the progress of the disease is registered. From this point of view it will be understood that persistent hypertension is not necessarily a sign of active and progressive disease unless the diastolic pressure is high—namely, at a level of 130 mm Hg or over. It is our experience that persistent diastolic pressures of this order are generally an indication of progressive disease. The evidence of a change in vascular structure and active arteriosclerotic disease is looked for in the presence of haemorrhages which, apart from frank haemorrhage such as epistaxis, haemoptysis, haematemesis, melaena, and menorrhagia, include retinal haemorrhages and microscopical haematuria.

Other evidence of an active phase of arteriosclerotic disease is to be found in electrocardiographic evidence of myocardial damage, in venous and arterial thromboses, and in the presence of renal damage such as allows of the diagnosis of malignant hypertension. Thus the disease may be quiescent in a patient who has symptomless hypertension and a blood pressure which remains fairly steady at a level of 210 mm Hg systolic and 100 mm Hg diastolic, but a phase of activity and progressive disease will be recognized by increasing hypertension, the appearance of

new symptoms such as headache or giddiness, especially by the appearance of microscopical haematuria and retinal haemorrhages, and perhaps papilloedema. By these signs of disease benign hypertension is recognized as passing into the malignant phase. In some cases, however, a quiescent phase may follow and the retinal haemorrhages and microscopical haematuria may disappear, less commonly the disks become normal in outline. Although the hypertension persists the disease may become quiescent, and a balance of health may be restored and last for a number of years (Evans, 1943).

The cases were classified in four groups, and the diagnosis was made after completing the routine detailed examination already described.

Group I Benign Hypertension Quiescent Phase—These patients had a persistently raised blood pressure but retinopathy showed only retinal arteriosclerosis without haemorrhages or exudate, and there was no microscopical haematuria.

Group II Benign Hypertension Active Phase—In these patients the arteriosclerotic process was judged to be active by the presence of microscopical haematuria, retinal haemorrhages, wide fluctuations of blood pressure, symptoms of major significance, or other signs of active disease already described.

Group III Malignant Hypertension—In this group there was severe hypertension (the diastolic pressure usually exceeding 130 mm Hg), impaired renal function, and papilloedema.

Group IV Renal Hypertension—Six patients with hypertensive symptoms were treated, in three the underlying pathology was found to be chronic nephritis, in two the sequelae of a toxæmia of pregnancy, and in one due to polycystic disease of the kidneys.

Results of Treatment

The criteria by which the result of potassium thiocyanate therapy was assessed were its effect on blood pressure and on symptoms. The patient was put to bed for a week and daily blood-pressure readings were taken. Thiocyanate was given only to patients in whom the blood pressure remained persistently raised or in whom symptoms persisted in spite of rest in bed and symptomatic treatment. The lowest pressure recorded in the first week was taken as the base line reading. The drug was then administered until an adequate serum level had been maintained for three weeks, when the average blood pressure recorded in the third week was taken as the final reading. Most American writers regard falls of 15% in systolic and diastolic pressures as a "good" effect and 10% as a "fair" effect. We have taken a more conservative figure—namely, 40 mm Hg systolic and 20 mm Hg diastolic—as significant reductions in pressure. The fall in pressure recorded is therefore additional to that obtained by rest in bed. The symptomatic effect was assessed by replies to direct questions the symptom being "cured," "improved," or "unaffected."

The results are summarized in the accompanying table. By "immediate effects" is meant the condition of the patient on discharge from hospital. Under "late effects" the condition is given of 42 subjects of hypertension who received adequate doses of the drug for periods of more than a year. One patient has been taking the drug for more than three years, nine for more than two years, and the remainder for more than a year. Twelve patients have died within the period of observation.

Discussion of Results

As will be seen from the table the drug's effects can be correlated with the disease process. Its immediate effects were most pronounced in cases of the benign quiescent group, where almost three-quarters showed significant falls in blood pressure and obtained complete symptomatic relief. In the benign active group about two thirds of the

cases responded to thiocyanate—a smaller proportion than in the quiescent group. In the malignant phase potassium thiocyanate is of little value, but even in these severe cases symptomatic relief may be obtained and, rarely, the progress of the disease may be temporarily stayed.

Six cases of renal hypertension were treated. Symptomatic relief was obtained in four, and in two there was a significant fall in blood pressure.

Of the 60 cases reviewed in this paper 62% obtained complete symptomatic relief and 56% showed significant falls in blood pressure. These results as to immediate

Table Summarizing the Effect of Administration of Potassium Thiocyanate to 60 Cases of Hypertension in Varying Phases

Classification	Immediate Effects			Late Effects			Remarks
	Number Treated	Number Obtaining Complete Symptomatic Relief	Number Showing Significant Falls in B.P.	Number Treated	Number Obtaining Complete Symptomatic Relief	Number Showing Significant Falls in B.P.	
Benign quiescent hypertension	23	17	16	15	8	9	No deaths
Benign active hypertension	21	12	13	13	6	6	4 deaths, all due to coronary thrombosis
Malignant hypertension	10	4	3	8	—	2	5 deaths: 3 in 1st year, 1 in 2nd, 1 in 3rd. All due to uraemia
Renal hypertension	6	4	2	6	3	1	3 deaths, all due to uraemia
Total Percentage	60	37/62%	34/56%	42	17/40%	18/43%	

effect of thiocyanate therapy are similar to those obtained by Wald *et al.* (1939)—246 cases. As to its late effect, 42 patients received adequate treatment for more than one year. Of 15 patients with benign quiescent hypertension nine remained throughout the period of observation with a significant fall in blood pressure and relief of symptoms. Of 13 patients with benign active hypertension six maintained a significant fall in blood pressure with relief of symptoms.

There is not as yet good evidence that potassium thiocyanate controls the activity or progress of arteriosclerotic disease, although it is our opinion that it has had this effect in certain cases. There is clear evidence that the disease may be progressive in spite of symptomatic relief and some measure of control of blood pressure as a result of continued use of the drug. In the group composed of 23 patients with benign quiescent hypertension there were no deaths but in the group composed of 21 patients with benign active hypertension there were four deaths due to coronary thrombosis. The occurrence of four fatal cases with benign active hypertension and none with benign quiescent hypertension, together with the fact that a rather smaller proportion of the benign active hypertensive group than of the benign quiescent hypertensive group were benefited by the treatment, justifies the division of benign hypertension into these two groups. It also suggests that potassium thiocyanate is not very effective in preventing progress of the disease in benign active hypertension. Further evidence in support of this view of the limited value of potassium thiocyanate is the clinical course of three cases in which the blood pressure was well controlled. One patient whose blood pressure was 160/80 developed a retinal thrombosis; another developed retinal haemorrhages; a third in spite of a fair measure of blood-pressure control continued to suffer from headaches and paroxysmal hypertension although taking potassium thiocyanate. On

the other hand, it is interesting that symptomatic relief may be maintained in spite of continued progress of arteriosclerotic disease. Thus of five fatal cases with malignant hypertension two were relieved of headache until death ensued.

With regard to the ten patients with malignant hypertension, there was immediate relief of symptoms in four, together with a real improvement in the general condition. One patient, a man aged 44, was dying of uraemia on admission to hospital. He made a remarkable recovery, became symptom-free, and returned to work. He remained at work for 20 months, and died suddenly of uraemia two years after his first admission to hospital. Six cases of renal hypertension have been treated, with symptomatic relief in four. This confirms the observation of Kurtz *et al.* (1941) that potassium thiocyanate may be useful in chronic nephritis. It does not seem to prolong life in this disease.

Of the 42 patients treated for more than a year a significant fall in blood pressure was obtained in 18 and symptomatic relief in 17.

In general terms these patients have been maintained on a serum thiocyanate level of 4 to 8 mg per 100 ml. It is possible that better results might be achieved by a serum thiocyanate concentration of 8 to 12 mg.

The drug is most effective in its relief of headache, dizziness, and vertigo. Improvement in vision was observed, but its effect in this respect is difficult to assess. Mental confusion was cleared in one case. Malaise and asthenia were relieved in several patients. The drug is much less effective in its relief of cardiac symptoms. Of six patients with angina, only one improved, four were unaffected, and one was worse. It has no effect on the sensation of palpitations. Three patients with intermittent claudication and hypertension were not improved in respect of their pain.

Toxic Effects

Symptoms of intolerance are a rash, malaise, asthenia, loss of appetite, nausea, indigestion, pains in the limbs, and impotence. The significant symptoms are a rash, excessive tiredness and nausea. The rash varies considerably in appearance and distribution, characteristically it is a dull-red maculo-papular rash, somewhat irritating, and ending by scaling. The macules may be sharply defined and are followed by pigmentation, which ultimately fades out. A common distribution is on the flexor aspects of the wrists and forearms, on the lower third of the legs, or on the front and inner aspect of the thighs. It may be on the extensor aspect of the extremities and on the neck and trunk. It may be urticarial or haemorrhagic. It may appear with a serum thiocyanate concentration as low as 4 mg or even 3 mg per 100 ml. After its disappearance resumption of thiocyanate administration in some cases is not followed by a reappearance of the rash. Some degree of tiredness in the early stages of treatment is not a contraindication to continuing the treatment. If the asthenia is considerable or if tiredness appears for the first time at a later stage in the treatment, the serum thiocyanate concentration should be checked at once. Indigestion in the early stages of treatment is remedied by giving the thiocyanate with food instead of after food. Indigestion and nausea appearing later in the treatment are probably an indication of overdosage; the administration of thiocyanate is therefore stopped and the serum thiocyanate estimated at once. There are other uncommon symptoms of thiocyanate intolerance or overdosage, including perhaps thrombophlebitis. An individual taking thiocyanate consequently needs to be under medical observation.

In the present series skin rashes have occurred in six patients in four the drug was given again without causing reappearance of the rash, and in two the rash reappeared and the thiocyanate had to be stopped. Koffler and Freireich (1944) have reported femoral thrombophlebitis in four of a series of 40 cases treated, and observed that the lesion tended to recur if the drug was repeated. In the present series this complication has occurred twice. In a larger series of other cases under the observation of one of us it has not occurred at all. Goitre is reported to have followed the long-continued administration of potassium thiocyanate. Wald *et al* (1939) report 11 cases in 246 patients treated. We have not seen this complication. Our opinion is that, apart from skin rashes which may occur at low serum thiocyanate concentrations, toxic effects are uncommon provided that the dosage of the drug is properly controlled. The necessity for close control, especially in the early stages of thiocyanate therapy during which the adequate maintenance dose is being ascertained, cannot be over-emphasized.

It is said that thiocyanate therapy may be responsible for retinal, cerebral, and coronary thrombosis, but this opinion takes no account of the fact that a proportion of patients with persistent hypertension are suffering from active arteriosclerotic disease and that this disease is the cause, or may be the cause, of thrombotic phenomena occurring during the administration of thiocyanate.

Summary

An attempt has been made to assess the value of thiocyanate therapy in hypertension. A scheme of dosage has been given together with indications for treatment. Patients with hypertension have been classified according to phases and types of hypertensive disease. Taking the cases as a whole, symptomatic relief and a significant fall in blood pressure were observed in roughly 60% of the cases. The further observation of 42 patients shows that the effect of thiocyanate therapy can be correlated with the phases of the arteriosclerotic process, and that whereas symptomatic relief is given and blood pressure reduction is maintained in approximately 40% of the cases, the continued administration of potassium thiocyanate does not prevent, in individual cases at least, the continued progress of arteriosclerotic disease.

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The Minister of Food has issued a General Licence (S R & O, 1947, No 595) under the Food Rationing (General Provisions) Order, 1946, which regularizes the arrangements for the supply of glucose barley sugar, free of personal points rationing to persons for whom it is prescribed by registered medical practitioners. It prescribes the maximum quantity which can be supplied and provides for prescriptions covering a certain number of repeat purchases. Ration free sales to the public can be made only by registered pharmacists and the responsibility for checking the prescriptions is placed upon them and manufacturers. The licence indicates how registered pharmacists may obtain glucose barley sugar from manufacturers to fulfil prescriptions or to replace stocks sold ration free. The Order came into operation on April 6.

AUTOHAEMAGGLUTINATION AND RAYNAUD'S PHENOMENON

BY

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Late Major R A M C Specialist in Pathology

Autohaemagglutination has been defined by Boxwell and Bigger (1931) as "a clumping of the erythrocytes into irregular masses, visible to the naked eye, occurring in the presence of the individual's own serum, without bacterial action, at air temperature and reversible at body temperature." The phenomenon has been fully studied by these authors and by Landsteiner (1903), Clough and Richter (1918), Yorke (1911), and others both in animals and in human subjects. As a result of their investigations a number of criteria have been established, these may be briefly summarized: (1) Autohaemagglutinins in the serum of an "auto-agglutinator" will produce agglutination of his own corpuscles at temperatures below that of the body. They are most active at 0° C, less active at room temperature, and inert at blood heat. (2) Autohaemagglutinins are capable of agglutinating, at low temperatures, not only autologous corpuscles but also those of other individuals irrespective of their blood group, and in some cases the corpuscles of various animals as well. (3) The reaction is reversible. Corpuscles which have been agglutinated at low temperatures will disperse on heating to body temperature and reagglutinate on cooling.

Because of their activity at low temperatures autoagglutinins are often referred to as "cold" agglutinins. The terms are not strictly synonymous. Broadly speaking, however, an auto-agglutinin may be regarded as non-specific "cold" agglutinin of such potency that it is active at room temperature. The difference then is largely one of "titre" and thermal range. The phenomenon is quite distinct from pseudo-agglutination which is due to excessive rouleaux formation, bacteriogenic haemagglutination which may occur when sera or cell suspensions are contaminated with certain organisms of the diphtheroid group (Thomson phenomenon), and from polyagglutinability, in which phenomenon the individual's corpuscles are agglutinated at low temperatures by most normal sera irrespective of their group agglutinins, but not by autologous serum (Gaffney and Sachs, 1943).

The sera of normal healthy individuals frequently contain small amounts of cold agglutinins which will produce weak macroscopic agglutination when the serum is mixed with corpuscles of the same group (or group O) at refrigeration temperature (0-7° C). The reaction is seldom demonstrable on dilution of the serum beyond 1/16 (Turner and Jackson 1943). Rarely a serum will stand considerable dilution (1/32, 1/64), and in very exceptional cases the agglutinin will be present in such strength as to produce obvious naked-eye agglutination at room temperature—that is auto-agglutination.

Of 10,000 sera from presumably healthy individuals 0.29% were found by Shooter (1943) to contain cold agglutinins active at room temperature. Errors in blood group determination are occasionally caused by the presence in an individual's serum or plasma of such an agglutinin. The small amount of plasma that is present in a citrate or saline suspension of the individual's corpuscles may be sufficient even on further dilution with grouping sera, to cause marked clumping of his own corpuscles, and a false diagnosis of group AB may be made. This source of error can be eliminated by carrying out the grouping test at 37° C, at which temperature

auto-agglutinins, but not the ordinary iso-agglutinins, anti-A and anti-B, are inactive

Autohaemagglutination occurs rarely and inconstantly in a variety of pathological conditions which have little or no nosological affinity. Boxwell and Bigger could find in the literature only 22 cases which they considered to be undoubted examples of the phenomenon. Of these, five were normal subjects and the remainder suffered from such diseases as severe anaemia, cirrhosis of the liver, syphilis, and leukaemia. Cold and auto-agglutinins, however, are found with some degree of regularity in the sera of patients with primary atypical pneumonia (Peterson *et al.*, 1943, Turner *et al.*, 1943), tropical eosinophilia (Viswanathan and Natarajan, 1945), and trypanosomiasis (Yorke, 1911), and their demonstration has been used as a laboratory aid to the diagnosis of these conditions.

Table Showing Cases of Autohaemagglutination with Peripheral Vascular Manifestations

No	Author	Case Notes
1	Iwai and Mei Sai (1925)	Male 36 Raynaud's phenomenon (R.P.)
2	Alexander and Thompson (1925)	Male 48 R.P. atypical leukaemia haemoglobinuria WR negative
3	Iwai and Mei Sai (1926)	Female 78 R.P.
4	Stieffel (1928)	Male 60 R.P. haemoglobinuria hepatomegaly
5	Davidson (1932)	Male 60 macrocytic anaemia suffered from cold hands
6	LeGoff (1933)	Male 67 R.P. chilblains
7	Roth (1935)	Male 59 R.P. haemoglobinuria
8	Salén (1935)	Male 50 acrocyanosis haemoglobinuria
9	Ernstene and Gardner (1935)	Male 38 R.P. haemoglobinuria
10	Szary Kipfer and Gharib (1938)	Male 60 R.P. haemolytic anaemia arteriosclerosis splenomegaly and hepatomegaly
11	Hanns and Sommer (1938)	Male 32 R.P. anaemia splenomegaly
12	Gautier Heimann and Laudat (1939)	Female 52 R.P. anaemia
13	Benians and Feasby (1941)	Female 65 R.P. anaemia
14	Davidsohn (1942)	Female 63 R.P.
15	Stats and Bullova (1943)	Male 64 R.P. dry gangrene of digits
16	Helwig and Freis (1943)	Male 38 acrocyanosis primary atypical pneumonia
17	McCombs and McElroy (1937)	Male 57 R.P. haemoglobinuria arteriosclerosis

The association of autohaemagglutination with symptoms of a peripheral vascular nature has been observed on several occasions. Iwai and Mei-Sai (1925, 1926) reported two cases of Raynaud's phenomenon with associated high-titre auto agglutinins, and were of the opinion that the peripheral vascular manifestations in their cases resulted from intravascular haemagglutination when the extremities were subjected to low environmental temperatures.

In 1937 McCombs and McElroy reviewed the literature on autohaemagglutination with special reference to its association with Raynaud's phenomenon. They were able to collect five case reports of this association, and they themselves added one more to the list. According to Stats and Bullova (1943), 14 accounts of this combination of phenomena had appeared in the literature by 1943. To these I would add four other case reports. They are by LeGoff (1933), Ernstene and Gardner (1935), Davidsohn (1942), and Helwig and Freis (1943).

Laboratory findings are given pride of place in most of the accounts in the literature and full clinical details are not always available. Intermittent pallor or cyanosis of the extremities, precipitated by exposure to cold, is the predominant clinical feature, and the demonstration of high titre cold or auto agglutinins in the blood is a constant laboratory finding. Attendant clinical features such as anaemia, haemoglobinuria, hepatic dysfunction, and organic occlusive disease of the peripheral vessels are found in the case reports. Males are affected more often than females and there is wide variation in age incidence. Few, if any, of the patients appear to have been suffering

from the true clinical entity called Raynaud's disease (see Table). The following account of a case which I investigated recently is submitted as an illustrative example of the association of autohaemagglutination and Raynaud's phenomenon.

Case Report

A 24-year-old American sergeant was admitted to hospital with the complaint that his fingers became blue and numb on exposure to cold environmental conditions. He had had several attacks in the course of a few days before admission, during which time the weather was moderately cold. An attack would develop if his hands were uncovered while out of doors or in bed at night. Each attack would last for 10 to 20 minutes and would be rapidly relieved by warmth. He stated that changes first appeared at the tips of his fingers. As a rule the tip of one finger of either hand would first become involved and the change would gradually extend to all the fingers of one or both hands. The palms and the dorsa of the hands were affected to a less degree than the fingers, the wrists and forearms were unaffected. Colour changes during an attack were rather variable and depended to a certain extent on whether he was in the upright or the recumbent position, and whether or not he took immediate steps to alleviate the condition. From his description it seems that the fingers assumed a mottled dusky tint with white and purple patches and areas of normal colouring. In one attack the white patches would predominate, in another the purple. During the recovery phase the fingers would become first pale orange in colour, gradually intensifying to red and then fading to the normal skin colouring. He stated that his fingers felt numb during an attack and that they "throbbed" for a short time afterwards. Occasionally the tip of his nose and the lobes of his ears would become blue. His toes and feet were not affected at any time.

His past history was essentially negative. Despite the fact that he had lived for many years in a very cold part of the United States he had not previously suffered from this complaint. He acted as a volunteer blood donor a few months before admission and at that time no abnormality was found on blood examination. There was nothing in the past history to suggest that he had suffered from trypanosomiasis. Mastoidectomy had been performed at the age of 6 years. Eight months before admission a small tumour situated at the right angle of the jaw had been removed. The patient (a highly intelligent man) stated that microscopical examination of the tumour revealed "inflammatory change only."

A few slightly enlarged lymph nodes in both axillae and in the left supraclavicular fossa were the only abnormal findings on physical examination. There was no wasting of the small muscles of the hands or clubbing of the fingers. Normal pulsation was felt in the main limb vessels. The skin over the extremities (when examined between attacks) appeared perfectly healthy and his hands felt quite warm. The spleen was not enlarged. Radiological examination of the chest revealed no abnormality.

During the patient's short stay in hospital the weather became much warmer and attacks did not develop spontaneously. However by immersing his hands in cold water it was possible to induce an attack. The colour changes already described were reproduced after a 15 minute immersion, with a rapid return to normal on placing his hands in warm water.

Laboratory Findings

That the patient was an "auto agglutinator" was first suspected when an attempt was made to do a blood count. Capillary blood issuing from a small puncture wound in the lobe of the ear was seen to agglutinate spontaneously and large clumps of corpuscles were present in the diluting pipette. Under these circumstances it was impossible to carry out an accurate blood count, but by warming the patient's ear with a hot-water bottle and using pipettes and diluting fluids which had been warmed to 37°C before use agglutination was temporarily prevented and a reasonably accurate blood count obtained. This count showed haemoglobin 98% (Haldane), red cells 4,900,000 per cmm, white cells 6,000 per cmm (neutrophil polymorphs 3180, lymphocytes 2,520, monocytes, 300), platelets, 370,000 per cmm. A film revealed nothing

abnormal. The patient's blood group was determined by carrying out the test at 37° C. He was found to belong to group B. The bleeding time and clotting time were normal. The erythrocyte sedimentation rate (Wintrobe) at 37° C was 1 mm in 1 hour (the true reading), at 22° C 47 mm in 1 hour—a false result owing to the rapid sedimentation of cell clumps, at 4° C large cell masses prevented sedimentation. The Kahn and Donath-Landsteiner reactions were negative, as was the Paul-Bunnell reaction when carried out at 37° C. The urine revealed nothing abnormal.

Venepuncture was next performed and the blood sample placed in both oxalate and plain containers. These were immediately transferred to the incubator; clot retraction was allowed to take place at 37° C and the following experiments were carried out, using the serum thus obtained.

1 One drop of the patient's serum was added to one drop of a 5% saline suspension of his own corpuscles on a porcelain tile at room temperature. Complete agglutination of the corpuscles occurred almost immediately. The porcelain tile with the serum corpuscle mixture still showing marked agglutination was then transferred to the incubator at 37° C. The tile was re-examined after 10 minutes at 37° C. Dispersion of the corpuscles had occurred so that a homogeneous suspension of corpuscles in serum resulted, and there was no trace of agglutination. Reagglutination of the corpuscles took place when the tile was left at bench temperature (22° C) for several minutes. Agglutination or deagglutination could be produced indefinitely by alternate cooling and warming of the serum corpuscle mixture.

2 The above experiment was repeated using several suspensions of group AB, A, B, and O corpuscles instead of autologous corpuscles. The same result was obtained with B and O suspensions. With AB and A suspensions agglutination persisted at 37° C because of the anti-A iso-agglutinin in the patient's serum.

3 A 1% saline suspension of washed autologous corpuscles was added to a series of dilution tubes containing progressive geometric dilutions of the patient's serum, so that the final dilutions of serum were 1/4 to 1/4096. The tubes were placed in the refrigerator at 4° C overnight. The following morning the corpuscles were resuspended in the supernatant fluid by rapidly inverting each tube three times and the highest dilution which showed naked-eye agglutination was taken as the end-point. A titre of 1/204 was thus obtained. The same titre was reached when the patient's serum was titrated against suspensions of O and B corpuscles. This titre remained constant throughout the patient's stay in hospital.

Comment

It has been shown experimentally that the abnormal agglutinin in this patient's serum was a true autohaemagglutinin. The disease or factor responsible for its presence was not, however, determined. The fact that no abnormality was detected on physical and radiological examinations of the chest does not altogether exclude the possibility that he had suffered recently from a subclinical attack of primary atypical pneumonia, a disease which was encountered not infrequently among Service personnel in North-West Europe at the time of his admission. It is known that primary atypical pneumonia may assume a very mild subclinical form, and Turner *et al.* (1943) record a case of the disease in an ambulant female patient, radiologically negative, whose serum contained cold agglutinins to a titre of 1,000 and whose only complaint was of a bad cough.

There can be little doubt that the peripheral vascular manifestations in the case presented were due to mechanical blockage of the small peripheral vessels by aggregations of corpuscles within their lumina, the activating factor being exposure to cold. Cold exerted its influence in a twofold manner: (a) by lowering the temperature of the exposed extremities to the critical level for auto-agglutination to occur, and (b) by producing simultaneously a constriction of these vessels—the normal response of peripheral vessels

to cold stimuli (Lewis, 1936). The lumina of the vessels were thus almost completely occluded and the clinical features of Raynaud's phenomenon produced. In true Raynaud's disease obliteration of the vessel lumen is brought about by intense spasm of the vessel. Although the mechanism of production of vascular obliteration is different in the two conditions the end-result is essentially the same (see diagram). The peripheral vascular manifesta-

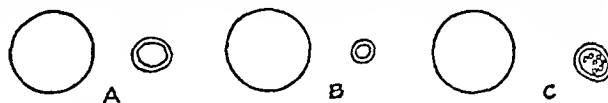


Diagram showing the effect of exposure to cold on the lumen diameter of small arteries. A, in normal subjects; B, in true Raynaud's disease; C, in Raynaud's phenomenon due to autoagglutination.

tions readily disappeared when heat was applied to the affected extremities, owing presumably to dilatation of the peripheral vessels and dissolution of the corpuscle aggregations. A free flow of blood to the parts was thus re-established.

The patient informed me by letter three months after his discharge from hospital that he was then symptom free and that a blood examination for cold and autoagglutinins was negative.

Summary

The literature on autohaemagglutination, with particular reference to its association with symptoms of a peripheral vascular nature, has been reviewed. Some 18 cases of this combination of phenomena are on record.

A case of autohaemagglutination with peripheral vascular crises has been described. It is suggested that the Raynaud-like attacks which followed exposure of the patient's extremities to low temperatures resulted from blockage of the small peripheral vessels with corpuscular aggregations. The results of *in vitro* experiments on the blood lend support to this contention and are probably a true reflection of the changes which occurred *in vivo*.

The aetiological factor responsible for the presence of the abnormal agglutinin was not determined.

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Medical Memoranda

A Case of Periarteritis Nodosa

Periarteritis nodosa is a rare and generally fatal disease. Perilman (1946) thinks that every case deserves special attention therefore I record the following case.

CASE REPORT

An Army driver aged 31 was taken ill with malaise, aches and pains, especially in the left side of the chest, and cough while in Greece. He was admitted to 53 General Hospital on April 24, 1946. On examination no abnormal physical signs were found, although a skiagram of the chest taken two days later showed a mild opacity in the left mid zone suggestive of resolving pneumonia. Atypical pneumonia was suspected. He soon ceased to complain of any specific symptoms, but his temperature remained raised. On April 30 the white cell count was 13,800 per cmm (polymorphonuclear neutrophils, 73%, lymphocytes, 20%, eosinophils, 4%, monocytes, 2%, basophils, 1%). On May 3 radiological examination of the chest was normal and the urine showed only a few pus cells. Throughout his prolonged stay he had pyrexia, usually 101-101.5 F (38.3-38.6°C) but occasionally as high as 103 F (39.4°C). All pathological investigations were negative. Three blood cultures were sterile and repeated stool examinations were negative for amoebae or cysts and pathogenic organisms. Agglutination tests for enteric fevers and brucellosis were negative on May 10, May 27, and June 22. At times he complained of abdominal pains, and on May 24 he had pain in the left foot. On June 22 his spleen was palpable. On June 29, 30,000 units of penicillin was injected three hourly, 2,000,000 units being given without effect.

He was transferred to 72B General Hospital on July 10 as a possible case of undulant fever. Here no abnormal physical signs were found except slightly enlarged lymph glands in the neck and axillae, and one was removed for biopsy. His temperature was still raised and his white cell count was 11,800 per cmm, 7% being eosinophils. Undulant fever was suspected but not confirmed.

He was returned to England and admitted to Q A Military Hospital, Horley, on Aug 9. His liver and spleen were enlarged and tender, a few shotty glands were palpable, the left ankle jerk was absent, and there was numbness in the left leg. A blood count showed red cells 4,160,000 per cmm, Hb, 78%, colour index, 1.9%, white cells, 14,200 per cmm (polymorphonuclear neutrophils 70%, lymphocytes, 17%, eosinophils 3%, monocytes 2.5%, basophils, 0.5%). A midstream specimen of urine showed an occasional granular cast, scanty pus cells, and a scanty growth of *Staph. albus* (? contaminant). Blood culture was sterile. Serum agglutination tests for brucellosis and enteric fevers were negative. A skiagram of the chest was normal and the Wassermann reaction and Kahn test were negative. On Aug 16 a neurologist reported: 'I think that this man's neurological signs in the left leg are indicative of a lateral popliteal nerve lesion. In view of the aching pain in both calves for two weeks before the numbness came on in the left leg I think the cause is probably a toxic neuritis'. About this time there was pronounced abdominal pain but a plain skiagram showed nothing abnormal and radiological examination of the spine was also negative.

On Aug 22 the biopsy report was: 'The picture is that of a malignant reticulosis, probably an early example of Hodgkin's disease'. The slides were considered to be 'strongly suggestive of lymphosarcoma'. On Sept 5 the patient was seen at the Middlesex Hospital with a view to treatment by deep x ray therapy. At this hospital the histological report was: 'Section shows areas of proliferation of endothelial cells, but the gland structure is preserved and there is no definite evidence of Hodgkin's disease'.

On Sept 17 the patient was admitted into Mount Vernon Hospital under my care. He was very ill and emaciated, and complained of abdominal pain and severe nausea. A few small glands were palpable in the neck and axillae. The liver was enlarged but the spleen could not be felt. Temperature 100 F (37.8°C). Shortly after admission he went into status epilepticus obviously due to intracerebral involvement. He died on Sept 24, five months from the onset of the illness.

Post mortem Examination—(1) Small nodules were present along the coronary arteries. (2) The brain showed general congestion and a small cerebral haemorrhage involving the cortex of the left lateral aspect of the occipital lobe. (3) The liver was enlarged, pale and mottled, showing marked toxic changes and several infarcts. (4) Both kidneys were swollen and mottled, and showed severe toxic changes and numerous small infarcts. (5) The spleen was enlarged but contained an infarct. (6) The small and large intestines were distended and flecked with small fibrino purulent

deposits. Many adhesions were present between various coils. The small intestine at the adherent areas showed thickening, the mucosa being covered by a rough exudate spreading circularly round the lumen, no definite ulcers were seen. The arteries supplying these areas showed some thickening but no definite nodules. The caecum contained areas of mucosal ulceration—probably a post-mortem change. (7) There were a few slightly enlarged glands in the neck and axillae.

Histological Examination—Heart: one section showed a typical mycotic aneurysm, and the others occlusive fibrotic changes in the vessels. Brain: section revealed haemorrhage, but destruction too extensive to show typical vessel changes. Liver: a large infarcted area with inflammatory infiltration and sprouting bile-ducts surrounding it, no typical vessel changes. Kidney: a small infarct and a vessel at the edge of it completely occluded by fibrous tissue. Spleen: an infarct present, some of the small vessels showed thickening but no aneurysm or complete occlusion was seen. Mesenteric vessels: occlusive changes. Gland: congested, there was retention of normal architecture, hyperplastic changes only.

Death was thus due to periarteritis nodosa the most typical lesions being in the coronary arteries.

DISCUSSION

This disease most commonly affects young adults. The principal vessels involved are those of the heart, intestine, and kidney, but the vessels of the brain, lungs, and limbs may be more rarely involved. There are fever, prostration, and loss of weight, and a remarkably varied symptomatology, as vascular involvement may occur in almost any organ. The abdominal symptoms in the above case were due to occlusion of the mesenteric vessels, while the neuritic pains were probably the result of occlusion of the nutrient arteries to the peripheral nerves. The immediate cause of death was involvement of the cerebral arteries.

The diagnosis is usually made post mortem. Occasionally, however, when nodules are present in the subcutaneous tissue biopsy will give a correct diagnosis. In the above case various diagnoses were suspected at the beginning: atypical pneumonia, and later undulant fever, toxic neuritis, and reticulosis. In Perilman's (1946) case infective polyneuritis was first suspected and later abdominal Hodgkin's disease. The condition may be due to a filtrable virus, but there is much evidence to suggest that it is a form of vascular hypersensitivity. Thus the disease may occur in patients who have suffered from asthma, serum sickness, or sulphonamide reaction. Miller and Nelson (1945) described a case occurring during antisyphilitic treatment, and suggested that the condition represents in this case an anaphylactic type of hypersensitive response to arsenicals. Again, Rich and Gregory (1943) have produced characteristic lesions in rabbits by repeated injection of horse serum. Eosinophilia, usually moderate, may be found in some cases, and also supports an allergic aetiology. Friedberg and Gross (1934) consider that some cases may be rheumatic in origin.

The disease is commonly fatal, death often being due, as in this case, to haemorrhage from a ruptured aneurysm. In some cases, however, though the condition may continue for months recovery may occur, but in some of these late symptoms of renal and cardiac insufficiency may develop, as in the case described by Arkin (1930). Treatment is in the main symptomatic and supportive but every effort should be made to exclude antigens that might be responsible.

I wish to thank Dr Ruth Pearson for the post mortem examination.

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Persons suffering from active tuberculosis who receive an additional supply of milk under an authority issued by the food office are to be allowed an extra ounce of bacon each week. Application should be made at the local food office for the authority to purchase the extra bacon. The ration book should accompany the application.

Reviews

INFECTIOUS DISEASES

The Background of Infectious Diseases in Man By I. M. Burnet, M.D. F.R.S. (Pp 110 7s 6d) Melbourne The Melbourne Permanent Postgraduate Committee, College of Surgeons, Spring Street

The present volume is a reprint of six postgraduate lectures delivered in 1945 at Melbourne. The author treats infectious disease from the oecological standpoint, illuminating particular aspects with broad generalizations and with recent scientific knowledge. Besides being useful to general practitioners, for whom they were originally intended these lectures should have a salutary effect on specialists, particularly those whose conceptions have become fixed or their vision narrowed.

An introductory lecture is followed by one on diphtheria, measles, rubella, and infectious jaundice. The author is exasperated by the fact that all the common infectious diseases having a long incubation period, such as chicken pox, measles, rubella and mumps, are caused by viruses that cannot be studied adequately in the laboratory. At most they cause a very mild illness in monkeys. He thinks, however, that the outburst of symptoms and rash in the exanthemata is due to a relatively massive liberation of virus into the blood, and such an intense antibody response then occurs that subsequent immunity is life long. In the third lecture he suggests that infectious disease must have evolved almost entirely among gregarious animals and that poliomyelitis, for example, may have been introduced into the human species from an animal such as the mouse, which suffers from a similar disease. The older age incidence of poliomyelitis that has been noted in some countries recently may be a result of their people's higher standard of living which has protected the infants and young children from exposure to infection. In the fourth lecture, on streptococcal infection and rheumatic fever, he points out that hypersensitivity to bacterial products requires the prolonged production of bacterial antigens in the immediate neighbourhood of an accumulation of monocytic inflammatory cells. He regards it as probable that antigen lodging in situations of choice, such as the joints reacts with antibody when the latter reaches a certain level in the blood, rather than that tissues sensitized by previously formed antibody respond to antigen set free from the local site of infection. He considers that the common febrile infections of the respiratory tract with the exception of those due to haemolytic streptococci are primarily caused by viruses. Discussing the possibility of successful vaccination against influenza he draws attention to the fact that herd immunity lasts longer than individual immunity probably because a lower general level of immunity is necessary to prevent the spread of infection through the herd than to protect the individual against concentrated exposure. In the last lecture on tuberculosis, he emphasizes that to prevent this disease the one outstanding requirement is to protect against primary infection with the tubercle bacillus. He dismisses the fear that the virtual abolition of tuberculosis from a community would result in the development of a highly susceptible population since most of the extremely susceptible combinations have been eliminated from the race in the past 200 years and it would take a long time for serious changes to occur in the current distribution of genetic resistance.

G. S. WILSON

LECTURES FROM EDINBURGH

Edinburgh Postgraduate Lectures in Medicine Volume 3 (Pp 588 illustrated 15s) Published for the Honyman Gillespie Trust by Oliver and Boyd, Edinburgh 1946

This volume which exemplifies the high level of didactic teaching characteristic of the Scottish schools of medicine comprises lectures by thirty-two different lecturers—all from Scotland and most from Edinburgh itself—delivered and published under a grant received by the executive committee of the Edinburgh postgraduate courses from the trustees of the late Mrs Honyman Gillespie. Nevertheless it has proved more difficult to read than any recently received volume. In reviewing some French lectures on clinical medicine a short time

ago we asked whether the dry of the published clinical lecture had not passed, the question is even more apposite when the lectures are given by over thirty different authors and, owing to the fortunes of war, are not published until three or four years after delivery.

It is difficult for any one reader to be interested both in the Control of Sepsis and in Delinquency, in the First Month of Life and in Prostatic Enlargement. Such diverse material is more suited to the special journals, where the reader's appetite is stimulated by the limited size and the sense of news, and to be blunt, it seems a waste of time and money to publish such material in a beautifully bound and printed volume of nearly six hundred pages. To-day is the day of the monograph and the symposium. How valuable, for example, would be a symposium on all that has been learned and recalled about malnutrition in the past eight years. It may well be that the committee which nominates and invites the lecturers should adopt a different policy in postgraduate education and publication. Only pious devotion to an *alma mater* would justify the purchase of these addresses, and it is certain that the collective genius of the Edinburgh school could pay some more fitting tribute to the memory of Mrs Honyman Gillespie.

L. J. WITTS

AESTHETIC LAPAROTOMY

Laparotomia Estetica en la Mujer By Dr Carlos Lorea (Pp 66 No price given) Madrid Editorial Científico Médica 1946

In this well illustrated monograph the author pleads for greater care in the planning of laparotomy incisions in gynaecological operations, and stresses the mental trauma inflicted on women condemned to bear unsightly operation scars on their abdomens. He makes a transverse incision with the convexity downwards not exceeding 10 cm in length, and with its centre about 4 cm above the symphysis pubis, so placed and of such size that the pubic hair will hide the scar. It is traced accurately by applying to the abdomen a sterile plate of thin steel which is fitted with a hook that rests against the pubis, a linear perforation marks the line of the proposed incision, and the suture lines are also delineated exactly and symmetrically. Methylene blue solution can be used to trace the line if iodine is employed as the skin disinfectant.

The skin and aponeurosis are incised along the line, and the lower flap of the aponeurosis is divided longitudinally in the midline to gain space, and then dissected off the underlying muscle. The recti are separated, and the peritoneum is incised longitudinally a self-retaining retractor is inserted. The exposure obtained is sufficient to perform conservative operations on uterus and adnexa, appendicectomy, or even a lower segment caesarean section. The wound is closed in four planes. The peritoneal edges are approximated with a continuous chromic catgut stitch, the recti with three mattress sutures, and the edges of the aponeurosis first with several interrupted catgut sutures and then with a continuous stitch. The skin is sutured with a few mattress stitches of silk worm gut, taking in the subcutaneous fat, and is finally closed with Michel clips. The photographs of cases in which this technique has been used seem to justify aesthetically the author's claims for his incision.

S. S. B. GILDER

CARDIOLOGY

Diseases of the Heart and Circulation By Albert A. Fitzgerald Peel, D.M., F.R.F.P.S. Oxford Medical Publications (Pp 393, 61 illustrations 35s) London and New York Geoffrey Cumberlege (Oxford University Press) 1947

This book is dated 1947, the author's preface September, 1946 and the student and practitioner for whom the book was primarily written would therefore expect to find in its pages the most recent information on the cardiovascular system and the treatment of its ailments. They will be disappointed. The most important new facts have been discovered by means of multiple chest lead electrocardiography, vectorcardiography, phonocardiography, angiocardiology, measurement of peripheral blood flow and especially cardiac catheterization. Yet the author mentions neither these methods nor the facts revealed by them. The most important new therapeutic agents in cardiology include penicillin, thiouracil, heparin, dicoumarol

thecophylline ethylene diamine cholinergic substances magnesium sulphate and lumbo dorsal sympathectomy, little or nothing is said about any of them.

The author rightly stresses the importance of functional as well as structural changes, but it can hardly be said that he has achieved his purpose 'to present the morbid physiology of the circulation side by side with its morbid anatomy'. He omits to discuss the hyperkinetic circulatory state associated with thyrotoxicosis, anaemia severe emphysema, arteriovenous aneurysm, beriberi, and extensive Paget's disease. Cardiac asthma is identified with the dyspnoeic phase of Cheyne Stokes breathing when complicated by bronchial spasm (p. 19), effort dyspnoea and cyanosis in patients with diminished cardiac reserve or with pulmonary congestion are attributed to excess of carbon dioxide (p. 5) and to deficient oxygenation of the blood (p. 20) respectively, palpitation and left inframammary pain to lowering of the sensory threshold to normal afferent impulses (p. 14) and jugular pulsation to tricuspid incompetence (pp. 21 and 202). The description of triple rhythm is especially confusing (pp. 37-40).

On the whole the author's views on morbid anatomy are orthodox, but the statement that syphilis is a cause of aortic stenosis (pp. 193 and 221) will not find many supporters, nor will the belief that adherent pericardium is a cause of great cardiac enlargement and that it should be treated by the operation of cardiolysis (p. 175). Recommendations for treatment are thoroughly conservative, even to the point of denying the value of quinidine in paroxysmal tachycardia (p. 113). The merits of the book are simplicity, economy of words, clarity of expression, lack of repetition, plentiful electrocardiographic and radiological illustrations, and a sensible division of the book into three main sections: (1) symptoms and signs, (2) anatomical lesions, (3) retiological types of heart disease. The bibliography is deliberately scanty and predominantly British.

PAUL WOOD

HOSPITAL STATISTICS

The Hospitals Year Book 1945-6 Edited by J. P. Wetenhall, B.A. (Pp. 279, 21s.) London: The British Hospitals Association, 1946.

In this edition of the *Hospitals Year Book* which appeared at the end of 1946, the latest statistics are those for 1942, for the figures concerning the finance and work of the voluntary hospitals are compiled from annual reports issued in the year after the one to which they relate. This year difficulties have further delayed publication. The statistical analyses are interesting for historical record. In 1942 subscriptions and donations accounted for 18% of the income of voluntary hospitals, legacies for 8.4%, patients' contributions for 41.6%, and receipts for public services for 21.7%. The hospitals were solvent, maintenance income exceeding expenditure by nearly 2.1 million pounds.

The *Hospital Directory* is the more useful part of the volume and presents much information compactly. The number of available beds at each voluntary hospital is given, together with the pre-war number. Of the twelve hospitals with medical schools ten have fewer beds available and only two (Kings College and University College) rather more but in the provinces and Scotland the trend is, in general, the other way. Particulars of accommodation for private patients and the fees charged, of the employment of almoners, dietitians, and others, of reservation of beds, and of approval for nursing training and other purposes are all given. A list of municipal and public assistance hospitals, of convalescent homes, and of contributory and provident schemes is included, and the result of an inquiry into an appointment system for out-patients with a suggested method of operating such a system, is an interesting feature.

Rehabilitation varies from a slap on the back and 'Well I don't want to see you again my lad!' to an educative process lasting many months—beginning perhaps with quadriceps exercises in bed and ending with a bicycle ride. In *The Road Back to Health* (H.M.S.O. price 6d.) which briefly describes and illustrates much of the apparatus of rehabilitation Mr. Aneurin Bevan gave in a foreword. This is a field in which Britain leads the world. This pamphlet is intended to appeal to laymen as well as doctors.

BOOKS RECEIVED

[Review is not precluded by notice here of books recently received]

Sensory Mechanisms of the Retina By Ragnar Granit, M.D. (Pp. 412, 35s.) Oxford University Press. Geoffrey Cumberlege, 1947.

An account of investigations into the electrical signs of excitation and inhibition in the retina and optic nerve, the properties of rods and cones, photosensitive substances and the mechanism of excitation, and colour reception by the professor of neurophysiology at the Royal Caroline Institute, Stockholm.

Transactions of the Third Tuberculosis Workers' Conference Held in New Delhi (Pp. 188, Rs. 4.) New Delhi: Tuberculosis Association of India, 1947.

Addresses on various aspects of tuberculosis delivered in New Delhi in 1945.

A Handbook of Midwifery By Sir Comyns Berkeley, F.R.C.P., F.R.C.S., F.R.C.O.G. 13th ed. (Pp. 456, 12s. 6d.) London: Cassell, 1946.

This textbook for pupil midwives, midwives and obstetric dressers contains new material on the rhesus factor, and sections on the treatment of unavoidable haemorrhage and blood transfusion have been rewritten.

Actions and Uses of Drugs By Windsor C. Cutting, M.D. (Pp. 326, 16s. 6d.) California: Stanford University Press, 1946.

A summary of the effects and uses of drugs intended as a textbook for nurses, includes sections on antibiotics, hormones, and vitamins.

Womanhood By Margaret M. White, M.D., F.R.C.S., M.R.C.O.G. (Pp. 107, 7s. 6d.) London: Cassell, 1947.

The purpose of this book is to help women to understand the anatomy and physiology of their sexual and procreative functions, written from a practical point of view and illustrated with diagrams.

Tension Arterial y Biotipo By Fidel Schaposnik. (Pp. 121, No price.) Buenos Aires: Librería y Editorial "El Ateneo", 1947.

A monograph on blood pressure with biological evidence. In Spanish.

Gestation Periods Technical Communication No. 5. Compiled by J. H. Kenneth, M.A., Ph.D., F.R.S.E. 2nd ed. (Pp. 30, 3s.) Edinburgh: Imperial Bureau of Animal Breeding and Genetics, 1947.

A table on the gestation periods of many animals, with bibliography.

Nuove Vedute sulla Malaria By Maurizio Ascoli et al. (Pp. 209, No price.) Rome: Istituto Bibliografico Italiano, 1947.

A collection of papers on malaria by Italian authors.

Pediatric Gynecology By Goodrich C. Schauffer, A.B., M.D. 2nd ed. (Pp. 380, \$6.00.) Chicago: Year Book Publishers, 1947.

Many sections in this book have been revised, including those on gynaecological surgery, medico-legal aspects, and commercial preparations of sex hormones.

My Eyes Have a Cold Nose By Hector Chevigny. (Pp. 253, 12s. 6d.) London: Michael Joseph, 1947.

An account by a blind man of his reactions to blindness and of the dogs trained to guide the blind.

Micro-diffusion Analysis and Volumetric Error By Edward J. Conway, M.B., D.Sc. (Pp. 357, 21s.) London: Crosby Lockwood, 1947.

Includes an account of new methods of micro-diffusion technique. Part I describes apparatus and principles used in micro-diffusion analysis. Part II methods with the standard "unit," and Part III the error of volumetric titration.

Uterotubal Insufflation By I. C. Rubin, M.D., F.A.C.S. (Pp. 453, 50s.) London: Henry Kimpton, 1947.

A clinical account of tubal insufflation and an evaluation of the aetiological importance of obstructed uterine tubes in sterile matings, with description of the anatomy, physiology, and pathology of the Fallopian tubes.

Penicillin in General Practice By J. L. Hamilton Paterson, M.D. 2nd ed. (Pp. 110, 5s.) London: Staples Press, 1947.

An account of the administration and uses of penicillin in general practice with a section on the nature and properties of penicillin.

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FOLIC ACID

It is now eighteen months since Spies¹ and his co-workers in America first reported the haemopoietic properties of folic acid in man. This recently synthesized member of the vitamin B complex has been recognized as an essential food factor for many years. Under the names vitamin B₁₂, eluate factor, *Lactobacillus casei* factor, *Streptococcus lactis* R factor, and vitamin M, crude preparations of folic acid have been shown to have a haemopoietic function in a number of species. A deficiency profoundly depresses the formation of red and white cells and platelets. With the synthesis of folic acid in 1945 by Agnier and his team² the pure substance has become available in quantities adequate for clinical trials. The results of many of these have been published, and it is now possible to review the therapeutic uses and limitations of folic acid and to speculate on its mode of action. Sufficient evidence has accumulated to prove that synthetic folic acid produces a haemopoietic response similar to that resulting from adequate liver therapy in many types of megaloblastic anaemia, including Addisonian pernicious anaemia, and the anaemias associated with sprue, pellagra, pregnancy, infancy, and malnutrition. It is ineffective, however, in the treatment of anaemias due to iron deficiency, the leukaemias, and the anaemias associated with hypoplasia or aplasia of the bone marrow. It appears to be effective only in cases of anaemia with a megaloblastic bone marrow. Leucopenia and thrombocytopenia have been produced in animals fed on purified diets deficient in folic acid, but it has proved successful in treating patients suffering from these conditions only when they have formed part of a syndrome resulting from a nutritional deficiency. Although it is the opinion of most workers that folic acid is ineffective in the treatment of aplastic anaemia, Gendel³ states that he has produced improvement in three patients with massive doses of 150 to 400 mg of folic acid daily (normal dose 5 mg to 10 mg daily). It may well be that the improvement observed was a coincidental spontaneous remission, but as a progressive marrow hypoplasia and aplasia can be produced in rats by feeding diets deficient in folic acid⁴ Gendel's massive dose therapy might repay further investigation.

The evidence for the value of folic acid in relieving the anaemia of sprue is conflicting. Spies and his colleagues⁵ have reported not only a striking haematological response, but also the disappearance of the oral and gastro-intestinal symptoms and a gain in weight in cases of tropical sprue in Cuba. A remarkable improvement in the radiological appearances of the gastro-intestinal tract was also described,

including the disappearance of mucosal oedema and intestinal segmentation, spasm, dilatation, and hypomotility. Davidson and his co-workers⁶ in Edinburgh have confirmed the dramatic control of the diarrhoea and the rapid clinical improvement in cases of tropical sprue and idiopathic stercorrhoea, but they consider the haematological response very disappointing. They emphasize a clinical finding that has not been reported before—namely, a considerable improvement in intestinal function on the fifth day of treatment with folic acid, before the appearance of any blood changes. This dramatic change, which may occur in patients who show no haematological response to continued folic acid therapy, suggests that folic acid may have two distinct actions—the continuation of normoblastic blood formation, and the control of normal functioning of the alimentary system. Davidson observed no beneficial effects from giving folic acid to patients with coeliac disease or idiopathic ulcerative colitis. It is possible, as he points out, that the excellent haematological response seen by Spies in his sprue patients treated with folic acid may have been due to the fact that they had subsisted on deficient diets for long periods, and that many of them had infections and infestations of the gastro-intestinal tract. They were therefore probably suffering from both a direct and a conditioned nutritional deficiency, whereas in the Edinburgh series the deficiency was conditioned by a failure in absorption or utilization. Davidson is inclined to believe that the Cuban cases were mainly patients with primary nutritional macrocytic anaemia suffering from gastro-intestinal symptoms. This would certainly explain the difference in the response of the two series.

One thing is certain. Folic acid is not identical, either chemically or therapeutically, with the anti-pernicious anaemia principle of liver. Efforts to demonstrate significant amounts of folic acid in liver fractions have failed, and attempts to liberate free folic acid from ground muscle treated with gastric juice, according to the technique of Castle, have also been unsuccessful.^{7,8} It has been estimated that an effective dose of liver contains less than 1 mg of folic acid, a quantity which is unlikely to produce a haemopoietic response itself. The active principle of liver is evidently not folic acid but a totally different compound, which, if ever isolated, will probably be many times more potent than folic acid. Clinically there are important differences between liver extracts or proteolysed liver and folic acid. Certain anaemias of indefinite origin respond to liver extracts but not to folic acid, which appears to be effective only in cases with a megaloblastic bone marrow, some cases of megaloblastic anaemia are refractory to potent purified liver extracts but respond to folic acid, and, what is very important clinically, the neurological sequelae of pernicious anaemia can be both controlled and prevented by liver extracts but not by folic acid. Spies and Stone⁹ have recently shown that folic acid has no effect on the subacute combined degeneration of the spinal cord associated with this disease. Not only did folic acid fail to relieve the symptoms in their patients but the neurological lesions progressed while folic acid was

¹ *Sth. med. J.* 1945 38 707² *Science* 1945 102 227³ *J. Lab. clin. Med.* 1947 32 139⁴ *Arch. Path.* 1945 40 364⁵ *J. Amer. med. Ass.* 1946 132, 906 *Amer. J. Roentgen* 1946 56 337*J. Lab. clin. Med.* 1946, 31, 227⁶ *Lancet* 1947 1 511⁷ *Amer. J. med. Sci.* 1945 209 520 *Proc. Soc. exp. Biol. N.Y.* 1946 62 112⁸ *Proc. Soc. exp. Biol. N.Y.* 1946 63 555⁹ *Lancet* 1947 1 174

being administered. This report has now been confirmed by Davidson and Girdwood in a contribution in this issue of the *Journal* and by several American workers.¹⁰ It would appear that in liver there is an unknown factor or factors other than folic acid essential for maintaining the integrity of the nervous system in patients with pernicious anaemia. This failure to control the neurological complications of pernicious anaemia constitutes a serious limitation to the use of folic acid in the treatment of this disease. It can be recommended only as a temporary measure in the initial stages of treatment and in patients sensitive to liver undergoing desensitization, parenteral liver therapy must still remain the treatment of choice. Since neurological changes rarely develop in nutritional megaloblastic anaemia, pernicious anaemia of pregnancy, refractory megaloblastic anaemia, and the sprue syndrome, folic acid can be safely administered both for the initial and maintenance therapy of these conditions in doses of 5 mg to 10 mg daily. Treatment of any megaloblastic anaemia with doses of more than 10 mg daily is wasteful and unnecessary. At present prices folic acid is so much more expensive than liver extracts that it is not likely to replace liver therapy in treatment. According to Spies¹¹ a further drawback to the use of folic acid is that for constancy and speed of haemopoiesis it is inferior to a potent liver extract.

How does folic acid function in cases of megaloblastic anaemia? It is not the maturation factor for primitive red cells itself, because if it is incubated, either alone or in the form of its conjugate, with centrifuged marrow cells it fails to bring about maturation of red cells from their primitive precursors to the mature reticulocyte stage. In similar circumstances liver extract does.⁸ Folic acid is widely distributed in foodstuffs, and the possibility of a deficiency in the diet is extremely unlikely in this country, although it may occur in the patient suffering from malnutrition. Folic acid does not occur free in foods but as a conjugate with hexaglutamic acid, known as pteroylhexaglutamylglutamic acid, which is normally broken down in the body. There is now sufficient evidence to show that free folic acid is an essential factor for the continuation of normoblastic blood formation and that a deficiency causes a reversal to the megaloblastic condition. A deficiency of free folic acid may result from a diminished intake of the conjugate, as in nutritional macrocytic anaemia, failure to absorb the conjugate, as in the sprue syndrome, or failure to break down or utilize the conjugate, as may occur in pernicious anaemia. Welch¹² and Bethell¹³ have shown that folic acid conjugate will not produce a haemopoietic response in patients with pernicious anaemia who respond to free folic acid alone or to a hydrolysed conjugate. Such patients also fail to excrete significant amounts of folic acid in their urine after treatment with the conjugate, although they do so after the administration of free folic acid. It would thus seem that pernicious anaemia patients either do not absorb folic acid conjugate from their food or else they do not utilize it. When a potent liver extract is given parenterally to a pernicious anaemia patient there is a haemopoietic response and a

marked excretion of free folic acid. Evidently liver extracts contain a factor liberating free folic acid from its conjugate.

Pursuing this theme, Davidson and Girdwood assume that this liberating factor, a product derived from the interaction of Castle's intrinsic and extrinsic factors in the alimentary tract, is absorbed from the intestine and stored in the liver of normal subjects, but not in the liver of pernicious anaemia patients. The cause of pernicious anaemia is not primarily due to a defect in the bone marrow but to the inability of the patient to convert conjugated folic acid to the free form through lack of the liberating factor. Hence the administration of either free folic acid, or liver containing the liberating factor, ultimately provides the bone marrow with the folic acid necessary for normoblastic blood formation. In nutritional macrocytic anaemia, the sprue syndrome, pernicious anaemia of pregnancy, and idiopathic refractory megaloblastic anaemia, megaloblastic blood formation is not the result of defective production of the liberating factor postulated by Davidson and Girdwood but of a deficiency of folic acid conjugate resulting from insufficient intake or failure of absorption. In such cases it is understandable why therapy with purified liver extracts may fail and yet succeed with folic acid. This very plausible explanation of the mode of action of folic acid will need some modification in the light of the recent observation that it may be synthesized by the organisms in the human gut, since the combined faecal and urinary excretion is greater than the intake in the diet.¹⁴

ARTIFICIAL INSEMINATION

In all discussions of human artificial insemination a sharp line is necessarily drawn between insemination with the husband's semen and with that of some other man. The conference¹⁵ sponsored by the Public Morality Council in 1946 produced varying views on the moral, social, and other implications of artificial insemination by the husband (AIH), but all the lawyers who have dealt publicly with the subject agree that AIH raises no special legal questions. These only start to arise in relation to artificial insemination by a donor (AID). They are the more numerous and troublesome for the almost complete lack of authority, either in statute or in decision. The application of existing principles, however, does enable some answers to be given with reasonable confidence. There seems to be general agreement that a child produced by AID is illegitimate. For the truth of this statement lawyers cite Lord Dunedin's words in *Russell v Russell*¹⁶ "The appellant conceived and had a child without penetration having ever been effected by man, she was fecundated *ab extra*. The jury came to the conclusion that she had been fecundated *ab extra* by another man, unknown, and fecundation *ab extra* is, I doubt not, adultery." A Canadian court trying an AID case¹⁷ held that the introduction into a wife's body by unusual means of the seed

¹⁰ Heale, R. W., and Welch, A. D. *J. Amer. med. Ass.* 1947 133 739.
¹¹ C. F. et al. *J. Lab. & Med.* 1947 32 262. *Blood*, 1947 2, 50.
¹² *Am. J. med. Sci.* 1947 213 135.
¹³ *J. Clin. Chem.* 1946 164 767.
¹⁴ *J. Lab. Clin. Med.* 1947 32, 3 23.

¹⁵ Denko C. W. et al. *Arch. Biochem.*, 1946 10 33.

¹⁶ *Artificial Human Insemination*. Report of a conference held in London under the auspices of the Public Morality Council 1947. London: Heinemann. Pp. 81. 3s. 6d.

¹⁷ 1924 A.C. 687 at p. 721.

¹⁸ *Oxford v Oxford* 58 D.L.R. 251.

of a man other than her husband is adultery Mr H U Willink (recently Minister of Health), commenting on this decision,¹⁸ has observed that the adulterous character of an act cannot be removed by the consent of the other spouse, its consequences may be affected by connivance or condonation, but it remains an act of adultery. Similarly a donor commits adultery if his semen is used for AID.

Though aiding and abetting adultery is neither a criminal offence nor an actionable wrong and though it would strain legal imagination too far to suggest that a medical practitioner who practises AID is himself guilty of adultery, yet clearly he stands on insecure ground and close to a number of dangerous pitfalls. The first of these is the law governing the registration of births. The mother and her husband are in a dilemma. If he is registered as the father of the child they infringe the Perjury Act, 1911, and become liable to a fine of £50 on summary conviction or seven years' penal servitude if convicted on indictment. Mr Willink therefore takes a grave view of the practice which some medical authorities adopt¹⁹ of informing the couple that the child will be legitimate if the husband is registered as the father, and of demanding such registration although it constitutes an offence. Apart from the weighty arguments in favour of children being in a position to know their parentage, he would have expected a less cavalier attitude towards the formidable Perjury Act, which is infringed by the practitioner giving such advice as well as by the parent. If, on the other hand, the father's name is not stated the child's illegitimacy is patent to everyone who sees the certificate. This is a heavy price to pay for a badly wanted child, not to mention the price paid by the child later.

If there is a will or settlement creating an interest in property in favour of the "heirs of the body" of the couple, or if a legitimate child of theirs would inherit a title, they may be faced with the alternative of disclosing the child's illegitimacy or of committing a fraud upon the person who would benefit in the absence of legitimate offspring. In the latter event the medical practitioner who had brought about the conception might find himself involved in the subsequent proceedings. Dr Robert Forbes,²⁰ reviewing the subject before the Medico-Legal Society in May, 1944, displayed the forms of consent drawn up by Messrs Hempsons, the solicitors to the Medical Defence Union, and approved by the Council of the Union. These forms contain an assurance that the birth of the child will not defeat the claims of any person to any titles, estates, interest, or fund. Mr J P Ashworth, judging from his address to the Public Morality Council's conference, would place little reliance on such a document. He states definitely that an assurance that no third party's interests will be overridden is not worth the paper it is written upon, for the husband and wife do not know the intentions of all the third parties, who may be unknown to them at the time, or the terms of the wills of various relatives. If the form is intended to convey an undertaking to see that the birth of the child will not defeat the claims of third parties it should express that meaning.

Mr Willink makes the further point that concealment of illegitimacy operates as a fraud on the revenue, a higher duty is payable on the succession of an illegitimate than of a legitimate child. Moreover, the concealment of the truth from the child itself may make fraud against other persons almost inevitable, not only when property interests are concerned but whenever gifts or services are offered, as by the husband's parents on the implicit basis that the child is their son's. Even the consent of the husband and wife cannot be taken as absolutely proved by such a form as that of the Medical Defence Union. Experience in the United States suggests that the large majority of cases of AID raise no controversy, but a certain number go wrong, and then either the husband or the wife may deny having given a real consent. If this happens the practitioner may find that the signed document expressing consent, which he obtained before carrying out the insemination, is not so efficient a protection as he imagined. As Mr Ashworth pointed out, if the degree of consent is brought into issue the doctor might find himself charged with rape or with a serious assault. The introduction of a nurse as a witness to the consent of the parties, and as a signatory to the document embodying it, might help the doctor in legal proceedings but might not be very effective in forestalling them. Another serious result, sociological as well as legal, of the practice of AID on a large scale might be that since a single donor may father a large number of children the chance of their mating together incestuously would become appreciable. These legal problems, and many others which have been suggested from time to time, show the need for legislation to govern a practice which, whatever the objections to it, seems bound to become socially important. The medical practitioner desires to help his patients in every possible way, and evidence is not lacking that in a number of cases he can give substantial help by artificial insemination. It is neither just nor desirable that he should do so at such risk as the recent discussions have disclosed. He has a right to statutory guidance and protection.

RESHAPING THE CURRICULUM

During the past two years the General Medical Council in private sessions has been preparing new recommendations for the medical curriculum, these have now been published and are summarized on another page. It is important in this connexion to bear in mind the relation of the Council to licensing bodies and medical schools. The Council makes recommendations only, it does not prescribe a curriculum to be imposed on students. Indeed, there is no such thing in this country as a medical curriculum in the sense of one uniform course of study which all students must undergo and one examination portal through which they must all pass. Qualifications are granted in the United Kingdom and Eire by eighteen universities, two medical corporations acting severally, and three examining boards on behalf of seven other corporations. Any recommendations of the Council are directed only to maintaining certain minimum standards below which any curriculum must not be allowed to fall. The Medical Acts of 1858 and 1886 so far as they indicate standards to be attained by students and examination, furnish only general and abstract directions, and the Council has held it to be its duty to translate

¹⁸ *Practitioner* 1947 158 349

¹⁹ Barton Walker and Wiesner *British Medical Journal* 1945 1 40

²⁰ *Med leg criminol Rev*, 1944 12, 138

these abstract references into concrete terms. That is all that the recommendations imply.

In framing the new recommendations, which replace those of ten years ago, the Council has taken note at every point of the proposals of the Goodenough Committee, and has incorporated some of these proposals, notably one for a three months' transitional course between the pre-clinical and clinical periods the better to enable the student to carry into the clinical work awaiting him the methods of scientific thought and criticism which he has so far acquired. The Goodenough Committee was anxious to shorten the curriculum to 4½ years, but the Council, after careful deliberation, holds that five academic years is the minimum period for the acquirement of the necessary knowledge and skill.

The recommendations concerning the main subjects are not greatly altered. The number of cases of labour to be attended by the student in midwifery is reduced from twenty to twelve, but it is laid down that the student must attend during the whole course of labour and not merely at the end of the second stage, and that each delivery must count only to one or at most two students—in other words, that not more than two persons, either two medical students or one student and one pupil midwife, should receive credit for attendance on any case of labour. The principal changes are in the new subjects, or subjects whose boundaries are being swiftly extended—paediatrics, psychiatry, social medicine. The Council recommends that paediatrics be recognized as a major subject, and it is specified for the first time under a separate main heading. Similar headings are given to psychiatry and to after-care and rehabilitation. The Council also draws the attention of the schools to the consideration that more thorough investigation of so-called chronic sickness would restore many patients to a happier and useful life and reduce the bedridden institutional population. "Social Medicine and Public Health" is given a separate heading. Social medicine is ill-defined, the Goodenough Committee held it to include disease prevention, promotion of health, the effect on health of social environment and heredity, and the communal aspects of health and sickness. It is a subject on which for a long time to come there will be wide differences in the teaching—its boundaries and emphasis—given in the different schools, and the Council holds, with the Goodenough Committee, that an ample measure of discretion should be left to the schools to determine for themselves how far the instruction of students in the subject should be carried. The recommendations as to professional examinations differ in some details from those hitherto obtaining but here again most of the modifications appear to be designed to leave a larger discretion with the examining bodies. The Council by some regarded as a rigid and pedantic body, believes in preserving elasticity in medical education, encouraging emulation between the teaching institutions, and maintaining the individuality of the universities and corporations. The new recommendations leave to them an increased degree of initiative as compared with the old.

POTASSIUM THIOCYANATE FOR HYPERTENSION

The treatment of essential hypertension remains unsatisfactory. As Dr Evan Bedford observed in a discussion at the Royal Society of Medicine (reported elsewhere), the most important cause of death in hypertension is heart failure. Spontaneous cure occurred in 5.4% of Bechgaard's series of 1,000 cases followed up for ten years.¹ Mild and moderate cases usually show a gradual but significant fall in basal blood-pressure when confined to bed for one to

six weeks, but soon regain their original pressures when they return to work. If such patients can obtain more rest and relaxation their symptoms may disappear and their blood pressures may remain at lower levels, especially with the aid of sedatives and a light diet. The results of carefully controlled treatment along these simple lines should form a basis for assessing the value of more active therapy, unfortunately such results are rarely published. Of the more active methods recent interest has centred round the Smithwick operation, but thiocyanate still has its advocates, and the case for its use is presented in this week's *Journal* by Watkinson and Evans.

It should be remembered that Pauli,² who is usually credited with the introduction of thiocyanate as a hypotensive agent, first used the drug in the hope that it would prove better than bromide in relieving the symptoms of neurosis and reported singular success in this respect. The effect of sedation on labile hypertension is well known, and if thiocyanate merely acts as a sedative it would be better replaced by a less toxic substance. It would be helpful if further reports dealt more with its mode of action than with the clinical results of its empirical use, with its toxicity, or with its effective blood level, all of which have become sufficiently well known and may be summarized as follows. Clinical benefit and a significant fall in blood pressure may be expected in about 60% of cases of persistent hypertension, according to Watkinson and Evans, especially in the younger labile group,³ and rarely in malignant or chronic nephritic hypertension.

The potassium salt is usually given by mouth in peppermint water in initial doses of 0.1–0.2 g (1½–3 gr) three or four times daily after meals until a serum level of 5–8 mg per 100 ml is reached. If this proves ineffective the higher dosage is continued until the serum level is 8–12 mg per 100 ml. The maintenance dose is commonly 0.1 g three times daily. Control of dosage by means of weekly blood-level estimations was introduced by Barker,⁴ who regarded anything above 20 mg per 100 ml as dangerous, and anything below 15 mg as safe. The normal thiocyanate blood level in untreated subjects with or without hypertension is 0.3 mg per 100 ml.⁵ Later work indicates that serious toxic symptoms may begin at concentrations less than 15 mg per 100 ml, and that it is best not to exceed the lowest effective blood level.⁶

Toxic symptoms include weakness, anorexia, indigestion, nausea and vomiting, limb pains, impotence, dermatitis, purpura, goitre, thrombophlebitis, mental lethargy, and confusion. In fatal cases dysarthria, verbal aphasia, clonic convulsions, delirium, hallucinations, and mania have usually preceded death, which has occurred within three to nineteen days. The question of chronic poisoning after five to ten years' continuous therapy was raised by Wald, Lindberg, and Barker,⁷ who observed progressive anaemia and emaciation in some cases.

It is usually stated that the drug is unsafe in patients over 60, in subjects with hypertensive encephalopathy or previous stroke, and in those with impaired renal function, but Watkinson and Evans observed no ill effect in 15 patients over 60 years of age, or in 16 cases of malignant or chronic nephritic hypertension. These authors recommend potassium thiocyanate for hypertensive subjects with headaches and giddiness, for those with diastolic blood pressures persistently over 130 mm Hg, and as an adjunct to the Smithwick operation. They found it of no value for the relief of angina pectoris or intermittent claudication, or for the treatment of hypertensive heart failure.

² *Munch med Wschr* 1903 50 153

³ *Med Clin N Amer* 1946 30 869

⁴ *J Amer med Ass* 1936 106 762

⁵ *Amer J med Sci* 1946 211 74

⁶ del Solar A *et al* *Arch intern Med* 1945 75 241

⁷ Wald M H *et al* *J Amer med Ass* 1939 112 1120

REVISION OF MEDICAL CURRICULUM

NEW RECOMMENDATIONS BY G.M.C. SOME "GOODENOUGH" PROPOSALS EMBODIED

The General Medical Council has adopted a new series of recommendations for the curriculum, replacing those of 1936-7. The new recommendations are published¹ with a lengthy introduction setting out their bearing upon the criticisms of the curriculum made in 1944 by the Inter-Departmental Committee on Medical Schools (the Goodenough Committee). The Council would in any event have undertaken a revision after the end of the war, but the task was accelerated by the Goodenough report, which urged a drastic overhaul. In September, 1944, the then Minister of Health asked the Council whether early action could be taken, and in November of that year the Council set up special committees for the purpose. These have been in close communication with the licensing bodies and medical schools and a delegation, including the President of the Council, has visited Canada and the United States, where much useful information has been obtained. Drafts of the new proposals were circulated to the interested bodies last year, and the recommendations were adopted at a recent special meeting of the Council, little more than two years after the work was begun.

The first task was to decide to what extent the severe criticisms by the Goodenough Committee were valid and ought to have effect in the new recommendations. The Council repeats several times in this report that it has no power under existing law to visit the medical schools, and therefore is not in a position to confirm or to confute from its own observations the conclusions of the Goodenough Committee on this or that point but certain of the Goodenough proposals have been accepted and reasons are given for the non acceptance of others.

Length of the Curriculum

The Goodenough Committee expressed a concern, which the Council shares, about the overloading of the curriculum, but the extent to which the matter can be remedied is subject to the limitation of the Council's powers under the Medical Acts. The most it can do to lighten the load is to ensure that nothing in its recommendations encourages the retention of what is unnecessary or premature for the instruction of the student. It believes that in these new recommendations only those subjects are included which it is essential for the safety of the public that the student shall learn.

Notwithstanding this, the Council cannot agree with the Goodenough Committee that the total normal length of the course of training leading to the final examination should not exceed 4½ years. The disadvantages of a long curriculum are fully recognized but in the Council's view the requisite knowledge and skill cannot be acquired in less than five academic years, made up of a period of pre-clinical studies of not less than five academic terms, an introductory or transitional clinical course lasting three months, and a period of clinical studies covering at least 33 months.

No substantial alteration is made in the recommendations for general and pre medical education adopted in 1937.

Every student should pass (1) a recognized primary examination in general education, and (2) an examination or examinations in physics, chemistry, and biology (both theoretical and practical in all three subjects).

The Goodenough Committee recommended that the teaching of these sciences should form part of the pre-clinical period, but the Council has to take a more narrow view and all it can properly attempt is not to include anything which would impede a broad general education and to ensure as far as possible a balance between general and scientific subjects.

Introduction to Clinical Study

During the five academic terms of the pre-clinical period

Instruction should be given in human anatomy and physiology, including (1) dissection of the whole body (2) anatomy of the living body, including radiological examination (3) principles of physiology (4) use of instruments employed in diagnosis (5) histology (6) (7) (8) elements of human embryology, of genetics,

and of psychology. Every effort should be made to secure close correlation between anatomy and physiology, and to stress the importance of these subjects in their clinical application.

Certain aspects of social medicine and public health in the Goodenough Committee's opinion, might be taught during the pre-clinical period but the Council prefers these subjects in broad general terms to be included in the clinical period. The Council adopts the Goodenough recommendation for a three months transitional period to enable the student to appreciate the relation between his pre-clinical and clinical studies.

During this period a course of instruction in methods of clinical examination should be given. Instruction in the elements of pathology and bacteriology and of pharmacology may also be given during this period or during the pre-clinical period or partly during the former and partly during the latter.

Instruction in Medicine and Surgery

Coming to the period of clinical studies, the recommendations set out that the course in medicine and the course in surgery should include systematic instruction in the principles and practice of each, and a medical and a surgical appointment in the hospital wards and in an out-patient department, each appointment for six months, including not less than one month's residence. In medicine instruction is to be given in the following subjects:

Acute infectious diseases, tuberculosis, diseases of the skin, venereal diseases, radiology in its application to medicine, dietetics, nursing, physiotherapy. In surgery: diseases of the ear, nose, and throat, and of the eye, orthopaedics, dental diseases, radiology in its application to surgery, and a course of theoretical and practical instruction in the administration of anaesthetics.

It was contemplated by the Goodenough Committee that the student in medicine should spend about four months in hospital appointments after the introductory clinical course and a further month in the first half of the final year as senior clerk. The Council, however, thinks it undesirable that any reduction should be made in the six months period as specified in its former recommendations but it is clear that the student may during this period also hold an appointment in a medical out-patient or equivalent department. The Council agrees with the Goodenough Committee that it would not be desirable, even if practicable, to include teaching expressly intended to equip the student to undertake major operative surgery, but it is regarded as a not remote possibility that the student, as soon as he is entitled to practise, may be called upon to undertake minor operative surgery and therefore instruction in that subject can not be safely omitted. "Practical instruction in minor operative surgery on the living" is therefore to be part of the instruction in surgery. The Council suggests that students should not spend more time in the operating theatre than is required to ensure familiarity with common surgical conditions, their recognition, and treatment.

Student's Attendance at Labour

The Council cannot accept the assumption of the Goodenough Committee that the unrestricted title to practise midwifery conferred on all registered medical practitioners should now be restricted if not in law, at least in fact, but the Goodenough Committee also held that such a course as is outlined in the Council's recommendations is necessary even though future general practitioners may refrain from dealing with abnormal conditions unless they have had adequate postgraduate training. The recommendations (summarized) are that the instruction should include:

Systematic instruction in principles and practice of midwifery and gynaecology including anatomy, physiology, and pathology of pregnancy and labour, and clinical instruction in midwifery, infant hygiene and gynaecology, with attendance on the practice of a maternity hospital or maternity wards and on in-patient and out-patient gynaecological practice over a period of six months.

This period is to be later than the medical and surgical appointments, and earlier, if possible, than a clinical clerkship in paediatrics.

Throughout the six months the student should receive instruction in antenatal and post-natal care, management of the puerperium and care of the newborn infant. At least two thirds of the hour of clinical instruction should be devoted to instruction in midwifery and infant hygiene. Not less than two months should be spent by the student in residence during which he should attend not less

¹ London: Constable, 2s. 6d.

The Goodenough Committee recommended a period of 30 months, including 8 weeks' holiday.

than 12 cases of labour under proper supervision, the first five at least in lying-in hospitals or wards. At his qualifying examination he must produce a certificate showing that he has attended such cases of labour, that he has written an adequate history of them, that in each case he has been in personal attendance on the patient during the whole course of labour and that he is not credited with any case which appears on the certificate of more than one other medical student or on that of more than one pupil midwife.

In its recommendations issued ten years ago the Council specified 20 as the number of cases of labour a student must attend. It is agreed that this number is not seldom unattainable, especially in metropolitan schools and it has been reduced to 12.

The Council is satisfied that if strict compliance is required with the provisions of the new recommendations as to the supervision of students during their attendance on cases, the restriction in the sharing of cases and the amount of attendance on each case—[‘the whole course of labour,’ and not merely the end of the second stage]—any disadvantage which may be entailed by the reduction of the minimum number of cases to be attended will be amply compensated.

New Major Subjects

Three subjects—namely paediatrics or child health, psychiatry and social medicine—received special prominence in the Goodenough report because of the developments that are necessary in the training provided in these subjects. That report expressed the view that generally in the medical schools the teaching about children has been inadequate and only faint interest has been taken in the subject. Here again the Council maintains its non-committal attitude, it is not in a position to confirm or to confute general statements but it agrees as to the importance of paediatrics in the curriculum and that it should be recognized as a major subject.

Instruction in paediatrics should include (1) systematic instruction in principles and practice (2) a three months clinical clerkship including one month's residence (3) instruction in the care of the newborn infant and in the diseases of the neonatal period, given during the course in midwifery (4) attendance at not less than six sessions in a child welfare centre, and (5) attendance at school medical and child guidance clinics.

For the first time the subject of psychiatry also is specified under a separate main heading. Here again the Council agrees with the Goodenough Committee alike as to the importance of the subject, the desirability that instruction be concentrated on potential rather than on established disorders of the mind and the need for co-operation between teachers of psychiatry and teachers of other clinical subjects.

Instruction should be carried out mainly in a psychiatric out-patient department but clinical demonstrations should also be given at a mental hospital and at a mental deficiency institution. A course of systematic lectures should be given and the attention of the student continuously directed to the relationship between physical and psychological aspects of disease.

Another subject specified under a separate main heading is Methods of After-care and Rehabilitation, and without making a separate heading attention is drawn to the importance of chronic sickness. Social medicine is also a new major subject but the Council agrees with the Goodenough Committee that the scope of instruction should be free from any attempt at rigid definition and susceptible of modification in the light of experience.

Instruction should be given in the principles of preventive medicine including epidemiology, the influence of heredity and environment including occupation on health and disease, the principles of health education and the functions of central and local authorities and voluntary organizations.

There will be room for differences between the various bodies on such questions as whether if instruction be given in sex hygiene it is best given by an experienced general practitioner.

The recommendations concerning instruction in pathology and bacteriology and pharmacology and therapeutics appear to remain as they were. In forensic medicine the recommendations are unaltered save for one omission. In its former recommendations the Council suggested that instruction in the legal and ethical obligations of practitioners should be given by some person having practical knowledge of the subject (that is to say normally an experienced general practitioner), but it is

anxious not to dictate to licensing bodies and schools, and it is confident that ample experience is now available to assist them to select suitable instructors.

Professional Examinations

The recommendations for professional examinations have also been rearranged but altered only in relatively minor detail. The examination in each subject should include written and oral tests and in the case of clinical subjects a clinical test is a clearer and more comprehensive statement of what was indicated in the earlier recommendations. The requirement that in all written examinations an average of at least half an hour should be allowed for a candidate to answer each question has been dropped, here as in several other matters discretion is left to the examining bodies. A recommendation that at least two examiners should participate in the adjudication of all written papers is substituted for the existing one that the marks should be a joint adjudication. Hitherto, in theory, the answers of all candidates have been read by two examiners, but in practice except in the case of candidates on the borderline they have often been read by only one. A comment of the Council's Inspector in Medicine that the requirement that two examiners shall participate is not uniformly interpreted in the oral and clinical examinations has led to a new recommendation—that at least two examiners should be present at the examination of each candidate and the marks should be a joint adjudication. It is added that examinations in all clinical subjects should include adequate practical tests: this follows a report by one of the inspectors that practical tests for example urine analysis are frequently not included. A former provision that candidates who obtain less than 30% of the marks in any subject should be remitted for a longer period than three months has been dropped, here again discretion has been left to the examining bodies. The recommendation concerning the scope of examination has been expanded.

“Candidates should be required to pass examinations in the following subjects (1) Medicine, surgery, and midwifery and gynaecology including the subdivisions of these subjects specified in the foregoing recommendations as to professional education (2) Paediatrics (including infant hygiene and child welfare) psychiatry and therapeutics. The examinations in these subjects may be separate examinations or may form part of the examinations in medicine, surgery, and midwifery and gynaecology (3) Social medicine and public health, forensic medicine, pathology and bacteriology, pharmacology.”

This is intended to give effect to the view of the Council that in the final or qualifying examination in medicine, surgery, and midwifery and gynaecology candidates should be examined both in these main subjects and in their subdivisions, and discretion is left with the licensing bodies and examining boards to examine in paediatrics, psychiatry, and therapeutics either in the final and qualifying examination or in previous separate examinations. The Council's Inspector in Medicine has been impressed most favourably by the introduction of a separate examination in psychological medicine and psychiatry in certain centres and the Inspector in Midwifery welcomes the recent introduction of separate examinations in paediatrics.

A further recommendation provides that no part of the final or qualifying examination, not only in medicine and surgery but in midwifery and gynaecology shall be taken before the end of 30 months of clinical study. The recommendation which this displaces contemplated that the clinical and practical examination in midwifery and gynaecology might be taken in advance of the rest of the final in midwifery and in advance of the final in medicine and surgery. It is thought that the new recommendation will enable licensing bodies to safeguard themselves against premature attempts on the part of students to pass parts of the final and will also safeguard the candidates against a degree of overloading of the final which in the words of the Inspector in Medicine ‘renders some examinations a test of physical endurance rather than proficiency’.

A recommendation which has hitherto obtained is that whatever be the method of entry for the final examination, all candidates should be required to complete the three portions of the final examination within a period of 19 months. After careful consideration the Council has come to the conclusion that this does not in fact secure to the public the safeguard

which it purports to offer and that it is better to leave the examiners with discretion to reject candidates who appear not to attain the required standard of proficiency. The recommendation therefore has not been retained. The recommendation that in the three primary subjects no candidate should be allowed to pass who fails to obtain 50% of the marks assigned to the clinical examination is repeated but certain other minima suggested in that recommendation have been dropped. They are considered matters proper to be determined by the examining bodies, and indeed the general effect of such alterations as have been made in the conduct of examinations is to leave these bodies with a larger discretion.

Reports of Societies -

MANAGEMENT OF PATIENTS WITH ESSENTIAL HYPERTENSION

In the Section of Medicine of the Royal Society of Medicine on April 22 Dr MAURICE DAVIDSON presiding a discussion took place on the management of patients with essential hypertension.

Dr GEOFFREY EVANS discussing aetiology said that in some of these cases there was undoubtedly a constitutional disease, to which at least there was an inherited predisposition, in others family influence and environment might determine the development of hypertension. Thus considerable understanding of a patient was necessary before giving him advice as to his manner of living but at least it should be remembered that living was an art and nowadays something of a problem. In the emotional background of these people there was often fear and apprehension, thus it was helpful to cultivate a sanguine attitude of mind towards them. Exhaustion aggravated hypertension even if it did not cause it, rest and relief from emotional tension were important. As for sedatives, he criticized the extravagance with which phenobarbitone and the barbiturates were prescribed. Exercise and a little alcohol might do good, those with peripheral congestion might benefit from venesection, and those overweight by weight reduction. Those were the ordinary conservative measures of approach for patients with essential hypertension.

Value of Potassium Thiocyanate

Potassium thiocyanate, Dr Geoffrey Evans continued, was of undoubted value in the relief of headache and giddiness, and in some patients it improved their feeling of well-being. In the minority there was a fall in blood pressure. He mentioned the case of a scientist aged 42, who had hypertensive retinopathy and was given potassium thiocyanate. He had now been relatively well for five years except for a recurrence three years ago when he gave up the treatment for a time and his headaches immediately returned. He was now, with this treatment, able to do rather more than two-thirds of his day's work. It was strange that after 11 years' experience of potassium thiocyanate there should still be such difference of opinion as to its value. He believed the reason to be as follows. Hypertension was caused by generalized hypertonia in the systemic circulation and many of its symptoms and complications were brought about by localized vascular spasm. If such spasm caused headaches and functional disturbance the patient might have these symptoms for years and apparently be no worse. But in some patients there followed a structural reaction to the functional change, this took the form of arteriosclerosis with irreversible changes leading to thrombosis and other sequelae. As physicians they had to determine by investigation whether the arteriosclerotic disease was active or quiescent. Their patients would do well not necessarily according to the way in which it was possible to control the symptoms—the headaches, giddiness and so on—but according to the nature of the arteriosclerosis. In some the arteriosclerosis might be quiescent and perhaps disappear, in others once started, it was steadily progressive. Patients might respond not only symptomatically but in their blood pressures to potassium thiocyanate, and show only moderate hypertension and yet develop retinal thrombosis because the disease was not controlled. So far as he knew there was no method, other than the conservative

measures he had detailed, of preventing the active phase of arteriosclerotic disease developing. It was on this that the prognosis turned and it could be evaluated only by watching a patient with arteriosclerotic disease treated on conservative lines over a period of ten or twenty years.

Surgical Measures for Relief of Hypertension

Mr A DICKSON WRIGHT said that hypertension was one of the most inexact and bewildering of diseases. One of its types was secondary to migraine. Sufferers from migraine were four times as likely as the ordinary person to get hypertension. Another group consisted of children with headaches and dizziness which would be described as functional if they occurred in the adult. The method of dealing with hypertension by means of surgery lay in one of two directions. One method was to attack the adrenals, but no very large measure of success had been achieved. The other method was to attack through the sympathetic system. Mr Dickson Wright showed by means of a film the procedure he favoured which was Adson's operation of sympathectomy and partial adrenalectomy. This operation should not be undertaken if the patient was over 50 or had a high blood pressure which did not subside after rest in bed and sedation. Of bad significance were high diastolic pressure and high pulse pressure. The pale hypertensive had a much worse prognosis than the bucolic subject. Women did better than men in every respect. But if a case was around the forties and there were headaches and other symptoms of hypertension one should not be too strict in looking for contra-indications. While his own predilection was for the Adson operation, there were others which were employed by other surgeons, and at the Mayo Clinic he was informed that the results were considered to be slightly better with the Smithwick operation. While in his hands Adson's operation had seemed to have a definite value, he never trusted himself to compile statistics of results. There was a certain percentage of failures, but no one was the worse for this operation and it had practically no complications.

Dr C WYNDHAM described some recent work carried out at the British Postgraduate Medical School on peripheral mechanisms which affect blood pressure. These mechanisms were skin tone, muscle tone, and splanchnic tone, which affected not only total peripheral resistance but also venous tone, and this in its turn affected the pressure with which the blood returned to the right heart and thus affected the cardiac output. He described in this relation the action of sympathectomy.

Mr H J B ATKINS asked whether there might not be some danger in the sudden reduction of blood pressure after sympathectomy. One of Mr Dickson Wright's two fatalities in his large series of cases was due to cerebral thrombosis and in a very small series of the speaker's a patient had a retinal thrombosis on the fourth day and went blind in one eye. If this complication of postoperative thrombosis was a serious danger he wondered whether it might not be wise to institute routine heparinization.

A "Forty-hour Week" for the Heart

Dr EVAN BEDFORD said that by far the most important cause of death in hypertension was heart failure. Over 60% of patients with persistent hypertension had heart failure of one form or another compared with less than 20% dying of cerebral vascular accidents. Therefore the management of the patient should be directed especially to the care of the heart. Probably half of all cases of organic heart disease seen in practice were due wholly or in part to essential hypertension. If the rate at which the heart enlarged were measured it would be found to be almost imperceptible from year to year. In cases in which he had made measurements over a period up to 14 years the average increase in transverse diameter was less than 2 mm annually but at a later stage a rapid enlargement might take place. Coronary disease must always be remembered as a frequent complication of hypertension. A fair number of cases had combined coronary and hypertensive heart disease. Treatment should be directed towards preventing or delaying the enlargement of the heart and when the heart was enlarged towards preventing or delaying heart failure. The crux of treatment was the control of the hypertension itself but as yet no sure way of control was known. No drug was capable of permanently lowering the blood pressure in a case of essential

hypertension. Occasional successes were obtained with thiocyanate but in the majority of cases thiocyanate was either too toxic or too disappointing to be any solution of their problems as a whole. The hypertensive patient must be taught to live slowly. A forty hour week should be prescribed for the heart. By judicious advice much could be done to delay the progress of cardiac enlargement and the onset of heart failure. As for surgery it was most difficult to assess the results from the statistics. It was unfortunate that results were given in terms of reduction of diastolic pressure which meant very little. In terms of the humoral theory of hypertension surgery was an irrational procedure but it might still be an effective one. It was not a cure for hypertension but at the best it could lower, sometimes appreciably, the blood pressure level and diminish the burden on the heart.

Mr. DICKSON WRIGHT said that the incidence of clotting in the eyes or brain after these operations of sympathectomy had been low and rather comparable with the incidence of femoral thrombosis after abdominal operations. He had not yet thought of giving heparin. It was the load on the heart which killed the patient. They were too prone to think of cerebral haemorrhage but the real mischief was the slow wearing out of the myocardium.

MEDICAL PHOTOGRAPHY

A meeting of the Medical Society of the L.C.C. Medical Service was held at County Hall on April 3 to discuss the uses of photography in medicine.

Dr. J. E. MCCARTNEY stressed the value of accurate and immediate recording of medical cases. Lesions were often fleeting, appearances changed rapidly, patients might recover or die and information not recorded at the time might be impossible to get later. In a written record the clinician put down only what he saw. A sketch might add a few more details, but a photograph would reveal not only all the clinician saw at the time but perhaps further information for other observers. Accurate photographic records were valuable both for present and for future investigations. Medical photography should be taken seriously. It required adequate modern equipment and a skilled staff. Medical photography was so specialized and involved such varying conditions of work that it was imperative to employ a first-class, well trained, well paid photographic technician.

Each patient presented a different problem, and special pieces of apparatus and a number of different lenses and cameras were necessary to cover the whole range of clinical photography. Special equipment was again required for biopsy or post mortem specimens. To show the correct dimensions of the specimen a centimetre scale or similar measure should be placed beside it. Miniature photography was useful for recording case papers, documents, reprints, books, etc. This had been specially developed in America with elaborate and costly apparatus.

Dr. McCartney went on to say that in America during his recent visit he had seen the latest developments of colour work and printing. Illustrations demonstrating the value of coloured backgrounds for throwing the subject into relief were shown. Cinephotography was invaluable for recording movement, such as gait and the progress of orthopaedic and similar cases. The use of colour in the cinephotography of operations was demonstrated and the value of sound film for teaching purposes was stressed. A 16 mm film showing parts of various medical films in black and white and in colour made by Mr. J. E. Andrews, the L.C.C. medical photographer, was then demonstrated.

Dr. GUNN emphasized the value of cinephotography for teaching purposes but thought it should only be considered in the case of operations or manipulations as an adjunct to direct clinical teaching. Mr. MATTHEWS remarked that though colour photography had considerably improved films of operations, it was still very difficult to see important details owing to the over-exposure due to reflection of light from the tissues.

Dr. McCartney raised the question of film-strips, suggested that for teaching purposes film-strips were more useful than still motion films as they could be arranged beforehand to show all the points and only those points which the lecturer desired to stress. He also questioned the value of taking films

of operations. It was impossible to learn to operate from the film and while it might make a pretty picture, there were many other aspects of medicine in which a film could be of much greater value.

Mr. PIERCEY, admitting that part of the film shown was of himself doing a thyroidectomy, said that the reason for having this film taken was to preserve a record of Mr. C. A. Joll's technique and particularly of his exposure and ligature of the inferior thyroid artery. He thought that films of operations showing special technique were of great interest to surgeons and others. Mr. ANDREWS said it was quite easy to get film-strips made by commercial firms. The cost was about 1s a picture and projectors were available from about £8 upwards. He thought that slides were more generally useful. The order of showing them could be altered and they stood up to heat much better than film-strips.

Correspondence

State Medical Service in New Zealand

SIR—New Zealand has enjoyed a partial State Medical Service for the past 10 years. In the current issue of *St. Mary's Hospital Gazette* Mr. A. E. Porritt—a New Zealander coming to England as a Rhodes Scholar to study medicine 23 years ago—gives a "dispassionate review on things medical in New Zealand" which he observed during a recent visit to that country. He remarks that although New Zealand is one of the most beautiful and naturally endowed countries in the world to-day "it is even more full of petty restrictions in its administration than this country." He sums up his conclusion on the medical services in these pregnant sentences: (a) A slightly improved all-round service for the public—during business hours. To get a doctor in New Zealand after 6 p.m. and over week-ends is not an enviable task. (b) A definite falling off in the standard of medical practice from both ethical and clinical viewpoints. This is a consensus of opinion from all branches of the profession. (c) A growing and already appreciable dearth of specialists—and this in a country where the proportion of meriting higher degrees was previously exceptionally high.

We have been warned!—I am, etc.

London, S.W.1

E. GRAHAM-LITTLE

Reiter's Syndrome

SIR—I am particularly interested in the claim made by Dr. R. R. Willcox and his collaborators (April 12, p. 483) that gold salts (myocrisin) were curative in two of their cases of Reiter's disease. As reported in an address to the Medical Society for the Study of Venereal Diseases in May, 1944, I was at that time carrying out treatment with myocrisin on a typical case of Reiter's disease with non-gonococcal urethritis, bilateral conjunctivitis, polyarthritides, and keratoderma blennorrhagica (Case 20 in the series) in spite of the fact that no pleuropneumonia-like organisms had been cultivated from the urethral, conjunctival or skin lesions. I had read the paper of Findlay *et al.* in which it was stated that organic gold salts protected rats and mice from developing arthritis after injection in the pad with pleuropneumonia-like organisms and the drug was prescribed on the supposition that the inclusions seen in my cases may have been the granular phase in the development of these organisms. No beneficial effects followed gold therapy in this and two further cases under my care. King in the treatment of Reiter's disease with the Simpson-Kettering hypertherm gave several cases injections of myocrisin during fever and the results obtained were no better than with fever alone. I was interested to note that in Case 1 of the authors' there was a fall in the blood sedimentation rate during treatment as in none of my cases has this ever been observed. In fact I find the test of little value in the assessment of progress. In one apyrexial case now under my care that has already received five injections of myocrisin the B.S.R. which was originally 30, has risen steadily each week and is now 41.

It is possible that the beneficial effects of gold therapy in the cases recorded by Willcox *et al.* were non-specific and due to the rise in temperature which sometimes occurs after the

ions This was definitely so in my cases for which hourly temperatures are recorded for 12 hours after each injection, the apyrexial case to which reference has already been made temperature registered 101.6° F (38.7° C) three hours after first injection 102° F (38.9° C) ten hours after the second 99.6° F (37.5° C) seven hours after the third 99.2° F (37.3° C) nine hours after the fourth and 99° F (37.2° C) eight hours after the fifth. A further patient who has just started a course developed a temperature of 100.2° F (37.9° C) three hours after the first injection. All the temperatures returned to normal in an hour or just over an hour and could have been overlooked with a 4 hourly chart. I have observed on several occasions that mild fever induced by intramuscular injections of aolan effects rapid cures in these cases.

The aetiology of the disease is still uncertain. Pleuropneumonia-like organisms have been cultivated in the urethral discharge of 14 out of 84 men suffering from uncomplicated non gonococcal urethritis in the cervical secretion of 10 out of 42 women with cervicitis, and in only 3 of 30 of my cases of Reiter's disease. Urethral cultures were also positive in my first case treated with gold eighteen months after apparent cure, and it is worth noting that there had been no subsequent sexual exposure. An examination carried out before the first morning micturition did however show the existence of a mild residual abacterial urethritis which may have persisted since the original illness. Cultures were negative in the synovial fluid of two and in the conjunctival secretions of three of my cases. Examination of female contacts of 5 cases in which pleuropneumonia-like organisms were isolated in the urethral discharge yielded negative cultures, but elementary bodies were seen in two. The majority of my cultural examinations have been carried out by Henderson Begg and Edward.

It is possible that the disease as I originally stated, is due to a virus. Primary herpetic stomatitis of infants and young children is caused by the virus of herpes simplex and a virus has recently been shown by Buddingh to be responsible for a similar disease associated with diarrhoea in children. Strains of the virus are maintained by serial passage from cornea to cornea of rabbits, but unlike primary herpetic stomatitis no inclusions have been found. In the discussion following Buddingh's paper on this subject Sabin stated that these inclusions would probably be demonstrated in serial sections. On this occasion Dodd also reported that she had obtained positive corneal inoculations in rabbits with vaginal swabs taken from the mothers of the children suffering from the disease. Buddingh had observed similar results with the urethral discharge and oral and conjunctival secretions of a typical case of Reiter's disease.

There would seem therefore to be definite room for doubt whether pleuropneumonia-like organisms are the aetiological factor in Reiter's disease. I consider too that the efficacy of gold therapy in the treatment of this disease requires further investigation. In view of its dangers I have not used this form of therapy in the treatment of uncomplicated abacterial urethritis (usually a very mild disease) in which these organisms have been isolated—I am, etc.,

London W 1

A. H. HARNES

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"Sulpha-Combination"—A New Chemotherapeutic Principle

SIR—In the article on 'Sulpha-Combination'—A New Chemotherapeutic Principle by Drs A. Rune Frisk, Gösta Hagerman, Sture Helander, and Bertil Sjogren (Jan 4 p 7) reference is made to my work on the same subject in a form which creates the erroneous impression that I have suggested only the use of a mixture of sulphathiazole and sulphadiazine. I therefore take the liberty of bringing the following facts to your attention.

My publication to which reference is made by the Swedish investigators appeared in print in January 1945—that is one year and three months before these authors published any of their experimental or clinical results with a combination of three sulphonamides and two years before their article appeared in your *Journal*. The title of my publication—"Inhibition of Drug Pre-

cipitation in the Urinary Tract by the Use of Sulfonamide Mixtures. I. Sulfathiazole-Sulfadiazine Mixture (*Proc Soc exp Biol N.Y.*, 1945 58 11)—clearly indicates that the general principle of a sulpha combination was investigated and that the sulphathiazole-sulphadiazine mixture represented only the initial phase of this work. This point is further emphasized in Table I of my paper containing solubility figures of seven different sulphonamide combinations, one of these consisting of as much as four separate constituents. In addition several statements in the text of this publication leave no doubt about the recognition of the general principle and the direction of further research.

I quote: "Since even closely related sulphonamides, when present simultaneously in the same solution, do not influence each other appreciably with regard to their particular solubilities the danger of intrarenal drug precipitation from the sulphonamides comprising the mixture should be only as great as if each compound had been administered alone, and in the partial dosage contained in the mixture."

Sulfathiazole and sulfadiazine were selected for the initial series of experiments, because these compounds are at present most frequently employed, have almost the same therapeutic indications, and cause renal complications in about the same percentage of cases. The findings of the solubility study summarized in Table I indicate that many other sulphonamide combinations should be investigated as to their ratio of renal toxicity and bacteriostatic activity. Since then I completed experiments on the combinations of sulphadiazine-sulphamerazine, and sulphadiazine-sulphathiazole-sulphamerazine early in 1946 and submitted my work to the American Medical Association in February, 1946 for presentation at its 95th Annual Session at San Francisco on July 3, 1946. The title of this presentation was 'The Prevention of Renal Complications by the Use of Sulfonamide Mixtures' (Announcements *J Amer med Ass* 1946, 131 306 and *ibid* 131 1141).

Further references to the general principle of sulphonamide mixtures can be found in three clinical publications. In the *Journal of Urology* 1946, 55 1 stated on p 565, "With regard to its potentialities and to possible future developments, however, treatment with sulphonamide mixtures seems to hold the promise of an efficiency which might dispense with the necessity of any other preventive measure." In the *Journal of Pediatrics* 1946 29 we explained on p 284 "Experimental work and preliminary clinical trials suggest that for the treatment of meningitis, sulfadiazine should be combined with a sulphonamide such as sulfamerazine, which diffuses better than sulfathiazole through the hematocephalic barrier. Our results suggest that the simultaneous employment of two or more sulphonamides should replace the use of single compounds, since mixtures combine a high therapeutic efficacy with a significantly lowered toxicity."

Flippin *et al* published 'An Evaluation of Sulfonamide Mixtures and Various Adjuvants for Control of Sulfonamide Crystalluria' in the *Annals of Internal Medicine* 1946 25 433. I quote from the discussion of this paper: "An alternative method, proposed by Lehr¹² avoids exceeding the critical concentrations at which crystallization will occur by using two or more sulphonamides simultaneously. Our preliminary observations indicate that this approach is as effective as the administration of sodium bicarbonate at the rate of 12 grams per day."

In summary then: The use of sulphonamide mixtures for the prevention of renal complications was conceived independently in our laboratory as the result of extensive animal experimental investigations on 'Methods which Inhibit or Prevent Intrarenal Precipitation of Compounds of the Sulphonamide Series' carried out since 1941. I published complete experimental proof for the validity of the sulphonamide mixture principle one year and three months before the Swedish investigators announced their new chemotherapeutic principle in *Nordisk Medicin* 1946 29 639 based on their first animal experimental study. Previous to this publication the authors, according to their own statement had done only preliminary clinical work with a mixture containing equal parts of sulphathiazole and sulphadiazine. Even if my publication to which reference is made by the Swedish authors was the only one available to them when their article was written they must have been aware of the fact that I did not merely suggest the use of a sulphathiazole-sulphadiazine mixture as the reference in your *Journal* implies but that I had offered valid animal experimental proof for this new concept of sulphonamide therapy. On the basis of the evidence presented I am forced to conclude, with regret, that the Swedish authors, in quoting my publication did not cite the facts properly and completely. Hence they have failed to give due credit to my work in this field—I am etc.

New York Medical College
New York

DAVID LEHR
Assistant Professor
Dept of Medicine and Pharmacology

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P N 39

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*References—Shortage of space precludes list of references but full documentation may be obtained on application to Clinical Research Dept 14 A



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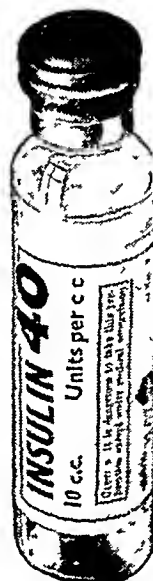
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International System of Weights and Measures

SIR—In his interesting article on "The International System of Weights and Measures" (April 5, p 460) Dr J M Hamill makes out a clear theoretical case for the substitution of the millilitre (ml) for the cubic centimetre (cc). He expresses regret at the obduracy of our profession in adhering to the incorrect use of the cubic centimetre as a measure of volume. Unfortunately, perhaps, the mischief does not end there. The cubic millimetre (cumm) is universally used in the data of haematologists. As a metrical purist, would Dr Hamill advocate the substitution of the microlitre, and would he suggest a suitable abbreviation for this quantity?—I am, etc,

Manchester

DOUGLAS A K BLACK

SIR—Dr J M Hamill's article (April 5, p 460) is most interesting and valuable. I do not wish to discuss his suggestion that in spite of common usage the metric system should not be so called, but the rather more important question of the cubic centimetre versus the millilitre. Scientists use the cgs (or mks) system of measures for mechanical quantities, and, as its name aptly suggests, the fundamental units are the cm, g, and sec (or m, kg, and sec). Dr Hamill is absolutely correct in distinguishing between the cm³ and ml. But R T Birge (1941, p 102) says "The litre and millilitre are not units in the present cgs system, whose unit of volume is the cm³". All scientists quite reasonably, think of the size of a volume in terms of the sizes of its sides—that is, as a derived quantity in the cgs (or mks) system. If they wish to think thus they have the authority of so eminent a person as Prof Birge that they should use the cm³ as their unit of volume. It is a purely legal form (like the gallon) that the ml ever got started, scientists writing scientific articles should refer to the cm³ (which may perhaps be given the bastard abbreviation of cc) unless they are actually and significantly using the millilitre. If they be writing legal reports they should use throughout whatever odd units—yard, drachm, or litre—that may be legally required. Every publication must make its own choice as to whether it wishes to be scientific or legal.—I am, etc,

Dorking Surrey

HARRY V STOPES ROE

REFERENCE

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Investigation and Treatment of Delinquency

SIR—Dr Edward Glover opens his article (March 29, p 421) as follows "Looking back over the development of clinical psychology during the past quarter of a century it is now perfectly clear that our understanding of ego disorders has lagged woefully behind that of the neuroses and other varieties of 'encapsulated' symptom formation, using this term to convey that a given symptom does not infiltrate the normal layers of the patient's ego."

There must be many besides me who find this Freudian terminology difficult to comprehend, and I venture to doubt if it be essential for a proper understanding of the subject. The conscious functions of the brain are surely clearly divided into those of the intellect + reason and the emotions + propensities. In the genus *Homo* not only in its species *sapiens* but doubtless in the extinct *Cromagnon*, *Neanderthal*, and *Eoanthropus*, the emotions take precedence over the intellect in staggering percentage, otherwise the whole gamut of faiths, from animism upward would hardly hold the influence they do over the 2 000 million of the world's inhabitants.

Crimes are roughly divided into those, like murder, which if not suppressed would quickly bring about the end of civilization and are universally condemned the world over, and, on the other hand, acts which the political majority decry or consider to have harmful tendencies (varying of course from country to country). All these latter are dealt with by laws enforcing preventive methods or by the introduction of reformatory methods, placing on probation, or actual Borstal treatment. The line between alienation and crime is to a great extent artificial the former

supposing the subject to be irresponsible either by developed mental defect in the nervous system, or due to that in addition to a diseased state. In the latter the subject's nervous system is judged sufficiently normal for the subject to be regarded as responsible for the forbidden act. The above appears to define the essentials to be kept in mind in dealing with delinquency and carrying out the treatment thereof.

We know that in ancient times among the Egyptians and other priesthoods cryptic methods and writings were used in order to dominate their peoples and enforce them to conform to the laws enacted, but surely simple plain language is sufficient in the present century, without making use of these Freudian embellishments—I am, etc,

Hove Sussex

WM BRYCE ORME

SIR—Every psychologist will support Dr Edward Glover's appeal (March 29, p 421) for wider facilities for the scientific treatment of delinquency and for further research on "every variety of delinquent or pre-delinquent conduct." Yet many will regret that he endorses the view, so frequently repudiated by other psychiatrists, that delinquency is primarily a medical problem. His list of "the different types of delinquency—e.g., neurotic, psychotic, psychopathic, mentally defective organic, etc"—covers only about 10% of the numbers, the remainder, chiefly non-medical cases, he wholly disregards.

He regrets that "the authority of medical psychology" in this field has not as yet been fully recognized. But he himself supplies the explanation "Looking back over the development of clinical psychology during the past quarter of a century," he notes that the problems of delinquency have been "the last to stimulate the curiosity of the psychopathologist." Yet the educational psychologist started to investigate the subject more than 40 years ago, 10 years later the Education Committee of the LCC appointed a psychologist to deal with this and allied problems. In an early report it was stated that over 60% of the cases were successfully "cured," while another 20% showed "definite improvement." Dr Glover reports "striking results" in certain types of case. But he offers no figures.

When teachers, magistrates, education officials, and the like are asked why they doubt the authority of the medical psychologist, their answer is that his treatment so often fails, because it overlooks the type of cause with which they are all too familiar. The medical psychologist is apt to assume that the main cause of the delinquency lies within the delinquent himself, accordingly he either looks for and treats suspected physical and organic disorders, or thinks solely of "inner mental mechanisms," which he interprets in metaphors drawn from physical disease—as when Dr Glover describes delinquency as a variety of "encapsulated" symptom-formation, indicating that the symptoms do not infiltrate the normal layers of the ego. "Actually," he says, "we know more about the mechanisms of the psychoses than we do of the causes of crime." That may be correct, if "we" refers to psychopathologists, but a glance at the psychological literature will show that the causes are now well known. What calls for research is the efficacy of different treatments.

All will agree that such research requires "specially trained investigators." But the essential part of their training must consist in a study not merely of mental and nervous disorder but of individual and social psychology. At present, with one notable exception, this is not included in psychiatric courses. Yet the need is obvious. It is a plain corollary not only to the Home Office inquiries but to the investigations carried out by Dr East while Medical Inspector of H.M. Prisons. As he points out, crime can no longer be regarded as a disease. It is a problem of social adjustment rather than of mental abnormality, and the most successful mode of dealing with it lies, not in psychotherapeutic treatment, but in an intelligent adjustment of the delinquent's own environment and in a re-education of the delinquent himself in improved social conditions. A small minority of genuinely pathological cases will of course always remain, and for these the methods described by Dr Glover are both urgent and essential.—I am, etc,

University College London

CHARLOTTE BANKS

Vaginal Operations

SIR—Mr Wilfred Shaw must be congratulated upon his brilliant article on this subject in your issue of April 12 (p 477). The description of the anatomy of the vagina given in standard textbooks has long been considered inadequate by gynaecologists and Mr Shaw has filled this gap. It is pleasing to note that Mr Shaw has considered the vagina not only a passage for childbirth but from a broad point of view which embraces the important functions of micturition and coitus.

Gynaecologists have for many years concentrated upon plastic operations which, although eminently satisfactory in the cure of prolapse, have often resulted in producing a vagina which proved useless in coitus and did nothing to relieve the distressing symptoms of stress incontinence, it is to be hoped that Mr Shaw's article will do something towards altering this state of affairs.

Finally, I am very pleased to see that Mr Shaw advocates vaginal hysterectomy in certain cases of prolapse. This is an important step forward, since by this operation the prolapse is cured and the danger of subsequent carcinomatous changes occurring in the cervix removed. This is particularly important when one remembers that carcinoma of the vaginal portion of the cervix only occurs in women who have been pregnant and prolapse, although not unknown in nulliparous women, usually occurs in those who have had difficult or repeated pregnancies—I am, etc

Southport

JOHN H. HANNAN

Retrodisplaced Gravid Uterus

SIR—Mr H. H. Fouracre Barns has replied (April 12 p 504) to my letter regarding the above. I am unrepentant in the matter of my deduction in Mr Barns's patient No 39. I am sure that Mr Barns will share with me the experience of finding a uterus retroverted after a ventrosuspension operation has been carried out even in a "reputable London teaching hospital." This I believe to be due not to any failure on the part of any individual operator but to a defect of the method of ventrosuspension most commonly used—namely Gilliam's operation and its modifications—in that it fails adequately to "take up the slack" of that portion of the round ligament which lies in the canal of Nuck, and which may in some cases be extremely elastic. The round ligament is thus left free to slip back out of the canal into the abdomen and permit the uterus to resume a position of retrodisplacement. This is one of the reasons why a modification of the operation of ventrofixation has continued to be used in the Liverpool School by certain distinguished operators, although various other methods are commonly in use. The multiplicity of methods of ventrosuspension which have been advocated from time to time (Crossen describes 19 different procedures) proves that none is uniformly successful, and I hope therefore that my deduction in my previous letter will not arouse the indignation of those responsible for the ventro suspension operation in the patient in question. In any event my justification is in Mr Barns's own statement that in 1943, three years after operation she was seen with a retrodisplaced uterus.

All the above, however, is not germane to the point at issue, and while I should be the last to deny that conservative treatment may be successful in maintaining a normal position of the pregnant uterus and therefore in promoting the successful completion of a pregnancy, I submit that in some cases, such as my own case quoted in my previous letter, ventrosuspension is necessary to ensure that the pregnancy shall continue to term.

With regard to the fact of circulatory factors (I apologize to Mr Barns for attributing to him the opinions of Mr Barnett) I would suggest that these may operate so as to cause abnormal development of the ovum apart from any question of its nidation and that this ovular abnormality may be the cause of an abortion after a relatively long interval such as that in Mr Barns's case No 42. There again the effect upon any given ovum of a minor circulatory abnormality is liable to variation and some might escape abnormality entirely thus explaining the cases of incarceration which are not followed by abortion. In habitual abortion it is often very difficult to find the cause, but the condition is a source of considerable disappointment and

sorrow to the patient and to her husband and a cause of much unhappiness. In many cases I am forced to admit with Mr Barns that I do not know the cause of the abortion, but in those in which retrodisplacement is present I feel that it is wrong to deprive the patient of the improved chance of a successful pregnancy which I believe ventrosuspension can give her—I am, etc

Ilkness

J. A. CHALMERS

Post-partum Intra-abdominal Separation of Uterus

SIR—The following extract from our textbook, *A Glasgow Manual of Obstetrics* (by S. J. Cameron and John and Ellen D. Hewitt), may have a bearing on Dr J. J. S. Wassenaar's case of post-partum intra-abdominal separation of the uterus (April 5 p 452). We would warn the practitioner to carry out removal of the placenta with the greatest caution as, owing to the softened condition of the uterine tissues, the wall of the organ may readily give way before the advancing fingers, and a practitioner has actually removed the entire uterus from the tissues above the cervix in the belief that he was detaching the placenta. One of our most trustworthy house surgeons also had this unenviable experience, and he assured us that in accomplishing this unpremeditated hysterectomy he experienced less resistance from the tissues than he had in other cases of retained placenta—I am, etc,

Helshill Lanarkshire

SAMUEL J. CAMERON

Nicotinamide and Diabetes Mellitus

SIR—I was most interested in Dr Henry J. Wade's memorandum (March 29, p 414). The investigations he describes were similar to those which I conducted in 1943. Since then I have felt that in only a very small percentage of diabetics could treatment with nicotinic acid be of any value. To demonstrate the effect of nicotinic acid and/or nicotinic acid amide it is necessary to test its effect on normal subjects, with and without insulin. Both preliminary tests were done before my article was published (Neuwahl, 1943), but its full implications were not realized at that time. A typical curve of 2½ units of crystalline insulin plus 150 mg of nicotinic acid given at the same time, is given below. The subjects were on a standard diet, so that fasting blood sugars were about 85 mg per 100 ml.

Fasting blood sugar	85 mg per 100 ml
2½ units of insulin plus 150 mg of nicotinic acid	intramuscularly
Blood sugar 2 minutes later	95 mg per 100 ml
5	109
10	95
15	77
20	109
25	119
30	105
35	121
40	141
60	141
90	77

This typical reaction has in fact spoilt every attempt to classify diabetics as suitable or unsuitable for treatment with nicotinic acid. After testing more than 50 patients only a small group of five remained which were insensitive to insulin and at the same time had probably an abnormally weak glycotrophic pituitary factor. In these the action of endogenous insulin could be heightened when the action of nicotinic acid was carefully watched, and the dosage reduced as soon as results appeared satisfactory, to prevent the glycotrophic factor being stimulated. The latter appears to increase in direct proportion to the action of insulin. The anti insulin action is apparently exerted through the adrenal cortex, and the first stage of action seems to affect the adrenal medulla, which liberates adrenaline. Thus the action of the "reinforced insulin" becomes obscured by an accelerated breakdown of both liver and muscle glycogen. The surplus discharge of adrenaline may also explain the undoubtedly favourable effect of nicotinic acid in cases of asthma, which was commented upon by G. Melton (1943)—I am, etc,

Rochdale

F. J. NEUWAHL

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Neuwahl F J (1943) *Lancet* 2, 348

Myiasis of Palpebral Conjunctiva

SIR—The following record of a case of myiasis of the palpebral conjunctiva is of interest

CASE REPORT

A negro oilfield metal turner aged 32 presented himself at the dispensary, saying that a piece of cast iron had got in his right eye in the course of his work that day. He complained of the usual irritation, but there was no infection of the cornea. After a search a minute foreign body was removed from the upper palpebral conjunctiva. The eye was washed out with boric lotion and he returned to work. Two days later he returned saying he still felt something in his eye.

On examination the conjunctiva was slightly infected and there was a small area of inflammation in the centre of the upper palpebral conjunctiva. As this appeared to be a focus of sepsis following removal of the foreign body, hot spoonings and irrigations with boric lotion were prescribed. A week later the man was seen again. There was a large swelling below the upper lid, which raised the lid off the eye, and he complained of frequent attacks of severe pain and inability to sleep for several nights.

The appearance was that of a large styte pointing on the underside of the eye, so 4% cocaine was instilled preparatory to incising it. When the lid was everted as much as possible there appeared to be two openings, and owing to the pressure a white object could just be seen in one of these openings. Increased pressure disclosed more of this object, and it was seen to be segmented with a row of bristles between each segment. Slowly a large larva of *Cordylobia anthropophaga* (tumbu fly) was extruded from the swelling, greatly to the amazement of all present. The larva was 3/4 in (1.9 cm) long and as thick as a cigarette. The patient was immediately relieved of his symptoms, and within two days the eye was to all appearances normal.

Infestation of various fleshy parts of the body is commonly seen, but this is the only case I have heard of in which it occurred in the orbital cavity—I am, etc.,

Santa Flora, Trinidad

T E M WARDILL

The Label of Psychoneurosis

SIR—During the last year I have been able to survey a large number of persons invalided from the Services with psychoneurosis. A great number of them complain bitterly that the label prevents them obtaining suitable employment. It is becoming evident that many employers, without proper consideration, look upon them as defective in character and mentality and as unfit for steady employment.

To my mind from an employment point of view there are two classes of psychoneurotics. (1) Those with a history of neurosis from childhood with a bad occupational record and who rapidly became useless in the Service because of black-outs, headache, apathy, and general poor morale. The employers quite rightly are rather chary of taking them on, for they cannot be relied upon to continue at steady work. Incidentally, I estimate not less than 15% of the total population belong to this class of ineffective unemployables, and it is they who ruin the harmonious working of many social services. (2) Those with a good employment record, who have done a fair amount of service but have eventually broken down under stress the severity of which they are unlikely to encounter in civil life. It is these men who suffer so unjustly from the label of psychoneurosis. Sometimes they have done over five years service or been through the Battle of Alamein or Salerno, or Caen or been on submarine service or completed 20 operational tours over Germany. Given a chance and a considerate employer they regain their confidence and return to normal—though they can never lose the stigma of psychoneurosis.

Solely on behalf of this latter group I would like to suggest (a) That invaliding medical boards when considering a man who has served his country well avoid the term psychoneurosis, and prefer terms such as battle exhaustion, tropical debility, flying stress etc. (b) That employers look more fully into a man's war service and the stress he has sustained before classifying him as a constitutional psychoneurotic.

Until laymen appreciate the difference between the above groups some very good men will continue to resent the label of psychoneurosis, and it is to bring this matter to light that I am writing this letter—I am, etc.,

London W 1

KENNETH HAZELL

Quinine and a Resistance Factor

SIR—I read with interest Dr E O Blake's letter (April 12, p 506) on the treatment of early cases of influenza and the common cold by the intravenous administration of quinine bi-hydrochloride. In fact the use of small doses of quinine by mouth by laymen in many countries to abort such attacks has stood the test of time. At first sight such a procedure seems quite irrational in view of the accepted idea that quinine is a drug with specific antimalarial action. But is it so?

It is generally held that quinine *in vitro* is ineffective unless large concentrations are used which are not tolerated by macrophages. This immediately suggests an indirect mode of action. Recently Black (*Trans Roy Soc Trop Med Hyg* 1946, 40 163) reported that serum from a patient treated with quinine arrested the development of trophozoites of *Plasmodium falciparum* when cultured *in vitro*. He had excluded the specific immune properties of sera used in the culture as an influence detrimental to the parasite since the parasites were taken from patients with a primary attack while the drugs were given to donors who had not had falciparum malaria. He had also excluded phagocytosis, since leucocytes were removed before cultivation was begun. This suggests that this indirect mode of action is humoral and non-specific. Of great interest is his finding that most of the parasites undergo schizogony in a control culture, using serum from healthy donors containing no drug, and that the second generation does not progress so readily. He comments that this method of cultivation does not provide ideal conditions for the development of the parasites. But why should serum from normal volunteers offer a handicap for the growth of these parasites?

At the last laboratory meeting of the Royal Society of Tropical Medicine I demonstrated the mechanism of action of two antimalarial drugs studied—quinine and atabrin—with reference to a new resistance factor found in the albumin residue and revealed by the serial cephalin flocculation curves. This resistance factor proved to be of great significance in determining the course and outcome of this struggle between host and parasite. A decrease in this resistance factor shifts the balance in favour of the parasite and when marked is associated with clinical manifestations of disease, while an increase in this resistance factor shifts the balance in favour of the host tending to re-establish a condition of health. This latter effect is obtained by the administration of quinine to healthy volunteers as well as to malarial patients, thus explaining its non-specific and indirect mode of action as an antimalarial and possibly also as an antiviral and antibacterial agent. Since this resistance factor is also present in healthy persons to a less extent than in healthy persons treated with quinine it is apparent why normal serum should offer a handicap to the growth of *P. falciparum* when cultured *in vitro*. A more detailed account is in the press—I am, etc.

London W 2

J G MAKARI

d-Tubocurarine in Caesarean Section

SIR—I was most interested to read Dr T Cecil Gray's excellent article on this subject (April 5 p 444) particularly as the choice of anaesthetic for caesarean section is such a controversial matter. The questions that seem to arise are (1) If the combination 'kermithal-cyclopropane-oxygen' is to be used, is it necessary to use *d*-tubocurarine at all? (2) If *d*-tubocurarine is used, do the advantages obtained definitely override the possible dangers attendant upon its use?

It seems that using cyclopropane-oxygen alone on the closed circuit, adequate anaesthesia can be obtained for caesarean section without using harmful doses of the anaesthetic agent. Little relaxation is required and the babies seldom cause anxiety. Anaesthesia is usually light and after delivery, not below deep plane one or upper plane two of the third stage. The patients in the great majority of cases recover their reflexes in the theatre. Post-operatively their condition is satisfactory and vomiting not a regular feature. True intubation is no doubt facilitated if it should become necessary and uterine tone good if *d*-tubocurarine is used with the above combination, but as Dr Gray reports this latter fact caused a temporary embarrassment to the surgeon on two occasions.

If *d* tubocurarine is to be used as an aid to anaesthesia for caesarean section its powers would perhaps be even more fully appreciated if combined with kemithal-gas and oxygen provided suboxygenation did not occur, for here the unpremedicated patient strains and resists anaesthesia is more liable to vomit during induction and usually requires the addition of trilene or ether.

In the future as reports come in perhaps all parties will be satisfied and the advantages of Dr Gray's method obtained with myanesin in combination with general anaesthesia, but with a wider margin of safety and no respiratory depression.

There seems a tendency at present for anaesthetists to use *d* tubocurarine indiscriminately as the solution to all their problems in the hands of one as experienced as Dr Gray it can only be an advantage but no one will deny that in the hands of the occasional anaesthetist its potential dangers may become real—I am, etc.,

Cambridge.

ROBERT I W BALLANTINE

Child Guidance

SIR—Dr J. A. McCluskie's letter (April 12, p. 508) illustrates the unnecessary confusion that there is on this subject. I suspect that, like many current misunderstandings it is largely due to people failing to read or comprehend the documents that they criticize. Since he refers—although not by its correct title—to a recent memorandum produced by a subcommittee of which I happen to be the convener I should be glad of an opportunity to correct the misleading impression that may result from his interpretation of the subcommittee's views although I do so as an individual. The subcommittee is part of the Medical Advisory Committee of the Berks Bucks, and Oxon Regional Hospitals Council, not that of the Nuffield Trust although it was set up by virtue of the activities of the latter body, and the memorandum refers to psychological medical services in the Oxford region only. It is appended to the council's report on the planning of hospital services in that region (January 1947). Dr McCluskie implies—para (c)—that the subcommittee advocate double administration clinics. On the contrary, this is the very thing that they deprecate. What they advocate is an arrangement very similar to that which Dr McCluskie describes and so obscurely calls 'the dual scheme under one administration'. Why introduce an element of contentiousness where none exists?

Most of the authorities that he quotes—and one notable one that he omits, namely, the joint memorandum of the R.C.P., the B.M.A., and the R.M.P.A. (Supplement 1945, I 111)—are agreed that the psychiatrist, with his essential technical assistants in psychometry and sociology, is the man to deal with mental illness and defect in children, and that it were better that this team should be integral with the health services, although they will probably do some of their work in *ad hoc* school clinics and some in the psychiatric department of a general hospital or in a special hospital. Thus they can deal with any patient in the place that is best suited to his needs, whatever may have been the point of first contact. It would ease relationships with education authorities if the distinction were more clearly recognized between an educational psychologist with a university training and degree in his subject on the one hand, and the more humble psychometrist, or mental tester, on the other, the latter may be an auxiliary technician in the psychiatrist's team or in the educational psychologist's department. But no realist would deny the educational psychologist his place in his own right, within the framework of the educational service for most of his work is far closer to education than it is to medicine. Psychiatrists, having rightly objected to a tendency, here and there, in the early days of this work, on the part of lay psychologists to undertake often in ignorance the treatment of an ill child should take care that they do not themselves commit a similar kind of offence by encroaching too far into the territory of the professional educationist.

At some points in some cases the two fields will overlap, symptoms may be scholastic, treatment medical, or vice versa. In the children's interests therefore, the administration system, however designated must be such as to provide smooth continuity from provisional diagnosis to investigation, to final diagnosis to treatment, no matter in what field symptoms arise, no matter through what channel help is sought (teacher and school M.O., or parent and family doctor, or juvenile court and probation officer) and no matter whether the prepotent therapeutic factor lies in the tutorial skill of the educational psychologist, in the clinical techniques of the psychiatrist or the paediatrician, or in the activities of the social worker. The

only way to achieve this is to have an easily worked interconsultative arrangement of people who know their jobs and their limitations and who, while remaining masters in their own houses, have a pretty sound conception of the relevance of the other man's work and are big enough to refer appropriate cases to him and let him get on with his own job in his own way.

I should like to dispel the doubts that Dr McCluskie has about the subcommittee's experience of psychiatric disorders in children. All of its members have done a considerable amount of work in this field, and among them are two former and one present director of psychiatric clinics for children. The latter is actively engaged in the work of clinics—managed on lines similar to those advocated—in a predominantly rural county. This work has been going on for five years and it has not yet broken down as a result of geographical considerations in the way that Dr McCluskie so confidently predicts—he must be very far indeed ahead of the planners.

I hope that controversy on this subject will not be rekindled. The great majority of the authorities that have given it consideration and are versed in its practice are agreed on the fundamental principles, clearly their detailed implementations must be moulded by the peculiarities of diversely circumstanced localities, can't we leave the matter there?

And if I may be allowed a personal tail piece—can't we stop, once and for all, using this ridiculous expression "child psychiatrist"? If the words bear their correct meaning they suggest a bespectacled prodigy in a school cap rushing hither and thither to treat disordered patients. Who ever heard of a 'child surgeon', a "child ophthalmologist, or a child dentist"? Must we always be different?—I am, etc.,

Aylesbury Bucks.

IAN SKOTTOVE.

Medical Ration Book

SIR—The size of the medical profession, its geographical distribution, and the proportion of its parts are not fortuitous things, but have arisen, rightly or wrongly in response not to needs in a general way but to "effective demand" in the special economic sense. The first result of making all demand effective by taking medicine out of the market will therefore be similar to that observed with other commodities in short supply—namely there will not be enough to go round. The number of medical items of service necessary to ensure theoretical perfection in practice (and to avoid future questions in Parliament) is limitless and therefore until the majority of the brains of the country can be mobilized and applied to the problem of keeping healthy people well and making sick people more introspective, some form of rationing will have to be devised.

It would appear that the simplest and fairest system, and one which is already familiar and highly esteemed would be some form of medical ration book. With the assistance of officials from the B.O.T. and the M.O.F. an estimate should be made from the supply side (there would obviously be no point in estimating demand as the limiting factor is supply) of the number of items of medical service available from year to year, and these should be divided up among the total population with special weighting for infants and the aged. A number of general coupons would be provided in the book and also pages of coupons for the various specialties: hospital beds, surgical operations, drugs, and appliances. On each page could contain photograph, finger-prints, blood pressure, identity number, height, weight, chest expansion, size of collar and shoes, blood-type, number of moles on the body, and other information likely to be helpful in diagnosis.

The patient would register with a general practitioner for the basic ration as it were but the specialist coupons could be used freely (like 'personal points') as taste or necessity indicated. As the total available services had been accurately estimated, there would be no need to insist that coupons should be non-transferable though the possibility of a 'black market' developing among hypochondriacs might require certain restrictive measures. The healthier members of the community could hand in coupons which they were not likely to require during the current period of say six months to a central pool controlled by a panel of consultants so that there would be no shortage of say, 'barbiturate coupons' for patients consulting psychiatrists or of "dental coupons" for orthopaedic—

patients. The validity of coupons would, of course, have to be confined to the area in which they were issued in order to avoid excessive travelling to Harley Street in search of health, though possibly the nationalization of transport would itself in time prevent people from leaving their birth place without adequate reason. However, a few starred coupons could be included in each book to allow of consultations with titled specialists. Extra coupons could easily be included for those in occupations having a high sickness rate. Leucotomy coupons could be provided for those engaged in economic planning, and euthanasia coupons for those who, owing to possible visual field defects, can see no future to the left of the left.

The whole scheme has the great merit of being simple and easily understood. Book-keeping would be reduced to a minimum, the cost of the service would be known in advance and could not be exceeded and all the doctors and consultants would have to do would be to cut out the coupons and affix them to a gummed sheet. Each full sheet would then represent a certain sum of money which could be either immediately passed for payment or transferred to the Inland Revenue Department as an income tax credit—I am, etc.

Bournemouth.

T R AYNLEY

The Plebiscite

SIR—I have noted of late with considerable misgiving, the lack of stimulating correspondence in your columns on the proposed National Health Service.

Between Nov 16 and 23 last year all members of the medical profession received a voting form for the plebiscite which was to ascertain how many of us were willing for the Negotiating Committee to enter into negotiations with the Minister of Health on the new Health Service. The final results as published in your issue of Jan 11 (p 64) showed that 46% voted for and 54% voted against negotiation. A clear majority of 8% against negotiation. Two weeks later, however, in the *Supplement* of Jan 25 (p 9) we were told that 'the Association, having considered the final results of the plebiscite and the Minister's letter of Jan 6 to the Presidents of the Royal Colleges, is willing that discussions be entered into with the Minister'.

It is an axiom of the supporters of the present Government that the Socialist Party has a clear mandate from the people to establish a national health service. I have taken the trouble to obtain the voting figures for the last General Election. The Socialists polled 48%, the Conservatives 36%, and all other parties 16% of the total of 25 million votes.

The Socialist Government therefore represents the wishes of less than half the population that voted. Yet a clear majority of 8% of doctors was considered an insufficient number against negotiation.

It is time that medical men and women shook off the apathy consequent upon six years of war and two years of peacetime controls and restrictions and realized that unless we stand firmly together and refuse to co-operate in Mr Bevan's health service we shall awake one day to find ourselves bound in the bonds of a National Socialist State where the right to question the opinions of those in authority is a crime punishable by professional if not physical, death—I am, etc.

Bromley Kent

MICHAEL B CARSON

The Chartered Society of Physiotherapy

SIR—I should be grateful if you would bring to the notice of the medical profession the correct title of the members of the Chartered Society of Physiotherapy. Until 1943 our Society was known as the Chartered Society of Massage and Medical Gymnastics. The new title is a more comprehensive one and the correct designation for a member is that of 'chartered physiotherapist' or M.C.S.P.

The members of the Chartered Society of Physiotherapy have always welcomed the opportunity of close co-operation with the medical profession and patients are only accepted for treatment when referred by a doctor—I am, etc.

London, W.C.1.

W S C. COPEMAN
Chairman of Council

POINTS FROM LETTERS

Loose Spectacle Lenses

Mr J G H COOPER (Portsmouth) writes: I hope that you may be willing to give a small part of your space to a subject which may help children who, like my own, wear glasses to correct a squint. In the course of their use these glasses invariably become loose, consequently when cleaning the lenses they are sometimes rotated. If this happens, so the optician tells me, the squint far from being cured will be made worse. This is so in nearly every case of glasses prescribed for squints, which are usually circular. Therefore the glasses must be returned for resetting every time it is suspected that the lenses have moved. This could be obviated by a locating peg in the frame and a notch in the edge of the lens.

"Are they, Mum?"

Dr A R STUART WARDEN (Brighton) writes: I recently had occasion to ask a young woman aged about 18 whether her bowels were regular. She turned to her mother and said, "Are they, Mum?" It seems to me that these three words completely sum up the modern system of State education. Volumes could say no more.

Volvulus of the Caecum

Dr G C PETHER (Colchester) writes: Mr R H Gardiner's article (Jan 18, p 83) interested me since I reviewed much of the literature on volvulus of the caecum some years ago. The dietetic factor, which he mentions, is one commonly met in the Balkans and certain Slavonic and other countries of Eastern Europe. In some of these it is customary to take only one meal a day, and, as may be imagined it is a big meal. Furthermore it contains a large amount of roughage of vegetable origin, and apparently the accumulation of this large mass in the caecum causes both sagging and distension. If I remember rightly the literature from the countries mentioned also refers to the high incidence about the seventh month of pregnancy. Presumably, since the British diet is so different, the percentage incidence in this country is much lower.

Control of Measles

Mr H ELWIN HARRIS FRCS (Bristol), writes: Dr A Crawford Mayer's letter (April 5, p 475) calls for little comment. Controls are not possible in private practice, but during a measles epidemic some years ago, which was characterized by a very virulent type of otitis media, none of the oiled patients had any complications. As a result of my previous letter (March 8, p 323) I received a letter from an ex nurse, who wrote that she "worked with a doctor at the Victoria Hospital, Stepney, on the treatment of scarlet fever and other infectious troubles by the use of eucalyptus oil and carbolic oil, with very marked success, and had the doctor lived I think the treatment would have been far more widely known than it is at present. I may say that in the four years I was working at the hospital we had only one case of infection, even though we nursed all cases in general wards and took no precaution with laundry."

Price of Vitamin B₁

Dr MAURICE JOWETT (Glasgow) writes: Vitamin B₁ is being made in the United States for 16 cents, or say 10d, a gramme (R R Williams, *Chem Ind* 1947 66 123). At this rate a bottle of a hundred 3 mg tablets which is sold to the public in this country at a price of 9s, contains three-pennyworth of the vitamin.

Fuel Abstracts a monthly summary compiled by the Fuel Research Station of the Department of Scientific and Industrial Research, is available to the general public from January, 1947. The summary comprises more than 500 abstracts a month of the world literature on all technical and scientific aspects of fuel and power. It is published by H M Stationery Office, Kingsway, London, W.C.2. During 1946 more than 6,400 abstracts were provided. Each monthly issue includes a subject index, and every six months complete author and subject indexes are issued. The summary is printed on both sides of the paper. The subscription for this service, now for the first time made generally available to technical, scientific, and commercial bodies, and to individuals is £2 10s per annum, covering 12 monthly issues and two half-yearly indexes post free. The charge is sufficient to cover the cost of printing and postage alone. Individual copies will not be for sale separately. Back numbers prior to Jan 1 are not available.

Obituary

HAROLD MOODY, M D

Dr Harold Moody, who died in London on April 24 at the age of 64 was the founder and president of the League of Coloured Peoples. He was also the first negro chairman of the London Missionary Society and the first negro president of the British Christian Endeavour Union.

Harold Arundel Moody was born at Kingston, Jamaica, in 1882 and he came to this country in 1904. A student of King's College Hospital, he won the Barry Prize in 1906 and the Tanner Prize in obstetrics and the Todd Medal in 1910. He took the Conjoint Diploma in 1911, the M B, B S a year later, and proceeded M D in 1919. Soon after qualifying he acted as medical superintendent of the Marylebone Medical Mission, and he was also for a time senior clinical assistant in the out-patients department at King's. He built up a large practice in Peckham and at the same time took an active part in the work of the London Missionary Society. Only two years ago he became chairman of its African committee. He was also an active congregationalist and his house soon became a meeting-place for young West Indians, and later for other coloured students.

In 1931 Dr Moody founded the League of Coloured Peoples. To this body he devoted all the time he could spare from a busy general practice. It was only recently that he handed over to others the day to day business of the League which he had previously conducted himself with remarkable perseverance and tact. Not long ago he visited the West Indies, where his brother, also a doctor, is in practice, in connexion with a new scheme to set up a communal centre for coloured people in South London. Dr Moody had been a member of the British Medical Association for over thirty years. He was also on the council of the Save the Children Fund, and as vice-chairman of its Child Protection Committee he took a special interest in the establishment of a pioneer maternity and infant welfare centre in Nigeria.

Dr Moody was a deeply religious man, and he achieved substantial success in his declared aim of showing by his way of life and by the force of example that colour was professionally and socially irrelevant. A familiar figure in the Colonial Office and other Government Departments, Dr Moody won the respect and admiration of all those with whom he came in contact. He is survived by a widow and six children, of whom two are members of the profession.

G HARRISON ORTON, M D

Dr George Harrison Orton, one of the pioneers of radiology, died on April 18 in St Mary's Hospital, at the age of 74. The eldest son of the late George Hunt Orton, F R C S, he was educated at Charterhouse School, Trinity College, Cambridge, and St Bartholomew's Hospital. He took the M A, the M B, B Ch and the Conjoint Diploma in 1901 and proceeded M D in 1906. Even before 1906 he was writing on the value of radiology in the diagnosis of diseases of the chest, and thirty years later he contributed an article to the *British Journal of Radiology* on the importance of calcium changes in diagnostic radiology. Other papers from his pen were on the diagnosis of renal and ureteric calculi, and he was also responsible for several articles on x-ray therapy. Dr Orton was successively radiologist to the King George V Military Hospital, medical officer in charge of the x-ray and electrical department of the Royal Free Hospital, and chief assistant in the x-ray department at Barts. For many years he had been consulting radiologist to St Mary's Hospital, to the Graylingwell Military Hospital at Chichester, and to the National Hospital for Diseases of the Heart.

In 1913 he was secretary of the section of radiology at the seventeenth International Congress of Medicine which was held in London in that year. He was a member of the council of the Medical Society of London and a former president of the electrotherapeutic section of the Royal Society of Medicine. Dr Orton acted as secretary of the section of electrotherapeutics

and radiology at the Annual Meeting of the B M A in 1911, and he was president of the section of radiology at the 1933 meeting. He was also joint secretary of the British X-ray and Radium Protection Commission and was an examiner in radiology for Cambridge University. In his earlier days he was associated with the Cheyne Hospital for Sick Children and Mount Vernon Hospital. Like others who were interested in radiology before all its dangers were fully realized, Dr Orton paid a heavy price for the contributions he made to its development. His long sufferings were patiently borne and he had the satisfaction of seeing the subject to which he contributed so much become a full-grown specialty.

Dr CHARLES JAMES BOUCHER died at his home in Bangor Co. Down, on March 16 at the age of 70. A student of Queen's College Belfast, Dr Boucher qualified in 1903. Not long afterwards he was serving as a surgeon commander in China and in other parts of the Far East. In 1909 he settled in Donaghcloney where he built up a large general practice. He had been a member of the British Medical Association since 1905, and was chairman of the Portadown and West Down Division in 1922 and honorary secretary of the division for over ten years. He was also president of the Banbridge Practitioners' Club. Apart from his professional interests, he served the British Legion as vice-president of the local branch, and he played cricket and golf, and was a keen angler. On his retirement from active practice, because of failing health, he took a house in Ballyholme, Bangor, and he had been there for a few months before his death. He is survived by his wife, a daughter, and a son who is in the profession.

Dr JAMES LIVINGSTON MORTON died in London on March 21 at the age of 47. Inheriting considerable wealth at an early age, Morton travelled extensively and did not start his medical studies at Queen's University Belfast, until he was in the late twenties. He qualified in 1934, and was a colourful and popular figure. He had been in practice at Surbiton and later at Coulsdon.

A colleague writes: I knew Morton as a student with an amazing gift for languages and caricature drawing together with an equally remarkable ability to size people up. His generosity was lavish and several students who fell upon hard times were enabled to continue their studies through his benevolence. Morton practised first at Surbiton and later at Coulsdon, where he died. He was very successful in both practices and very popular with all who knew him, but his heart was in Northern Ireland where he spent his youth and few persons were so well known and well liked there. Hundred of Ulstermen will miss him and mourn his loss.

Dr HORACE CHARLES COLYER died at his home in Croydon on March 26 aged 63 years. Born at Ryde in the Isle of Wight in 1884, the son of a dental surgeon, he decided to follow his father's profession and entered the Royal Dental Hospital, where he took his L D S in 1905. He obtained his conjoint diploma in 1907 at University College Hospital. Returning to the Royal Dental Hospital he became house surgeon and later demonstrator after which in 1910 he settled in Guildford in dental practice. In 1914 he joined the R A M C as one of the original six dental surgeons posted to a C C S at Hazebruck. Later he transferred to medical duties and was attached to the R F C. In 1917 he was gassed and this seriously affected his health and career. After the war Charles Colyer soon realized that as a result of the damage to his sight by mustard gas he would be unable to continue as a dental surgeon. His interest in dental radiology had taken up the career of radiologist and after studying at Liverpool he began to practise in Croydon. He held appointments as radiologist to the Purley and District War Memorial Hospital, to Princess Elizabeth's Hospital, to the Mayday Hospital, Croydon and to All Saints' Hospital. In 1937 he published an article on tomography a branch of his work to which he was much interested. The apparatus he used was largely constructed by himself, he had considerable mechanical ingenuity combined with manual dexterity. Early in the recent war a land mine destroyed his house and consulting room, luckily without injury to himself. Some of his apparatus was saved and he was able to form a partnership with a colleague who was similarly placed and continued in practice until last year, when owing to increasing disability, he retired. Charles Colyer had been a member of the British Medical Association for many years. His straightforward and simple character endeared him to all with whom he came in contact and much sympathy will be felt by his friends for his widow.

Dr JOHN STEVENSON MITCHELL, of Bridge of Allan, Stirling-shire died suddenly on April 4 at the age of 65. Dr Mitchell was a student of Edinburgh University. He qualified in 1905 and took the FRCS in 1909. After a period as house-surgeon and house physician at the Edinburgh Royal Infirmary, Dr Mitchell acted as assistant to Dr Henderson of Galashiels. He took up practice in Bridge of Allan in 1912. During the first world war he served with the RAMC in the Middle East. When he was demobilized he returned to his practice and entered into partnership with Dr Welsh. In the recent war Dr Mitchell acted as medical officer of the Stanley House Auxiliary Hospital, and he continued his work as a lecturer and examiner for the Red Cross. He had always led a busy professional life and he died only a few hours after completing his usual day's work.

Dr WILFRID BOOTHBY BLANDY of Nottingham, died at the age of 68 on April 1. Dr Blandy took the LDS RCS in 1900 and the MRCS, LRCP in 1902. He was a house-surgeon at Charing Cross Hospital, where he had received his medical training and for many years he practised in Nottingham. He served in the Middle East with the RAMC from 1917 to 1919 and soon after his return to Nottingham he was elected to the local council as a member for Meadows Ward. He was president of the Nottingham Medical Society in 1938, and he had a great deal to do with the establishment of the new sanatorium at Newstead. One of his principal interests was work in connexion with the Nottingham branch of the British Red Cross Society, of which he became county director. He was also a member of the University College Council and had been chairman of the Board of Governors of the Nottingham High School. Dr Blandy, whose death will be regretted by all who knew him in the Nottingham area, is survived by his widow and two sons.

Dr FRITZ WEIGERT director of the physico chemical department of the research institute at Mount Vernon Hospital, died on April 13. Born in 1876, Fritz Weigert during his seventy years of life achieved much. Appointed to Nernst's Institute in Berlin in 1905 he went on to Berlin University as lecturer in chemistry in 1908. In 1914 he was appointed professor of scientific photography and photochemistry at Leipzig. From then on there came a continuous flow of research papers ranging over the fields of physical chemistry, photochemistry, and photographic methods applied to chemistry. During this period also he wrote a number of books, in particular the well known *Optische Methoden der Chemie*. In 1936 he came to England and at an age when most men would willingly have retired, Fritz Weigert started life anew. With the enthusiasm and energy that were so typical of the man he threw himself into the task of building a new career in a new country. Whilst holding a fellowship at Glasgow University he continued his research work. Then in 1939 came the change to an entirely new field. Applying his favoured optical methods he worked at Mount Vernon Hospital, Northwood, and was soon responsible for a series of papers adding to our knowledge of the metabolism of the chemical carcinogens. He was working at this problem right up to the day of his death. Away from the scientific work which was the mainspring of his life Fritz Weigert was a charming and cultured host and companion. Despite almost total deafness an argument was entered into with zest and enlivened by many a witicism and penetrating comment. The loss of this versatile scientist whose enthusiasm and energy never flagged is deeply regretted by a host of friends, whose sympathy is extended to his widow and two children.—G C

The Services

Captain (now Temporary Lieutenant Colonel) P C Mitchell M.C., has been awarded the Efficiency Medal (Territorial).

DEATHS IN THE SERVICES

Lieut.-Col CHARLES AIKMAN GOURLAY D.S.O., died at his home at Carbridge, Inverness-shire, on April 5 at the age of 69. A student of the University of Glasgow he qualified M.B., Ch.B., in 1900, proceeding M.D. in 1912. Col Gourlay joined the IMS after serving at Netley Military Hospital. He spent many years in India and was for some time attached to a Gurkha unit. He served in Mesopotamia during the first world war, and he retired in 1924. On his return to this country he lived at Aberfoyle and in 1928 became physician superintendent of Erskine Hospital, which post he retained for twelve years. During the second world war he was a liaison officer with the Ministry of Health.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

Titles of degrees of M.A., M.B., B.Chir. were conferred by diploma on Mrs E. W. Higgins in March.

UNIVERSITY OF DUBLIN

SCHOOL OF PHYSIC TRINITY COLLEGE

Lord Horder delivered the inaugural Frederick Price Lecture on "The Place of Nutrition in Social Medicine" in Dixon Hall, Trinity College, on May 1.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

At a quarterly meeting of the Council of the College held on April 10, with Sir Alfred Webb-Johnson, Bt., President, in the chair, Dr S. S. Beare and Dr E. H. R. Altounyan were elected Fellows of the College, being Members of over twenty years standing. A Diploma of Fellowship was granted to P. D. Trevor-Roper.

The Begley Prize was awarded to Mr Ronald Charles Jordan, of Cardiff.

Prof W. E. Gye, F.R.S., and Dr James Craigie, F.R.S., were appointed Imperial Cancer Research Fund Lecturers for 1947.

It was decided to hold an additional Primary examination for the Fellowship in July.

The subject for the Jacksonian Prize for 1948 is "Malignant Disease of the Thyroid Gland".

The category of those entitled to attend the College monthly dinners was widened so as to include Fellows (when elected) and Licentates in Dental Surgery, holders of any of the specialist post-graduate diplomas, and all postgraduate students of the College together with their wives and guests.

The following hospitals were recognized in respect of the posts mentioned, the tenure of which is required of candidates for the Final Fellowship examination: Demerdash Hospital, Egypt (House surgeon and Resident Officer), Paddington Hospital (Assistant Medical Officer), Royal Buckinghamshire Hospital, Aylesbury (Senior House surgeon and Supernumerary House-surgeon).

Diplomas in Tropical Medicine and Hygiene and in Child Health were granted, jointly with the Royal College of Physicians of London to the following successful candidates:

DIPLOMA IN TROPICAL MEDICINE AND HYGIENE—H. E. Al Abed, H. Annamunthodo, D. W. Bell, R. H. Bell, J. S. Calnan, M. V. Chan, F. G. Domangue, A. El S. Eissa, H. S. Fuller, V. V. Gharpure, D. J. Gilbert, J. Harper, L. Jacobson, V. N. Jai, S. K. Kaan, E. Kertész, R. R. Lam, J. I. Lesh, K. H. Lim, J. P. Mackey, R. D. Maclean, R. C. Macleod, G. Y. Nan, M. G. Nelson, Y. H. Ng, Q. Pasha, S. H. Patel, I. B. Patwari, A. Qattan, R. V. Rele, S. C. Sanghani, A. O. Sasegbon, K. S. Seal, I. H. Syed, W. J. U. Tin, J. M. Vazley, A. J. N. Warack, Dorothy W. Wells, J. P. F. Whelan.

DIPLOMA IN CHILD HEALTH—Esmé Abelheim, J. M. Alexander, R. Asquith, J. N. Berry, D. W. Beynon, D. M. Brierley, Margaret Brodigan, J. Brody, J. C. Brown, R. W. W. Brown, Janet Cameron, W. A. B. Campbell, F. S. Carter, R. H. Caughey, Roma N. Chamberlain, N. A. Daniel, H. H. Davies, H. L. Ellis, Edith M. Evans, C. G. Fagg, D. M. Foubister, Elsie C. Gibbons, Mildred C. Green, Joan Guy, H. Habib, N. Hamlin, Margaret A. Hay, Frances A. Hepburn, J. B. Heycock, Patricia E. Hingle, A. Holzel, J. N. Horne, Margaret E. Hughes, J. Jacobs, A. P. Kalra, Nora Kelly, Doreen M. King, P. Kuschik, J. H. Lawrence, Joan M. Levell, M. E. MacGregor, Runa B. Mackay, G. F. Maggioni, S. L. Malhotra, N. M. Mann, Betty M. Margetts, P. Maurice, Lilian Morris, P. D. Moss, E. L. Murphy, A. P. Norman, W. H. Opie, A. Palley, A. N. Pearson, V. R. Pickles, B. W. Powell, P. M. M. Pritchard, E. P. Quibell, Joan M. Redshaw, Attracta G. Rewcastle, F. Rousseau, G. R. Royston, A. Russell, Isabel S. Smellie, Marion E. Smith, Ankele M. P. Snow, Margaret H. Stanfield, J. H. Steeds, Eluned M. Steven, J. K. Steward, Marian E. Sturrock, Laura Thompson, J. P. M. Tizard, I. P. Todd, A. B. Tompkins, Vivien V. Tracey, G. B. R. Walkey, Pauline H. Webb, R. C. Webster, R. H. White, Jones, Llyr, M. Williams, D. A. J. Williamson.

The following lectures will be delivered at the College (Lincoln's Inn Fields, W.C.) May 8, 5 p.m. Hunterian Lecture by Prof J. B. Macalpine, "Bladder Growths, with Special Reference to Growths occurring in Workers in Aniline Dyes." May 14, 5 p.m. Arris and Gale Lecture by Prof F. Wood Jones, "The Hall marks of Humanity." May 15, 5 p.m., Hunterian Lecture by Prof Rodney Smith, "Intestinal Decompression in the Treatment of Acute Obstructions." May 22, 5 p.m., Arris and Gale Lecture by Prof Lambert Rogers, "Ligature of Arteries with particular reference to Carotid Occlusion and the Circle of Willis." May 29, 3.45 p.m., Erasmus Wilson Demonstration by Mr L. W. Proger, "Pathological Specimens in the Museum." The lectures are open to those attending courses in the College and also to all other medical practitioners and advanced students.

A course of 72 Lectures in Anatomy, Applied Physiology, and Pathology will be given at the College from July 1 to 31 and from Sept 1 to 30 on Mondays, Tuesdays, Wednesdays, Thursdays, and Fridays at 3.45 p.m. and 5 p.m. The fee for the whole course is £16 16s. Fellows and Members of the College and Licentates in Dental Surgery will be admitted on payment of £12 12s. It will not be permissible to take one or two subjects only. Applications, accompanied by a cheque for £16 16s. or £12 12s., should be sent to the assistant secretary, Royal College of Surgeons of England, Lincoln's Inn Fields, W.C.2.

CONJOINT BOARD IN SCOTLAND

The following candidates having passed the final examination, have been admitted L R C P Ed, L R C S Ed, and L R F P & S Glas

M S Barnett	H Y Coldwell	R H Fennell	J A D H	J A E F
G McDermott	Joseph			W F
Weisswasser	A MacD			W M
Williams				

Medico-Legal

TEMPORARY TREATMENT AND DIVORCE

[FROM OUR MEDICO LEGAL CORRESPONDENT]

Divorce for insanity, introduced by the Matrimonial Causes Act (Herbert's Act¹), 1937, was a complete innovation, and the provisions governing it were drawn very carefully and are interpreted very strictly. In the result several anomalies have come to light which inflict undue hardship on petitioners whose cases happen to fall just outside the boundary line. Under Section 2 (d) a petition for divorce may be presented on the ground that the respondent is incurably of unsound mind and has been continuously under care and treatment for at least five years. The words 'care and treatment' are precisely but somewhat narrowly defined. Section 3 says that a person of unsound mind is under care and treatment while (*inter alia*) he is detained in pursuance of any order or inquisition under the Lunacy and Mental Treatment Acts, or while he is receiving treatment as a voluntary patient, if such treatment follows immediately on a period of detention.

Temporary treatment is not mentioned in the Act at all. It was instituted by Section 5 of the Mental Treatment Act, 1930 which says that a patient likely to benefit by it may be received as a temporary patient on a written application but without a reception order. The official form of application 'requests' the person in charge of the hospital to receive the patient. The question whether temporary treatment counts as 'care and treatment' under Herbert's Act had often been asked, but has only recently, ten years after the passing of the Act, come before the Court in a pure form.

In *Benson v Benson* (1941, P 90) the respondent was admitted as a temporary patient, and after six months the Board of Control directed the period of treatment to be extended for three months. The patient was discharged relieved before the end of the second period but was admitted at once into another hospital as a voluntary patient. Lord Merriman, the President, found that the direction of the Board extending the period was an order. In the latest case, *Whitley v Whitley* (1946 2 All E R 726), the wife was admittedly incurable and had admittedly been under care and treatment for more than five years. In December, 1936 she was received as a temporary patient shortly after childbirth. After six months she was discharged relieved, but was readmitted as a voluntary patient, and she had been in hospital ever since. There was no such direction as had been made in the *Benson* case as only the initial period of six months was involved. Counsel urged that the procedure by which a patient is admitted to temporary treatment ought to be treated as an order. Mr Justice Barnard, however, could not agree and felt himself bound to deal with the Act as he found it. He could not by any stretch of imagination call an application an order, nor a request an authority. His decision seems logically unassailable, but leads to the absurd position that an extended period of temporary treatment counts for 'divorce' while the original period does not. Although the wife was properly detained as a temporary patient, she was not detained in pursuance of any order.

The judge referred shortly to a case heard a few months earlier, but not then reported in which a relieving officer directed a married woman to be removed to a mental hospital, two days later her husband took her away and she went into another mental institution as a voluntary patient (*Crutchfield v Crutchfield*). Mr Justice Jones said in that case that the relieving officer had not given any order but had merely taken action under Section 20 of the Lunacy Act 1890, and later voluntary treatment therefore did not count for divorce. These two cases provide the latest addition to a long list of amendments which call loudly for insertion in Herbert's Act when Parliament can spare the time.

Medical Notes in Parliament

SCOTTISH HEALTH SERVICE BILL

The National Health Service (Scotland) Bill was recommitted on April 21 to a Committee of the whole House of Commons in respect of amendments in the name of the Secretary of State for Scotland.

On Clause 5 Mr WESTWOOD moved an amendment to make clear that the charges to be paid by private patients were to cover the cost falling on public funds. This amendment was accepted.

On Clause 22 Mr WESTWOOD moved to insert a provision that where arrangements provided for the supply of anything prescribed, not being a drug, a medicine, or an appliance of a type normally supplied the local authority may recover from any person so supplied such charge as the authority may determine. He instanced the supply of milk, orange juice, and cod liver oil. He said the Government did not intend to authorize charges for the supply of anything which was provided as an integral part of health treatment. The line was a difficult one to draw, and under the Clause in the form proposed the House of Commons would now determine where the line was to be drawn.

Col WALTER ELLIOT said that under the proposed words the local authority could recover from any person the cost of milk or of cod-liver oil. Nothing discouraged the mothers of young children from applying for such things so much as the long and complicated regulations. He did not believe that the solution proposed by Mr Westwood met the wishes of the House.

Mr WESTWOOD said that responsibility for providing cod liver oil and milk was national and the House was dealing with local authority responsibility.

Sir THOMAS MOORE asked whether, if an iron lung was required and had to be brought from a distance, it had to be paid for by the person who needed it.

Mr BUCHANAN said that was not an appliance supplied by a local authority. The Clause covered purely personal appliances. After further debate the amendment was accepted.

On the motion of Mr WESTWOOD the House agreed to leave out subsection (4) of Clause 22. This amendment deleted from the Bill the provision which sought to make the local health authority the local authority for the purposes of Part I of the Children and Young Persons (Scotland) Act, 1937. An amendment was accepted to Clause 29 to bring into operation on the passing of the Act without waiting for the appointed day a new Clause authorizing local authorities to contribute to expenditure incurred by a body set up to advise on the co-ordination of health services in each area.

On Clause 64 an amendment was accepted on the motion of the Lord Advocate, Mr G R THOMSON authorizing the making of reciprocal arrangements between Scotland and England and Wales or between Scotland and Northern Ireland to safeguard the superannuation rights of persons transferred to employment in health services in those countries. After debate Clause 64 as amended was ordered to stand part of the Bill.

Local Authority Research and Co-ordination

Mr WESTWOOD then brought forward a new Clause enabling local authorities to carry out research connected with their own health service functions. He instanced inquiries into the value of various forms of care or after-care services, studies of the effectiveness of child-welfare centres, and inquiries into the effects of environment on health.

Col ELLIOT saw a danger of overlapping. He pointed out that under the Clause the Regional Hospital Board and the Board of Management would have power to conduct research.

Mr WESTWOOD in reply to questions, said there was a possibility that research being carried on by local authorities might be stopped if the power was not provided in this Clause. If they claimed under the amendment for research which was carried through and the Secretary of State approved the claim they would get grants. The Clause was added to the Bill.

Mr WESTWOOD moved a further new Clause. He said day-to-day co-ordination would be secured by close contact between the personnel responsible for administering the three divisions of the Health Service, and to facilitate liaison the Secretary of State would be in a position to encourage the establishment of non-statutory local committees in which representatives of the three divisions would take part. These committees would not have executive powers but would meet regularly to discuss the whole field of health services for the area, and their findings would go forward as recommendations to the Regional Hospital Boards, the Executive Councils, or the local authorities.



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new Clause authorized a contribution by a local health authority towards expenditure incurred by a co-ordinating committee.

The Clause was read a second time. The Eleventh Schedule was technically amended and the Bill was then reported as amended on recommitment and was immediately considered on Report.

REPORT STAGE

Mr WESTWOOD moved to insert in Clause 5 a proviso that no accommodation shall be set aside (for private patients) unless there will remain available, as part of the hospital and specialist services, for other patients at least as much accommodation as was immediately before the appointed day available free of charge or at hospitals vested in local authorities." He said the object of Clause 5 was to encourage front rank specialists to come into the Service. It enabled specialists to treat patients of their own who wished to continue as private patients in accommodation as physically convenient as possible to the specialist's work for ordinary patients within the Service. The number of specialists was considerably short of the numbers required to provide an efficient service for the whole population. No specialist would be compelled to come into the new Service and it was therefore important that the Secretary of State should do everything to encourage them to spend the maximum time within the Service. Since the Committee Stage he had had discussion with the Scottish specialists which made it clear to him that the success of the new Service would be prejudiced if the facility proposed in the Clause was not extended to them. Other objections had been expressed. On balance it seemed to him the right thing to do was to retain the Clause, but there was no question of so operating it as to reduce the number of beds available free of charge below the number so available immediately before the new Service came into being. Scottish specialists had never suggested such a reduction. He therefore proposed the insertion into the Bill of this proviso which would provide a statutory safeguard against any reduction. He recognized that for a long time it would not be possible to set aside more than a very small proportion of new hospital accommodation or of equivalent accommodation in existing hospitals.

Col ELLIOT said the Opposition accepted the doctrine that the transfer should not diminish the number of free beds available but held also that the transfer should not diminish the number of paying beds available. The Standing Committee on the Bill had felt that paying beds and free beds ought to be mixed and not segregated into nursing homes on one side and hospitals on the other.

Mr BUCHANAN said the amendment safeguarded the present number of free places and that number would be the minimum and not the maximum.

Cmdr GALBRAITH moved to add to the proposed amendment a proviso that accommodation previously used for paying patients should be so set aside unless the result would be to diminish accommodation hitherto available free to patients. His amendment was defeated by 222 to 81 and the amendment moved by Mr Westwood was inserted in the Bill.

Hospital Endowments

On Clause 7 Col ELLIOT moved to provide that the liabilities associated with endowments and to be transferred with them should be such as were reasonably connected with the individual property or properties taken over. Mr BUCHANAN said the Government could not see its way to accept the amendment. It did not know the liabilities concerned. Col ELLIOT appealed to Mr Buchanan to consider whether some form of records could be proposed in the House of Lords to ensure that endowments would not be unreasonably divorced from the original intention of the donors. Mr BUCHANAN said the Government would look into this point again and Col Elliot withdrew his amendment.

Mr BUCHANAN moved to amend Clause 8 by varying the sections to the Hospital Endowments Commission on the principles governing schemes for the management or transfer of endowments. The amendment instructed the Commission to have special regard to the spirit of the intention of the donor or donor and in particular to conditions intended to preserve the memory of any person or class of persons also the extent to which the original purpose of the endowment is provided for by a public service or otherwise and finally the interests of the hospital and specialist services. The amendment was agreed to.

Cmdr GALBRAITH moved to omit from subsection (6) of Clause 8 the words which authorized the Secretary of State in approving any scheme submitted to him by the Hospital Endowments Commission to do so with modifications including any or exceptions. He said it was extraordinary that the Commission should set up an Endowments Commission and yet that

the Secretary of State should take power completely to alter a scheme.

The LORD ADVOCATE said that if this amendment were accepted the Secretary of State would have no latitude at all. If any substantial modification were made which had not been agreed by the Commission the order when laid before Parliament would be accompanied by a White Paper setting out the modifications. By 234 to 76 the House decided to retain the original wording of the Bill.

On Clause 9 the LORD ADVOCATE moved an amendment making less strict the provisions to prevent diversion of hospital funds between the date of publication of the Bill and the appointed day. Col ELLIOT accepted the amendment and said it was an improvement. The House agreed to it.

On Clause 12 Col ELLIOT moved an amendment providing for the laying before Parliament of any scheme dealing with the functions of regional hospital boards and boards of management which had been brought forward by a board and had been modified by the Secretary of State. He said such a provision was more necessary because Mr Westwood had not left the teaching hospitals so far out of the picture as they had been left in the English Bill. The regional boards would have much greater powers in Scotland than in England, and if Mr Westwood had not approved the scheme which had been submitted by a board he should lay this scheme before Parliament.

The LORD ADVOCATE said the amendment would introduce a too formal element into the relationship between the Secretary of State and the regional boards. Other methods of publicity might be utilized instead of the submission of the scheme to Parliament. Col Elliot's amendment was rejected by 235 to 70.

Health Centres

On Clause 15 Col ELLIOT moved to amend the subsection authorizing the Secretary of State to delegate to a local health authority any of his functions under the Clause, such delegation should follow the holding of an inquiry. He said the medical profession would feel more content if the amendment were adopted.

Mr WESTWOOD said he did not intend in the early experimental years of a new service to delegate any health centre functions to local authorities. When the stage of delegating functions was reached the nature of the delegation would be worked out in consultation with the professional people concerned and would not be irrevocable. So far as he was concerned such delegation would never take place except on agreement with the local health authority concerned and after consultation with the Executive Council, medical and other appropriate bodies in the area, and doctors and dentists working at the health centre. A formal inquiry would be too elaborate. Col Elliot withdrew his amendment.

On Clause 27 Mr WESTWOOD secured acceptance of an amendment authorizing a local authority to recover payment for services under this Clause. He instanced the possibility of charges for the supply of extra foodstuffs, fuel, and bedding.

Distribution of Medical Practitioners

On Clause 33 Cmdr GALBRAITH moved to authorize the making of regulations requiring the Scottish Medical Practices Committee to survey each area or part of an area and to report on the number of medical practitioners necessary to provide an adequate service. He said those about to enter the profession should have some knowledge of over-doctored and under-doctored areas.

Mr BUCHANAN could not accept the amendment. A vacancy arising in a district would be advertised in the medical press. In considering whether an area was over-doctored the question of the health of the doctors had to be considered and the mere numbers might be misleading. The Scottish Office took the view that the best way to make vacancies known was by advertisement in the professional journals. The Government would see that the young doctors knew the position throughout Scotland. Mr Westwood would make his officials accessible at all times to the young doctor and they would set the exact picture of the country before him. The amendment was withdrawn.

Mr THORNTON-KEMSLEY on Clause 34 moved to insert a declaration that if premises previously used by a medical practitioner were sold at a public auction by that medical practitioner or by his personal representative such should not be deemed to be a sale of the goodwill or part of the goodwill of the practice of that practitioner. He said that until the hammer fell the seller would not know whether a doctor was going to buy or another man. Once the hammer fell a contract had been made and it would be impossible for the vendor to say that he would not sell to a doctor.

The LORD ADVOCATE held that the amendment was not necessary. Where a doctor's house was sold at a genuine auction, there could be no danger of prosecution. The fact that a sum was paid at such an auction by a purchaser who had no prior agreement with the seller would negative any suggestion that the price contained an element of goodwill. The proposed amendment was rejected by 226 to 70.

On Clause 35 Cmdr GALBRAITH moved to provide that compensation should be payable when the medical practitioner concerned reached the age of 65, or had retired or had died. The Bill before the House recognized only the last two contingencies.

Mr BUCHANAN said the subject had been exhaustively discussed in Standing Committee but he hoped to go some way towards meeting Cmdr Galbraith. At any time, and not only at the age of 65 a doctor, because of overwork or ill health, might wish to sell his practice and buy one of less value. Mr Buchanan reminded the House that he had already agreed that a young doctor going abroad or going into local authority work would get his money as would the young doctor who was overloaded with debts through buying his practice. The Government now proposed to prescribe conditions so that a man who retired because of ill health, to go into a smaller practice might get either the whole or part of his money at once. When a man of 65 retired he retired completely. The case which Mr Buchanan's medical representatives thought should be met was the man who suffered a breakdown in health at 40 to 50 years but who did not wish to retire from work and was seeking an easier life. The Government would meet that class of case at any age by paying the whole or a portion of the sum to which the doctor was entitled. Cmdr Galbraith withdrew his amendment.

Disqualifications and Disputes

On Clause 41 the House accepted an amendment proposed by Mr BUCHANAN authorizing the giving of information to any person who was the subject of an inquiry of the grounds on which any disqualification had been imposed in his case.

The House then rejected by 228 to 71 an amendment proposed by Col ELLIOT on Clause 42. This amendment would have provided that any order made by the Secretary of State dispensing with requirements under the Act should be laid before Parliament.

On Clause 45 Mr BUCHANAN moved to provide that in any dispute the Secretary of State should cause an inquiry to be held at the request of either party, unless satisfied that in the special circumstances such an inquiry was unnecessary. This was accepted.

Drafting amendments were made in Clauses 57 and 63. On Clause 68 the period during which any action or proceedings shall be brought against any authority or officer was changed from two months to twelve months. Formal changes were made in Clause 71, and Mr WESTWOOD gave Col Elliot an assurance that amendments put down by the Opposition to this Clause would be considered before the passage of the Bill through the Lords. An amendment proposed by Cmdr GALBRAITH to ensure that schemes put forward by the Hospital Endowments Commission should be submitted to a positive resolution of both Houses of Parliament was negatived. A drafting amendment was made in Clause 77 to make it clear that the Clause applied only to the use of the word 'asylum' under the Lunacy Act. This concluded the Report Stage and Mr WESTWOOD immediately moved that the Bill be read a third time.

THIRD READING

Mr WESTWOOD said that if the Bill was passed substantially in its present form the Government hoped to fix April 1, 1948, as the appointed day. The Bill put squarely on public authorities the duty to provide all necessary facilities needed for the health care of all the people. The members of the Scottish Health Services Council and its standing advisory committees would be chosen for their ability to give the Secretary of State expert advice on all the problems which would arise in fitting together the various component parts into a unified service, giving everyone access to any kind of specialist treatment which they required. Regional boards and boards of management would be chosen from people with interest in and knowledge of the hospitals they were to administer. The Bill made it possible for the best features of the voluntary hospital system to be maintained. Endowments were left in the hands of the boards of management and regional hospital boards to be expended at their discretion. The Bill placed a duty upon the Secretary of State to provide facilities in the hospital service for the teaching of medicine. It allowed the largest number of hospitals to come into the teaching field and to share in the

advantages which that work could confer. Without any trespassing by the State upon the responsibility of the teaching and licensing authorities the Bill brought these authorities fully into the administration of the hospital service so far as it affected them. Local authorities were given power for important developments in prevention and treatment. In future there would be available to everyone the care and attention of a family doctor of the patient's own choice without any need to count the cost. The Bill did not confer any power to direct individual doctors to work in particular localities or at particular jobs. The passing of the Bill would not produce more doctors overnight, but the organized service which it provided with the new system of remuneration which the Government had in view and the abolition of the sale of practices, would increase the attraction of general medical practice as a career. These factors, in conjunction with measures which the Government were introducing to bring higher education within the reach of all, would supply at no distant date an adequate number of doctors for the tasks ahead.

Centralized Control

Col ELLIOT moved that the House decline to give a Third Reading to a Bill which centralized control of institutions in the hands of the Secretary of State, deprived local authorities and voluntary bodies of powers hitherto exercised to the advantage of the people, took for the Secretary of State power of diverting trust funds and benefactions and gravely threatened the future of the practice of medicine and of research. Col Elliot said the steps which the Government was taking could only be justified if the medical system of Scotland had been a signal failure instead of being, as it admittedly was, one of the great scientific and practising successes of the world. While the Government's plans were waiting to be carried through, the practice of medicine to help the people of Scotland was being held up. The stereotyping of research into a Government system where the subject became political was a strong argument against the Bill.

Mr RANKIN said the Bill would not interfere with the training of students and it would be possible to absorb at once in active work in the hospitals every young doctor who left the universities. He believed at the moment there was such plenitude of doctors that they could not be placed in private practice.

Lady GRANT held that the abolition of the sale of goodwill of practices and the introduction of the element of basic salary opened the way to the full State salaried service which was the acknowledged aim of Labour Members.

Democratic Research

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The LORD ADVOCATE held that the amendment was not necessary. Where a doctor's house was sold at a genuine auction, there could be no danger of prosecution. The fact that a sum as paid at such an auction by a purchaser who had no prior agreement with the seller would negate any suggestion that the price contained an element of goodwill. The proposed amendment was rejected by 226 to 70.

On Clause 35 Cmdr GALBRAITH moved to provide that compensation should be payable when the medical practitioner concerned reached the age of 65, or had retired or had died. The Bill before the House recognized only the last two contingencies.

Mr BUCHANAN said the subject had been exhaustively discussed in Standing Committee but he hoped to go some way towards meeting Cmdr Galbraith. At any time, and not only at the age of 65 a doctor, because of overwork or ill health, might wish to sell his practice and buy one of less value. Mr Buchanan reminded the House that he had already agreed that a young doctor going abroad or going into local authority work would get his money as would the young doctor who was overloaded with debts through buying his practice. The Government now proposed to prescribe conditions so that a man who retired because of ill-health to go into a smaller practice might get either the whole or part of his money at once. When a man of 65 retired he retired completely. The case which Mr Buchanan's medical representatives thought should be met was the man who suffered a breakdown in health at 40 to 50 years but who did not wish to retire from work and was seeking an easier life. The Government would meet that class of case at any age by paying the whole or a portion of the sum to which the doctor was entitled. Cmdr Galbraith withdrew his amendment.

Disqualifications and Disputes

On Clause 41 the House accepted an amendment proposed by Mr BUCHANAN authorizing the giving of information to any person who was the subject of an inquiry of the grounds on which any disqualification had been imposed in his case.

The House then rejected by 228 to 71 an amendment proposed by Col ELLIOT on Clause 42. This amendment would have provided that any order made by the Secretary of State dispensing with requirements under the Act should be laid before Parliament.

On Clause 45 Mr BUCHANAN moved to provide that in any dispute the Secretary of State should cause an inquiry to be held at the request of either party, unless satisfied that in the special circumstances such an inquiry was unnecessary. This was accepted.

Drafting amendments were made in Clauses 57 and 63. On Clause 68 the period during which any action or proceedings shall be brought against any authority or officer was changed from two months to twelve months. Formal changes were made in Clause 71, and Mr WESTWOOD gave Col Elliot an assurance that amendments put down by the Opposition to this Clause would be considered before the passage of the Bill through the Lords. An amendment proposed by Cmdr GALBRAITH to ensure that schemes put forward by the Hospital Endowments Commission should be submitted to a positive resolution of both Houses of Parliament was negatived. A drafting amendment was made in Clause 77 to make it clear that the Clause applied only to the use of the word 'asylum' under the Lunacy Act. This concluded the Report Stage and Mr WESTWOOD immediately moved that the Bill be read a third time.

THIRD READING

Mr WESTWOOD said that if the Bill was passed substantially in its present form the Government hoped to fix April 1, 1948, as the appointed day. The Bill put squarely on public authorities the duty to provide all necessary facilities needed for the health care of all the people. The members of the Scottish Health Services Council and its standing advisory committees would be chosen for their ability to give the Secretary of State expert advice on all the problems which would arise in fitting together the various component parts into a unified service giving everyone access to any kind of specialist treatment which they required. Regional boards and boards of management would be chosen from people with interest in and knowledge of the hospitals they were to administer. The Bill made it possible for the best features of the voluntary hospital system to be maintained. Endowments were left in the hands of the boards of management and regional hospital boards to be expended at their discretion. The Bill placed a duty upon the Secretary of State to provide facilities in the hospital service for the teaching of medicine. It allowed the largest number of hospitals to come into the teaching field and to share in the

advantages which that work could confer. Without any trespassing by the State upon the responsibility of the teaching and licensing authorities the Bill brought these authorities fully into the administration of the hospital service so far as it affected them. Local authorities were given power for important developments in prevention and treatment. In future there would be available to everyone the care and attention of a family doctor of the patient's own choice without any need to count the cost. The Bill did not confer any power to direct individual doctors to work in particular localities or at particular jobs. The passing of the Bill would not produce more doctors overnight, but the organized service which it provided with the new system of remuneration which the Government had in view and the abolition of the sale of practices, would increase the attraction of general medical practice as a career. These factors in conjunction with measures which the Government were introducing to bring higher education within the reach of all, would supply at no distant date an adequate number of doctors for the tasks ahead.

Centralized Control

Col ELLIOT moved that the House decline to give a Third Reading to a Bill which centralized control of institutions in the hands of the Secretary of State, deprived local authorities and voluntary bodies of powers hitherto exercised to the advantage of the people, took for the Secretary of State power of diverting trust funds and benefactions and gravely threatened the future of the practice of medicine and of research. Col Elliot said the steps which the Government was taking could only be justified if the medical system of Scotland had been a signal failure instead of being, as it admittedly was, one of the great scientific and practising successes of the world. While the Government's plans were waiting to be carried through, the practice of medicine to help the people of Scotland was being held up. The stereotyping of research into a Government system where the subject became political was a strong argument against the Bill.

Mr RANKIN said the Bill would not interfere with the training of students and it would be possible to absorb at once in active work in the hospitals every young doctor who left the universities. He believed at the moment there was such a plenitude of doctors that they could not be placed in private practice.

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The Secretary of State for Scotland and the Minister of Health have set up a working party to inquire into the recruitment and training of midwives and any other matters which have a bearing on the present shortage of practising midwives. The chairman is Mrs Mary Stocks, BSc, Principal of Westfield College, London. Assisting the working party is a steering committee, also under the chairmanship of Mrs Stocks. All correspondence, including any suggestions from interested organizations, should be addressed to the Secretary of the Midwifery Inquiry, Ministry of Health, Whitehall, London SW 1.

Dr Eleanor H Kelly has been appointed a Justice of the Peace for Wimbledon and was recently elected a member of the Merton and Morden Urban District Council.

Dr Peter McBride, of York, who died on June 16, 1946 left £85,736. Prof W Gemmill, of Birmingham Professor of Surgery in Birmingham University, who died on July 28, 1946 left personal estate in England and Scotland valued at £67,568. Prof J W W Stephens, of Ferry-side Carmarthenshire, Emeritus Professor of Tropical Medicine, Liverpool University, who died on May 17, 1946, aged 81 years left £16,792. Dr Ilja Margolin, of Birmingham who died on June 28, 1946 left £10,311. Dr Ernest Millam, of Oxford, who died on Oct 24, 1946 left £47,588. Dr George Alexander Troup Aberdeenshire who died on Oct 24, 1946, left £32,820. Sir William J Collins, who died on Dec 12, 1946, left £33,272. Mr Arthur Tudor Edwards, who died on Aug 25, 1946, left £52,472. Prof T Wardrop Griffiths, of Leeds Emeritus Professor of Medicine, Leeds University, who died on Oct 21, 1946, left £49,478.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* increases were reported in the notifications of measles 1,983 dysentery 33, and diphtheria 29 while there was a fall in the incidence of scarlet fever 67 and of whooping-cough 24.

A rise in the notifications of measles was recorded in most areas: the largest increases were Yorkshire West Riding 329, Staffordshire 171, Leicestershire 160 Lancashire 138 Glamorganshire 110 and Warwickshire 107. Only slight changes appeared in the local trends of scarlet fever and diphtheria. The local incidence of whooping cough fluctuated but the general tendency was for an increased incidence in the south and a decrease in the north, the largest rise was Kent 51 and the largest fall Lancashire 64. The increase in cases of dysentery was due to an outbreak involving 25 persons in Surrey (Woking U.D. 21).

In *Scotland* there was a decrease in the incidence of whooping-cough 52 measles 31, and dysentery 10. Notifications increased for scarlet fever 22 diphtheria 13 and cerebrospinal fever 11. The increase in cases of diphtheria was confined to Glasgow, where the incidence rose from 11 to 32. The rise in the notifications of cerebrospinal fever was contributed by the western area of the country.

In *Eire* the chief features of the returns were rises in the incidence of whooping cough 33 and diarrhoea and enteritis 21: these increases were contributed by Dublin C.B.

In *Northern Ireland* infectious diseases were less prevalent during the week and small declines were recorded for most diseases.

Births and Deaths During the March Quarter

The number of births registered during the first quarter of this year in England and Wales was 241,421 equivalent to a rate of 22.8 per 1,000. This was the highest rate since the second quarter of 1921 and was 6.7 above the average of the first quarters of 1941-5. The death rate was 17.2 per 1,000, and was 2.5 above the rate of the first quarter of 1945 and 2.4 above the 1941-5 average.

Week Ending April 19

The notifications of infectious diseases in England and Wales during the week included scarlet fever 930 whooping-cough 2,117 diphtheria 182 measles 9,035 acute pneumonia 728, cerebrospinal fever 81 dysentery 46 acute poliomyelitis 9, smallpox 2, paratyphoid 5, typhoid 5.

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended April 12.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year for (a) England and Wales (London included) (b) London (administrative county) (c) Scotland (d) Eire (e) Northern Ireland. Figures of Births and Deaths recorded under each infectious disease are for (a) The 126 principal towns in England and Wales (including London) (b) London (administrative county) (c) The 16 principal towns in Scotland (d) The 13 principal towns in Eire (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases a blank space denotes disease not notifiable or no return available.

Disease	1947					1946 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever Deaths	89	7	36	—	1	78	7	41	1	—
Diphtheria Deaths	213	18	55	18	—	463	41	118	56	—
Dysentery Deaths	77	6	11	—	—	270	26	32	3	—
Encephalitis lethargica acute Deaths	—	—	—	—	—	1	—	—	—	—
Erysipeloid Deaths	—	—	49	11	2	—	—	39	7	—
Infective enteritis or diarrhoea under 2 years Deaths	85	14	18	38	7	61	12	7	46	10
Measles* Deaths	10,326	525	223	36	26	2,552	950	810	46	—
Ophthalmia neonatorum Deaths	61	6	22	—	—	68	3	21	—	—
Paratyphoid fever Deaths	1	1	—	—	—	4	—	—	—	—
Pneumonia influenza Deaths (from influenza)	709	38	14	9	11	871	44	8	13	—
Pneumonia primary Deaths	33	7	4	—	2	24	2	2	1	—
Poliomyelitis acute Deaths	—	—	—	—	—	1	—	—	—	—
Poliomyelitis acute Deaths	11	4	—	—	—	5	1	—	1	—
Puerperal fever Deaths	—	3	15	—	—	—	—	19	—	—
Puerperal pyrexia† Deaths	156	12	10	1	1	124	13	15	1	—
Relapsing fever Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever Deaths	928	73	177	18	2	1,366	105	13	25	—
Smallpox Deaths	13	—	—	—	—	3	—	—	—	—
Typhoid fever Deaths	6	—	—	7	1	3	2	—	—	—
Typhus fever Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough* Deaths	1,751	221	146	104	7	1,934	180	120	25	14
Deaths (0-1 year) Infant mortality rate (per 1,000 live births)	555	68	97	37	11	402	54	40	27	—
Deaths (excluding still births) Annual death rate (per 1,000 persons living)	5,469	883	722	254	151	4,730	752	599	183	—
Live births Annual rate per 1,000 persons living	10,291	1,664	1,336	477	287	7,697	1,148	926	40	—
Stillbirths Rate per 1,000 total births (including stillborn)	246	35	48	—	—	236	34	38	—	—

* Measles and whooping-cough are not notifiable in Scotland and the are therefore an approximation only.

† Includes primary form for England and Wales (London & county) and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

Any Questions ?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Artificial Insemination

Q—A patient of mine wishes to be artificially inseminated. A suitable donor has been obtained. When should artificial insemination be performed and exactly what technique should be used ?

A—If the donor is already selected it is perhaps rather late to offer advice on this point. Experience has shown, however, that it is important that he and the patient should remain anonymous to each other. Their blood groups should be known if only to exclude Rh incompatibility, and his seminal fluid should have been fully analysed and also cultured to exclude infection in his genital tract. For the purpose of insemination the semen should be collected by masturbation into a dry glass container whose interior is sterile. It should be kept at atmospheric temperature during the interval between collection and injection, which should not exceed three hours and is preferably less.

If the genital organs of the woman are normal, the technique of injection is comparatively simple. The cervix is exposed by inserting an unlubricated speculum into the vagina, any discharge is wiped away but no antiseptic should be used. A small quantity of semen, not more than 1.0 ml (0.1 to 0.2 ml is adequate) is drawn up into a dry and sterilized syringe and is injected slowly and with minimal pressure just within the cervical canal. Most of it escapes back into the upper vagina. The patient should remain lying flat for about five minutes afterwards.

If artificial insemination is indicated, then it will only be effective if performed at about the time of ovulation. This can sometimes be roughly determined from daily records of the waking vaginal or rectal temperature, the occurrence of ovulation being indicated by a fall followed by a sharp rise within twenty-four hours. Ovulation pain or haemorrhage may also be a useful guide. If it is impracticable to determine the time of ovulation then insemination should be repeated every two or three days between the eighth and eighteenth days of a twenty-eight day cycle, i.e., four or five times in all. It should be realized moreover that insemination may have to be carried out during several monthly cycles before a pregnancy results.

Finally attention should be drawn to the medico-legal aspects of this procedure. They are considered in a leading article elsewhere in this issue (p. 605).

"Faecal B. Coli"

Q—The term 'faecal B. coli' is often used in bacteriological reports. Is there a B. coli which is not faecal? Does the term imply that the organism is of human origin? I believe that human B. coli cannot be distinguished from those of animal origin.

A—The term *B. coli* in its widest sense includes the large number of related strains and species forming the coli-aerogenes group of the genus *Bacterium*. Most of these organisms fall into one of two main subdivisions: (1) the faecal *B. coli* which commonly frequent the intestinal tract of man and animals, (2) the non-faecal *B. coli* which usually exist as free living forms associated with soil water and plants. Therefore many *B. coli* cur which are not faecal, those which are not faecal are widely distributed as animal parasites. There is no constant distinction between strains of human and those of animal origin. It is only to be expected each habitat is to a limited extent interchangeable and bacilli having intermediate characteristics are sometimes encountered. In spite of this it is useful in public health work to determine to which group contaminants in milk and drinking water belong. This broad distinction is based on a study of the organism's biochemical reactions. Non-faecal *B. coli* from such sources have very much less significance

than those of faecal type since the presence of the latter implies probable faecal pollution and all the risks of infection with intestinal pathogens which this may entail.

Intermittent Claudication

Q—I have read that the Americans have had excellent results from injections of vitamin C and histidine in intermittent claudication. Has it been tried in this country?

A—This question evidently refers to the preliminary report of Wirtschafter and Widman (*J. Amer. med. Ass.* 1947, 133, 604) on the treatment of eleven cases of peripheral vascular disease with histidine and ascorbic acid. The rationale of the treatment is that ascorbic acid converts histidine slowly into histamine, which acts as a vasodilator. These authors give 500 mg of sodium ascorbate intravenously followed by 5 ml of a 4% solution of histidine hydrochloride intramuscularly and 100 mg of sodium ascorbate intravenously. Treatment is repeated every 4, 6, 8, or 12 hours according to the severity of the condition. So far as we are aware the method has not been tried in this country.

Edentulous Halitosis

Q—Since having all her teeth extracted for dental sepsis a patient has complained of an unpleasant taste in the mouth and notices a film on her dentures. It is temporarily relieved after meals and by mouth-washes. The tongue, buccal mucosa and pharynx appear normal. What treatment is recommended?

A—Occasionally a small fragment of tooth root left behind during extractions is to blame in such cases. A small sinus may be found from which pus can be expressed. In consequence it is always advisable to have a full set of dental x-ray films in such a case to exclude the presence of any retained roots. Should no such obvious cause be present to account for the unpleasant taste, the denture itself is sometimes to blame. Some patients do not tolerate vulcanite well, and trouble sometimes occurs where the rubber has not been thoroughly vulcanized. In these cases it is worth trying an acrylic resin denture. The latter type however, sometimes itself gives rise to a taste where the resin has not been thoroughly processed.

Burnt Nipple and Lactation

Q—A patient now aged 23 suffered a burn in early childhood involving the nipple and areola of the right breast. The nipple is considerably smaller than that of the other side, and the openings of the lactiferous ducts appear to be obliterated. Can a nipple which will function be established?

A—There is no known method of establishing new openings to lactiferous ducts which have been obliterated as a result of a burn in early childhood. If, however, the nipple is present as in this case, it is likely that some degree of lactation may prove possible, as a few remaining ducts may communicate with secretory tissue.

Death Rates, 1936-46

Q—How does the present death rate compare with the pre-war rate and with that during the war?

A—The crude death rate of 11.5 per 1,000 in 1946 was below the average of the immediate pre-war years and the average of the war years. The death rate during 1936-9 varied from 11.6 to 12.4 and during 1940-4 the death rate ranged from 11.5 to 13.9.

Penicillin Desensitization

Q—A patient has had severe reactions to various forms of penicillin treatment, also a violent eczematous reaction following a subcutaneous test dose of the drug. I should like to know if desensitization to penicillin has been undertaken. Is the immunity of a lasting type? Does desensitization of the tissue cells lead to any insensitivity of the infecting organisms to the drug thus reducing its therapeutic efficacy?

A—O. Donovan and Klorfaja (*Lancet* 1946, 2, 444) desensitized a patient by giving 15,000 units by mouth several times a day for a fortnight. There is no reason to suppose that anyone who has ceased to be sensitive will spontaneously become so again, though further treatment might, of course, reproduce

condition. There is no connexion whatever between tissue activity and the susceptibility of micro organisms to penicillin, hence there is no danger that desensitization would lead to any impairment of therapeutic effect.

Pediculosis

Q—*Are there other hosts than man for *Pediculus capitis* and *corporis* and *Phthirus pubis*? If so what?*

A—There are no other natural hosts than man. Some American workers have shown that *P. humanus corporis* can be reared with considerable difficulty on the rabbit (Davis and Hansens, *Amer J Hyg* 1945, 41 1). The abdomen was shaved daily and the lice fed two or three times a day. Even so there was a high mortality, though it was just possible to rear two generations on this host.

Sexual Frigidity

Q—*Is there any remedy for a fertile young married woman with markedly subnormal sexual desire associated with abnormal sleepiness? She is otherwise normal. Could the condition have an endocrine basis?*

A—Sexual frigidity is rarely due to an endocrine cause, and more often is the result of a faulty outlook on sex matters or a failure on the part of the husband to rouse the sex-urge, which usually is latent in women and has to be developed by careful and patient education. In this case, however, the association of sleepiness raises the possibility of a hypothalamic or hypothalamic pituitary disorder. The fact that she is fertile is evidence against any gross pituitary fault, but a lesion in the central nervous system should be excluded, so also should hypothyroidism. If no organic cause can be found hormone therapy is not likely to help, and the first step should be to make sure that the husband is fully aware of his duties in respect of love-making, one of the many books on the subject might help him. There should also be careful inquiry into the past history of the wife to see if there is any factor in her upbringing or any experience in earlier years which has given her a revulsion to the physical side of marriage.

Tests of Paternity

Q—*Is there any reliable method of proving the paternity of a child who bears a strong resemblance to a suspected party and none at all to the supposed father?*

A—No test yet devised will positively assign paternity to a child, but examination of the inheritable (blood-group) characters of the blood in relation to the supposed parents will in about one-third of the cases disprove the paternity of a particular man, for example a husband who is not really the father. Broadly speaking the child cannot have a group-character that it has not inherited from one or other parent. If all its group characters are accounted for in the blood of the husband and wife then the husband can (not necessarily must) be its father. Any character not possessed by one or other of the couple must, on the other hand, have come from a man not the husband. Small samples of blood are needed from husband, wife and child. Unfortunately since medico-legal blood grouping was discontinued at St Mary's Hospital, it has become very difficult to get the tests done in this country.

INCOME TAX

All inquiries will receive an authoritative reply but only a selection can be published.

Cost of Books

N E asks whether the cost of replacing old editions of medical books with new editions is an allowable expense.

*** *** It depends on the nature of the earnings from which the deduction of such expenses is claimed. If the earnings are assessable under schedule D (e.g., are derived from general practice) such expenses are normally allowable. If, however, the earnings are assessable under Schedule E (as are the emoluments of an employment) such expenses are disallowed on the ground that they are not incurred necessarily in the performance of the duties of the employment but rather to put the taxpayer into a position to perform them.

Letters and Notes

Blood Products for Transfusion by Ship Surgeons

The normal issue for each ship will be six bottles of dried plasma or serum together with sterile distilled water for reconstitution and two sterile giving sets. If this is considered insufficient, increased supplies may be made after consultation by writing or in person with the transfusion officer concerned, but no more than six bottles will be issued to an accredited messenger without such consultation. Any material not used within six months should be taken as so far as possible to the nearest depot for inspection. Supplies will not be available through shipping chemists. Further supplies will be issued against the return of the empty or unused bottles and giving sets to any of the undermentioned centres.

London Docks—The House Governor, London Hospital, Whitechapel, Tel. Bishopsgate 8333. **Southampton**—Dr H. H. Glass, Royal Southampton Hospital, Southampton, Tel. Southampton 76211. **Plymouth Falmouth and Avonmouth**—Regional Transfusion Centre, Southmead, Bristol, Tel. Bristol 68021. **Cardiff and Wales Ports**—Regional Transfusion Centre (Welsh Board of Health), Newport Road, Cardiff, Tel. Cardiff 4521. **Liverpool**—Regional Transfusion Centre, 102-4, Whitechapel, Liverpool, 1, Tel. Ro 6314-5-6, Ext. 85. **Glasgow and West Scotland Ports**—Glasgow and West of Scotland Blood Transfusion Service, 15, North Portland Street, Glasgow, C1. Tel. Glasgow, Bell, 4111. **Edinburgh and East Scotland Ports**—Edinburgh and South East Scotland Blood Transfusion Service, Clinical Laboratory, Royal Infirmary, Edinburgh 3, Tel. Edinburgh 26031, Ext. 179. **Newcastle**—Regional Transfusion Centre, 78, Jesmond Road, Newcastle upon Tyne, Tyne 7. **Jesmond** 2992. **Hull**—Regional Transfusion Centre, E.M.S. Hospital, Meanwood Park Colony, Tongue Lane, Leeds, 2, Tel. Lx 52651.

Gifts to Hospitals

The British Hospitals Association has prepared a memorandum which explains briefly how intending donors may still make gifts to hospitals with the assurance that their benefactions will be applied in accordance with their intentions and for the benefit of the particular hospital or locality in which they are interested. This object can be accomplished by taking care that the will, or deed of gift, or directions, make it clear that the gift is to be treated as a capital fund, separate from the general funds of the hospital, as a fund for some specific object of a capital nature. Such a gift may consist of money or of property. A point to be noted also is whether the gift is made before or after the "appointed day." Appropriate forms of words for use in making gifts to a hospital are included in the memorandum. These have been prepared by Chancery counsel at the request of the British Hospitals Association.

Buccal Ulceration and Menstruation

Dr A. G. T. Brown (Horley, Surrey) writes: "I noted the question (March 15 p. 365) put by a doctor concerning his edentulous patient who suffered from buccal ulceration near the time of menstruation and asking for the treatment. I saw a woman of the same name months ago with the same trouble who had had all dental work excluded. Stilboestrol gave her violent nausea but stopped the ulcers completely. In this case they were on the upper gum opposite the canine teeth. Subsequent trial with dienoestrol 0.3 mg. during the second half of the cycle taken every other day seemed to have prevented recurrence. Your correspondent may be interested in this treatment."

Correction

In our Epidemiological Notes of April 19 (p. 550) the statement "In Aberdeen 89 babies have died of gastro enteritis during the past three months" was incorrect. Over this period 89 was the total number of deaths of children under one year, of these deaths 31 were due to gastro enteritis.

All communications with regard to editorial business should be addressed to the EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE EUSTON 2111. TELEGRAMS: ALICE WESTCENT LONDON. ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the British Medical Journal and unless the contrary be stated.

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SOME PROBLEMS IN THE TITRATION OF STREPTOMYCIN

BY

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AND

ALEXANDER FLEMING, FRS

(From the Laboratories of the Inoculation Department St Mary's Hospital)

In the titration of an antibiotic substance it has been usual to choose for the test organism a microbe which is very sensitive and which is easy to work with. For streptomycin use has been made of Gram-negative bacilli such as *B. coli* or Friedlander's bacillus, and one strain of Friedlander's bacillus (*Klebsiella* 41) has been extensively employed in America. In this article we propose to deal with some of the difficulties we have encountered in the titration of streptomycin in solution or in the patient's serum. We might say here that, as we had no official standard solution of streptomycin, we used for these tests a standard solution made up by dissolving in 100 ml the contents of one bottle of Merck's streptomycin, which was labelled as containing 1 g of streptomycin hydrochloride.

Influence of the Nature of the Culture Medium

For some time we have been using glucose-phenol-red-serum water for the titration of penicillin in patients' serum. When streptomycin was titrated in this medium we found that we obtained a much higher end-point than when it was titrated in ordinary broth. We therefore made observations on the bacteriostatic power of streptomycin on a number of different organisms in four different media—namely, (a) ordinary digest broth, (b) peptone water, (c) glucose-phenol-red-serum water (this is made by boiling for a few minutes serum, 2 parts, distilled water, 6 parts, 10% glucose solution, 2 parts, and saturated solution of phenol red, sufficient to give a red colour), (d) defibrinated human blood, inactivated.

In regard to the first three media serial twofold dilutions of the stock streptomycin were made in the media which had been inoculated with 10 cmm per ml of a 24-hour culture of the test organism. This was done in 0.5 ml quantities in test-tubes. With broth and peptone water the end-point was the appearance of visible growth after 24 hours. In the serum water there was a colour change from red to yellow, and a precipitation of the medium where the organisms grew and fermented the glucose.

When the test was made in blood the streptomycin was diluted in saline in 25-cmm volumes, these were mixed with the same volume of blood which had been suitably infected with the test organism, and incubated in slide cells. As the growth of Friedlander's bacillus in blood is not very

obvious 2% glucose was added when testing this organism. When growth then occurred the blood was haemolysed and a good end-point obtained. The results are shown in Table I.

TABLE I—Bacteriostatic Power of Streptomycin tested in Different Media

Test Organism	Lowest Concentration (in Thousands) of Streptomycin Completely Inhibiting Growth in			
	Broth	Peptone Water	Glucose-Phenol-red-Serum Water	Human Blood Inactivated
Haemolytic streptococcus	1/100	No growth	1/2000	1/40
Staphylococcus	1/320	1/1600	1/4000	1/1000
<i>C. diphtheriae</i>	1/600	1/1600	1/4000	1/1000
<i>B. coli</i> (haemolytic)	1/40	1/160	1/1000	1/400
<i>Klebsiella</i> 41	1/320	1/500	1/4000	1/1000*
Friedlander 3	1/1500	1/4000	1/10 000	1/1000*

* A good end point was obtained only when 2% of glucose was added to the blood.

These results show that there is a great difference in the end-point according to the culture medium used. With one exception the lowest readings were obtained in broth, and invariably the highest readings were those in serum water. It is interesting that the results in human blood are usually considerably higher than in broth.

Influence of Dilution of the Culture Medium

In the first experiments streptomycin solution in distilled water was titrated in broth and in a tenfold dilution of this broth in distilled water. The titrations were done in 0.5 ml quantities in small test-tubes, and the end-point was the appearance of visible growth. The results are shown

TABLE II—Effect of Dilution of the Culture Medium with Water in the Titration of Streptomycin

Test Organism	Least Concentration Completely Inhibiting Growth of Test Organism in Broth	
	Undiluted	Tenfold Diluted
Staphylococcus	1/300 000	1/60 000 000
Haemolytic streptococcus	1/200 000	1/1 000 000
<i>C. diphtheriae</i>	1/600 000	1/60 000 000
<i>B. coli</i>	1/80 000	1/1 000 000
<i>Klebsiella</i> 41	1/300 000	1/100 000 000

in Table II. In this titration all the constituents of the broth were diluted. Another titration was done in broth and tenfold-diluted broth, to each of which glucose was added to make 2%. This gave the results shown in

TABLE III—Test Organism *Klebsiella 41* Growth in Dilutions of Streptomycin (in thousands)

	1/100	1/500	1/2500	1/12 500	1/62,500	Control
Broth + glucose	0	+	+	+	+	+
Tenfold-diluted broth + glucose	0	+	+	+	+	+

Table III. In both these experiments there was an enormous difference in the end-point in the diluted medium.

Meantime other experiments had shown that the salt content of the medium had some influence on the end-point, so titrations were made in broth, and in broth diluted ten times with water and with normal saline. The results

TABLE IV—Test Organism *Klebsiella 41* Growth in Dilutions of Streptomycin (in thousands)

	1/100	1/500	1/2500	1/12 500	1/62 500	Control
Broth undiluted	0	+	+	+	+	+
diluted in saline	0	+	+	+	+	+
in water	0	0	0	0	+	+

are shown in Table IV. This showed that the salt content of the medium made a considerable difference.

We made similar observations using serum water as the culture medium. The original serum water (serum 1 part boiled with 3 parts distilled water) was diluted with water and with saline, and to each was added 1% glucose and phenol red. The results appear in Table V.

TABLE V—Growth of *Klebsiella 41* in Serum Water diluted with Water and with Saline and containing Streptomycin as Under (in thousands)

	1/1600	1/3200	1/6400	1/12 800	1/25 600	1/51 200	1/100 000	Control
Serum water undiluted	0	0	0	+	+	+	+	+
Serum water diluted 10 times in saline 0.85%	0	0	+	+	+	+	+	+
Serum water diluted 10 times in water	0	0	0	0	0	0	+	+

The original serum-water medium has a much lower salt content than normal saline. (The only salt in it is that of the serum, which is diluted four times in water.) When this was diluted with water the titre of the streptomycin was much higher than in the undiluted serum water, but when it was diluted in normal saline it was slightly lower. When the salt content of undiluted serum water was raised to 0.85% it gave exactly the same end-point as did tenfold-diluted serum water with the same salinity.

These experiments confirm the statement which often appears in streptomycin literature, that the salt content is of considerable importance and that saline solutions to some extent inhibit streptomycin.

Effect of the Size of the Inoculum of the Test Organism

Experiments were made to see whether streptomycin behaves like penicillin, which gives the same end-point whatever the inoculum within quite wide limits, or like sulphadiazide, which is very sensitive to changes in the size of the inoculum. The same batch of medium (glucose-phenol-red-serum water) was divided into 4-ml volumes which were inoculated with 0.1 ml of serial dilutions of a

broth culture of the test organism (*Klebsiella 41*). Streptomycin solution 1 in 1,000,000 was titrated with each of these media, with the results shown in Table VI.

TABLE VI

Dilution of Broth Culture used as Inoculum	Growth resulting in Concentrations of Streptomycin (in millions)					
	1/2	1/4	1/8	1/16	1/32	Control
1/1	0	0	+	+	+	+
1/10	0	0	+	+	+	+
1/100	0	0	0	+	+	+
1/1000	0	0	0	+	+	+
1/10 000	0	0	0	0	+	+
1/100 000	0	0	0	0	+	+
1/1,000 000	0	0	0	0	+	+

It will be seen that there is a definite change in the end-point as the inoculum gets smaller. The titration is sensitive enough when the inoculum is considerable, as we have found that when very small inocula are used the results may be irregular. We have therefore used as routine an inoculum of 10 cmm of a 24-hour broth culture to each 1 ml of the culture medium.

Influence of Atmospheric Conditions

Experiments were conducted to see whether anaerobic conditions influenced the end-point. For the most part these were done in a very simple manner by making serial dilutions in 1-ml quantities in the infected culture medium and then transferring 0.5 ml to another set of tubes in which the fluid was covered with a layer of melted petroleum jelly. Thus we had one series of tubes fully exposed to the air and another exactly similar set from which air was excluded. It was found that with some of the organisms it required, in the absence of air, a higher concentration of streptomycin to inhibit growth completely.

TABLE VII—Influence of Anaerobic Conditions on the Titration of Streptomycin. Test Organism *Klebsiella 41* Medium: Glucose-Phenol-red-Serum Water

	Growths in Dilutions of Streptomycin Solutions				
	1/8	1/16	1/32	1/64	Control
Aerobic	0	0	0	+	+
Anaerobic	0	+	+	+	+

The same result was obtained when the anaerobic tubes were incubated (without the petroleum jelly covering) in an anaerobic jar.

Incubation in Capillary Tubes—In the past, when titrating penicillin in a patient's serum, we used small volumes and incubated in capillary tubes the serum dilutions with the test streptococcus and human blood. Later we used the same technique but diluted the serum in glucose-phenol-red-serum water. The capillary tubes were sealed in the flame and incubated horizontally stuck in "plasticine" on a microscope slide. When we adopted this last method with streptomycin, using *B. coli* or Friedlander's bacillus as the test organism, the end point was often obscured by the fact that in several tubes there was only a partial change of colour—one portion of the tube would be yellow and another red. We found also that the end-point was not the same as it was when the fluids were incubated in open tubes. We therefore compared the results obtained by incubating the same fluids in four different ways: (a) in 0.5-ml quantities in open test tubes; (b) in capillary tubes (about 1 in (2.5 cm) column of fluid); (b1) unsealed and incubated horizontally, (b2) sealed and incubated horizontally, (b3) sealed and incubated vertically.

TABLE VIII

Method of Incubation	Dilution of Streptomycin Solution				
	1/8	1/16	1/32	1/64	Control
Test tubes open	0	0	0	+	+
Capillaries open horizontal	0	0	0	+	+
closed horizontal	0	±	+	+	+
vertical	±	±	+	+	+

The results with open test-tubes and open capillaries were identical, but when the capillaries were sealed (in the flame) it required more streptomycin to inhibit growth and still more when they were incubated vertically. It seems possible that this may, in part at least, be due to the diminished access of air in the closed tube. This result was obtained with *B. coli* and Friedlander's bacillus and staphylococcus, but when streptococcus was used as the test organism the end-point was the same whether the capillaries were open or closed, and whether they were incubated horizontal or upright.

The fact that open capillaries gave what is apparently the true reading is fortunate in that it saves the time which would be occupied in sealing them. The capillaries used were about 4 in (10 cm) long and approximately 1 mm in diameter. When stuck horizontally in plasticine the fluid (unless there is rough handling) remains in place near the middle.

Sensitivity of Different Bacteria to Streptomycin

Many tables have been published giving the amount of streptomycin necessary to inhibit the growth of different bacteria. In a consideration of these figures we must take into account the medium in which the test was made, for, as we have seen, the nature of the culture medium makes a vast difference to the result.

TABLE IX—Sensitivity of Bacteria to Streptomycin in Broth and in Glucose-Phenol red-Serum Water

	No of Strain	Lowest Concentration Completely Inhibiting Growth			
		Broth		Serum Water	
		Lowest	Highest	Lowest	Highest
Friedlander's bacillus	5	1/30 000	1/1 500 000	1/2 000 000	1/12 000 000
<i>B. coli</i>	18	1/40 000	1/160 000	1/500 000	1/2 000 000
<i>Ps. pyocyanea</i>	5	1/20 000	1/40 000	1/1 000 000	1/4 000 000
<i>B. proteus</i>	6	1/10 000	1/20 000	1/500 000	1/2 000 000
<i>B. typhosus</i>	8	1/20 000	1/80 000	1/500 000	1/4 000 000
<i>B. paratyphosus A</i>	4	1/20 000	1/40 000	1/1 000 000	1/2 000 000
<i>B. paratyphosus B</i>	5	1/20 000	1/40 000	1/500 000	1/1 000 000
<i>B. paratyphosus C</i>	1	1/20 000		1/1 000 000	
Other Salmonella	6	1/20 000	1/160 000	1/500 000	1/2 000 000
<i>B. dysenteriae</i>	4	1/160 000	1/160 000	1/1 000 000	1/1 000 000
Haemolytic streptococcus	1	1/160 000		1/1 000 000	
<i>Streptococcus viridans</i>	7	1/50 000	1/400 000	1/1 000 000	1/6 000 000
Staphylococci	2	1/320 000	1/320 000	1/4 000 000	1/4 000 000
<i>H. influenzae</i> (Fildes extract added)	4	1/100 000	1/100 000	1/600 000	1/600 000

In Table IX we set forth the results obtained with a large number of organisms tested in our ordinary nutrient broth and in glucose-serum water. When figures are given as to the effect of streptomycin on bacteria it is quite obvious that the culture medium should be described, and it is also very desirable that a standard organism should be included in the test—such as the staphylococcus, which has been universally used for penicillin titration, or Friedlander's bacillus (*Klebsiella 41*).

Distribution of Streptomycin in Blood—Experiments were made to determine the relative amount of streptomycin in the corpuscles and the serum. A citation of one of these will serve.

Streptomycin 1/500 000 was added to serum. This was divided into two parts. One of these was mixed with an

equal volume of packed cells which had not previously been in contact with streptomycin. At intervals a sample of the mixture was centrifuged and the streptomycin content of the serum was compared with that of the control serum, to which no cells had been added. After one hour the bulk of the streptomycin remained in the serum and only a relatively small amount had passed into the corpuscles, but after six hours the streptomycin was equally distributed between the serum and the corpuscles.

Testing of a Patient's Serum for Streptomycin—As with penicillin it is desirable, in order to avoid undue bleeding of the patient, to use a micro-method, and the methods employed for penicillin are applicable to streptomycin, with a possible change of the test organism. Normal sera containing no streptomycin were tested by making dilutions in glucose-phenol-red-serum water infected with *B. coli* or Friedlander's bacillus, and it was found that growth was inhibited in the higher concentrations of serum. Sometimes it was only a 1 in 2 dilution which inhibited, but sometimes as much as 1/32 dilution showed no growth. When the serum was inactivated this bacteriostatic action disappeared. It follows from this that if this organism is used the serum must be inactivated, otherwise it will be impossible to detect small amounts of streptomycin in the serum.

Use of Liquoid for Inactivation—Inactivation of the serum by heat meant another operation, and we thought that by adding liquoid to the culture medium we might destroy the antibacterial power of the serum. Liquoid in a concentration of 1 in 2,000 did not interfere with the growth of any of the test organisms, and it completely destroyed the antibacterial power of the serum. We thought we had solved this problem until we discovered that liquoid interfered in some way with the action of streptomycin, as is shown in the following experiment (Table X). Different concentrations of liquoid were made in serum-water medium, and solutions of 1 in 200,000 streptomycin in the same concentration of liquoid were titrated in each of these media.

TABLE X

Concentration of Liquoid in Medium	Growth of Staphylococcus in Concentrations of Streptomycin (in thousands)						
	1/400	1/800	1/1600	1/3200	1/6400	1/12 800	Control
1/500	0	+	+	+	+	+	+
1/1000	0	0	±	+	+	+	+
1/2000	0	0	0	+	+	+	+
Control no liquoid	0	0	0	±	±	+	+

This interference of liquoid with streptomycin made it an unsuitable inactivating agent, and when using a test organism which is inhibited by human serum such serum has to be inactivated by heat before its streptomycin content is estimated. It was found that inactivation of the serum by heat (half an hour at 56° C) did not destroy the streptomycin.

The method of titrating streptomycin in blood serum which we have finally adopted is as follows.

1 Culture Medium—Serum 1 part, distilled water 4 parts boiled or steamed with 1% glucose and sufficient of a saturated watery solution of phenol red to give a very definite red colour. For use 1 ml of this medium is inoculated with 10 ml of a 24 hour broth culture of the test organism.

2 Test Organism—The Friedlander's bacillus (*Klebsiella 41*) which has been in use in America is very suitable, but if this is employed the patient's serum must be inactivated by heat before the test. Staphylococcus may be used (choosing a strain which is not inhibited by human serum). It is almost as sensitive as *Klebsiella 41* and there is no need to inactivate the serum. If the patient has had penicillin, staphylococcus cannot be used unless penicillinase is added to the medium.

in Table II. In this titration all the constituents of the broth were diluted. Another titration was done in broth and tenfold diluted broth, to each of which glucose was added to make 2%. This gave the results shown in

TABLE III—*Test Organism Klebsiella 41* Growth in Dilutions of Streptomycin (in thousands)

	1/100	1/500	1/2500	1/12 500	1/62 500	Control
Broth + glucose	0	+	+	+	+	+
Tenfold-diluted broth + glucose	0	+	+	+	+	+

Table III. In both these experiments there was an enormous difference in the end-point in the diluted medium.

Meantime other experiments had shown that the salt content of the medium had some influence on the end-point, so titrations were made in broth, and in broth diluted ten times with water and with normal saline. The results

TABLE IV—*Test Organism Klebsiella 41* Growth in Dilutions of Streptomycin (in thousands)

	1/100	1/500	1/2500	1/12 500	1/62 500	Control
Broth undiluted	0	+	+	+	+	+
diluted in saline	0	0	0	+	+	+
in water	0	0	0	0	+	+

are shown in Table IV. This showed that the salt content of the medium made a considerable difference.

We made similar observations using serum water as the culture medium. The original serum water (serum 1 part boiled with 3 parts distilled water) was diluted with water and with saline, and to each was added 1% glucose and phenol red. The results appear in Table V.

TABLE V—*Growth of Klebsiella 41* in Serum Water diluted with Water and with Saline and containing Streptomycin as Under (in thousands)

	1/1600	1/3200	1/6400	1/12 800	1/25 600	1/51 200	1/100 000	Control
Serum water undiluted	0	0	0	+	+	+	+	+
Serum water diluted 10 times in saline 0.85%	0	0	+	+	+	+	+	+
Serum water diluted 10 times in water	0	0	0	0	0	0	+	+

The original serum-water medium has a much lower salt content than normal saline. (The only salt in it is that of the serum, which is diluted four times in water.) When this was diluted with water the titre of the streptomycin was much higher than in the undiluted serum water, but when it was diluted in normal saline it was slightly lower. When the salt content of undiluted serum water was raised to 0.85% it gave exactly the same end-point as did tenfold-diluted serum water with the same salinity.

These experiments confirm the statement which often appears in streptomycin literature, that the salt content is of considerable importance and that saline solutions to some extent inhibit streptomycin.

Effect of the Size of the Inoculum of the Test Organism

Experiments were made to see whether streptomycin behaves like penicillin, which gives the same end-point whatever the inoculum within quite wide limits, or like sulphanilamide, which is very sensitive to changes in the size of the inoculum. The same batch of medium (glucose-phenol-red-serum water) was divided into 4-ml volumes which were inoculated with 0.1 ml of serial dilutions of a

broth culture of the test organism (*Klebsiella 41*). A streptomycin solution 1 in 1,000,000 was titrated with each of these media with the results shown in Table VI.

TABLE VI

Dilution of Broth Culture used as Inoculum	Growth resulting in Concentrations of Streptomycin (in millions)					
	1/2	1/4	1/8	1/16	1/32	Control
1/1	0	0	+	+	+	+
1/10	0	0	+	+	+	+
1/100	0	0	+	+	+	+
1/1000	0	0	0	+	+	+
1/10 000	0	0	0	0	+	+
1/100 000	0	0	0	0	+	+
1/1 000 000	0	0	0	0	+	+

It will be seen that there is a definite change in the end-point as the inoculum gets smaller. The titration is sensitive enough when the inoculum is considerable, as we have found that when very small inocula are used the results may be irregular. We have therefore used as routine an inoculum of 10 c.mm. of a 24-hour broth culture to each 1 ml. of the culture medium.

Influence of Atmospheric Conditions

Experiments were conducted to see whether anaerobic conditions influenced the end-point. For the most part these were done in a very simple manner by making serial dilutions in 1-ml quantities in the infected culture medium and then transferring 0.5 ml to another set of tubes in which the fluid was covered with a layer of melted petroleum jelly. Thus we had one series of tubes fully exposed to the air and another exactly similar set from which air was excluded. It was found that with some organisms it required, in the absence of air, a higher concentration of streptomycin to inhibit growth completely.

TABLE VII—*Influence of Anaerobic Conditions on the Titration of Streptomycin* Test Organism *Klebsiella 41* Medium 1 Glucose-Phenol red-Serum Water

	Growths in Dilutions of Streptomycin Solutions				
	1/8	1/16	1/32	1/64	Control
Aerobic	0	0	0	+	+
Anaerobic	0	+	+	+	+

The same result was obtained when the anaerobic tubes were incubated (without the petroleum jelly covering) in an anaerobic jar.

Incubation in Capillary Tubes—In the past, when titrating penicillin in a patient's serum, we used small volumes and incubated in capillary tubes the serum dilutions with the test streptococcus and human blood. Later we used the same technique but diluted the serum in glucose-phenol-red-serum water. The capillary tubes were sealed in the flame and incubated horizontally stuck to "plasticine" on a microscope slide. When we adopted this last method with streptomycin, using *B. coli* or Friedlander's bacillus as the test organism, the end point was often obscured by the fact that in several tubes there was only a partial change of colour—one portion of the tube would be yellow and another red. We found also that the end-point was not the same as it was when the fluids were incubated in open tubes. We therefore compared the results obtained by incubating the same fluids in four different ways: (a) in 0.5-ml quantities in open test tubes; (b) in capillary tubes (about 1 in 2.5 cm) column of fluid; (b1) unsealed and incubated horizontally, (b2) sealed and incubated horizontally, (b3) sealed and incubated vertically.

TABLE VIII

Method of Incubation	Dilution of Streptomycin Solution				
	1/8	1/16	1/32	1/64	Control
Test tubes open	0	0	0	+	+
Capillaries open	0	0	0	+	+
horizontal	0	±	+	+	+
closed	±	±	+	+	±
horizontal					
vertical					

The results with open test-tubes and open capillaries were identical, but when the capillaries were sealed (in the flame) it required more streptomycin to inhibit growth and still more when they were incubated vertically. It seems possible that this may, in part at least, be due to the diminished access of air in the closed tube. This result was obtained with *B. coli* and Friedlander's bacillus and staphylococcus, but when streptococcus was used as the test organism the end-point was the same whether the capillaries were open or closed, and whether they were incubated horizontal or upright.

The fact that open capillaries gave what is apparently the true reading is fortunate in that it saves the time which would be occupied in sealing them. The capillaries used were about 4 in (10 cm) long and approximately 1 mm in diameter. When stuck horizontally in plasticine the fluid (unless there is rough handling) remains in place near the middle.

Sensitivity of Different Bacteria to Streptomycin

Many tables have been published giving the amount of streptomycin necessary to inhibit the growth of different bacteria. In a consideration of these figures we must take into account the medium in which the test was made, for, as we have seen, the nature of the culture medium makes a vast difference to the result.

TABLE IX—Sensitivity of Bacteria to Streptomycin in Broth and in Glucose-Phenol red-Serum Water

	No of Strain	Lowest Concentration Completely Inhibiting Growth			
		Broth		Serum Water	
		Lowest	Highest	Lowest	Highest
Friedlander's bacillus	5	1/30 000	1/1 500 000	1/2 000 000	1/12 000 000
<i>B. coli</i>	18	1/40 000	1/160 000	1/500 000	1/2 000 000
<i>Ps. pyocyanea</i>	5	1/20 000	1/40 000	1/1 000 000	1/4 000 000
<i>B. proteus</i>	6	1/10 000	1/20 000	1/500 000	1/2 000 000
<i>B. typhosus</i>	8	1/20 000	1/80 000	1/500 000	1/2 000 000
<i>B. paratyphosus A</i>	4	1/20 000	1/40 000	1/1 000 000	1/2 000 000
<i>B. paratyphosus B</i>	5	1/20 000	1/40 000	1/1 000 000	1/2 000 000
<i>B. paratyphosus C</i>	1	1/20 000	1/40 000	1/1 000 000	1/2 000 000
Other Salmonella	6	1/20 000	1/160 000	1/1 000 000	1/2 000 000
<i>B. dysenteriae</i>	4	1/160 000	1/160 000	1/1 000 000	1/2 000 000
Haemolytic streptococcus	1	1/160 000	1/160 000	1/1 000 000	1/1 000 000
<i>Streptococcus viridans</i>	7	1/50 000	1/400 000	1/1 000 000	1/6 000 000
Staphylococci	2	1/320 000	1/320 000	1/4 000 000	1/4 000 000
<i>S. influenzae</i> (Fildes extract added)	4	1/100 000	1/100 000	1/600 000	1/600 000

In Table IX we set forth the results obtained with a large number of organisms tested in our ordinary nutrient broth and in glucose-serum water. When figures are given as to the effect of streptomycin on bacteria it is quite obvious that the culture medium should be described, and it is also very desirable that a standard organism should be included in the test—such as the staphylococcus, which has been universally used for penicillin titration, or Friedlander's bacillus (*Klebsiella* 41).

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Streptomycin 1/500,000 was added to serum. This was divided into two parts. One of these was mixed with an

equal volume of packed cells which had not previously been in contact with streptomycin. At intervals a sample of the mixture was centrifuged and the streptomycin content of the serum was compared with that of the control serum, to which no cells had been added. After one hour the bulk of the streptomycin remained in the serum and only a relatively small amount had passed into the corpuscles, but after six hours the streptomycin was equally distributed between the serum and the corpuscles.

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TABLE X

Concentration of Liquoid in Medium	Growth of Staphylococcus in Concentrations of Streptomycin (in thousands)					
	1/400	1/800	1/1600	1/3200	1/6400	1/12 800
Control	+	+	+	+	+	+
1/500	0	+	+	+	+	+
1/1000	0	0	±	+	+	+
1/2000	0	0	0	±	+	+
Control no liquoid	0	0	0	0	±	+

This interference of liquoid with streptomycin made it an unsuitable inactivating agent, and when using a test organism which is inhibited by human serum such serum has to be inactivated by heat before its streptomycin content is estimated. It was found that inactivation of the serum by heat (half an hour at 56° C) did not destroy the streptomycin.

The method of titrating streptomycin in blood serum which we have finally adopted is as follows.

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3 Serial dilutions of the serum to be tested are made in normal saline solution, and to each of these dilutions is added an equal volume of the infected medium. We have preferred to use 0.25 ml volumes and carry out the incubation in capillary tubes open at both ends and stuck flat on plasticine on a microscope slide, but the test can be done in exactly the same way using larger volumes and incubating the mixtures in small test-tubes. When serum water is used as the medium for titration and *Klebsiella* 41 or *Staphylococcus* as the test organism the end point comes at a dilution of 1 in 4-6 million. In blood it requires about 1 in 1 million concentration of streptomycin to inhibit growth completely, so that this method will indicate a smaller amount of streptomycin than the therapeutic level, whereas if broth is used this would not be so. Serum water is also more suitable for the test as it is an unbuffered medium and the end point is more easily read than it is in broth.

4 Control—As the final end point of the titrations depends on so many factors it is necessary to make a control titration of a known concentration of streptomycin (1 in 1,000,000) in human serum. A comparison of the end point obtained with this and with the patient's serum will give an absolute measurement of the streptomycin content in the latter.

The accompanying Chart illustrates the result obtained by titrations of patients' serum following intramuscular

one volume of this mixture is taken with the same pipette and mixed in the same way with the second drop of diluent. But the pipette in making the first mixture has been wetted up to the second graduation mark, so that in making the second dilution the whole volume plus an additional wash is mixed with the volume minus a wash. This is an error accumulating with each of the serial dilutions, and while it is small with a short series it becomes serious when ten or more serial dilutions are made in this way. The extent of the error may be seen in the following experiment.

Dilutions of streptomycin were made accurately 1/10,000, 1/50,000, 1/1,000,000, and 1/5,000,000. These were titrated by twofold dilutions in glucose-phenol red-serum water infected with Friedlander 3. With 1/10,000 strength 14 serial dilutions were made before an end-point was reached. Complete inhibition of growth occurred in what purported to be 1 in 80,000,000 and growth occurred in 1 in 160,000,000. With the 1 in 50,000 strength 11 serial dilutions gave an end point of inhibition in 1/50,000,000 and growth in 1/100,000,000. With the 1/1,000,000 strength 5 dilutions showed inhibition in 1/16,000,000 and growth in 1/32,000,000. With the 1 in 5,000,000 strength 2 dilutions showed inhibition in 1/10,000,000 and growth in 1/20,000,000. A control series done by a method which eliminates the wash gave the same result as the last.

It is quite evident, therefore, that a long series of twofold dilutions made in the usual way by a method in which there is the cumulative error of the wash may give results which are wide of the mark. It is suggested that the series of dilutions made in this way should not exceed 5 or 6.

Fleming (1924) has suggested a method whereby dilutions can be made with capillary pipettes which avoids the error of the wash and can be adapted to the titration of streptomycin or other substance.

Summary

In the titration of streptomycin the end point depends on (1) culture medium, (2) atmospheric conditions, (3) nature of the test organism, and (4) size of inoculum of the test organism.

Results are given for many organisms in broth and serum water.

A method of titration of streptomycin in patients' serum is described.

Attention is drawn to an error inherent in the method of serial dilutions by capillary tubes.

REFERENCE

Fleming, A (1924) *Brit J exp Path* 5 148

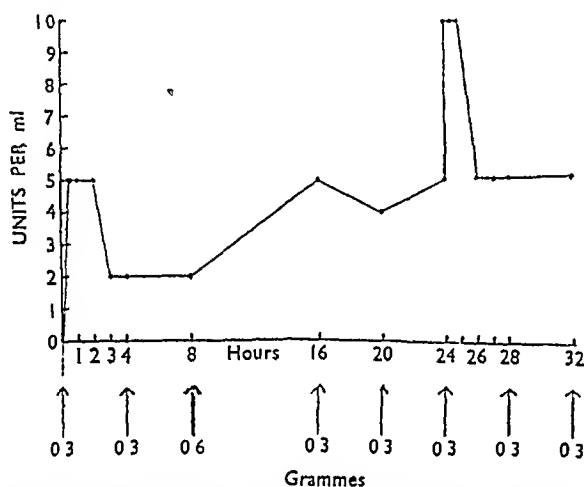


Chart showing the streptomycin content of a patient's serum after intramuscular injections of 0.33 g of the drug. The arrows represent time of injections.

injections of 0.33 g of streptomycin. Injections were given every four hours except that at bedtime that amount was doubled (indicated on the chart by a thick arrow), and eight hours elapsed before the next injection. The blood was tested just before each injection and at shorter intervals after the first and the sixth injections. It will be seen that at the end of the first injection interval there were still 2 units per ml in the serum, but after three injections the residual amount was maintained at 4 to 5 units.

ADDENDUM

Error in making Serial Dilutions with a Capillary Pipette

The usual method is to lay out on a paraffined slide a number of equal volumes from a graduated capillary pipette. None of these is the whole volume represented by the graduation, all of them are that volume less the wash of fluid which wets the inside of the pipette. This varies with the bore of the pipette and with the rate of expulsion, but Fleming (1924) estimated that with ordinary capillary pipettes and at the normal rate of working the wash amounted to about 3%.

The fluid to be diluted is taken up to the graduation mark in the pipette, expelled into the first drop of the diluent, and then mixed by sucking up and expelling the fluid several times. This means that the whole of the fluid to be diluted is mixed with the same volume of the diluent minus the wash. Then

The Royal Sanitary Institute will hold its 1947 health congress at Torquay, from June 2 to 6, at the invitation of the Corporation. The Earl Fortescue, Lord Lieutenant of the County of Devon, will be President of the Congress. The following is a selection from the provisional programme: June 2, 3 p.m., official welcome by the Mayor of Torquay and inaugural address by the president of the congress. June 3, 10 a.m., Section of Preventive Medicine, discussions on 'The Scope of Public Health after 1948' and 'The Present Position and Prospects in Whooping-cough Immunization'. Section of Engineering and Architecture, discussions on 'The Design and Location of Health Centres' and 'Engineering Standards in Relation to Health'. Sanitary Inspectors conference, discussions on 'The Social Aspect of the Housing Problem' and 'Milk: A Food for Thought'. June 4, 10 a.m., Medical Officers of Health conference, discussion on 'The National Health Service Act and the Public Health Service'. Health Visitors conference, discussion on 'The Expanding Duties of the Family Health Team'. June 5, 10 a.m., Section of Maternal and Child Health, discussion on 'Infantile Mortality: The Clinical Aspects'. Section of Tropical Hygiene discussion on 'The Practical Application of Recent Advances in Tropical Medicine and Hygiene in Rural Tropical Areas', (a) Anopheles (Malaria) Eradication in Karpas, Cyprus 1946, and (b) Native Welfare in its Wider Aspects, including Nutrition and Housing. June 6, 10 a.m., Section of Maternal and Child Health, discussion on 'Infantile Mortality: The Preventive Aspects'. Section of Veterinary Hygiene, discussion on 'The Importance of Cowshed Hygiene in the Transmission of Milk-borne Diseases'. Section of Food and Nutrition, in conjunction with the Food Group of the Society of Chemical Industry, discussion on 'The Microbiological Aspects of Food Quality'.

THE PHYSICAL HEALTH OF CHILDREN ATTENDING DAY NURSERIES

A REPORT TO THE DAY NURSERIES COMMITTEE
OF THE MEDICAL WOMEN'S FEDERATION

BY

MARGARET E McLAUGHLIN, MB, BS, DCH

PART II

6 Postural and Foot Conditions

Comparison was made between the home and nursery groups of the incidence of poor posture, genu valgum, and pes valgus in children over 2 years of age. Under 2 years a comparison was felt to be useless owing to the normal variation in time of walking and of development of the arches of the foot. (a) *Poor posture* included lordosis, round shoulders, stooping, and hyperextension or sagging of the knees on standing, (b) *Genu valgum* was recorded where the gap between the internal malleoli was over 1/2 in (1.25 cm) in the supine position, (c) *Pes valgus* included not only advanced flat foot but also those cases where the child habitually walked and stood on the inner border of the foot.

Results (Tables VIII IX X)—Poor Posture—A slightly higher incidence was recorded in the nursery group for all ages together (2-5) and in individual age groups, but no difference was significant except in boys of 2-5 years. **Genu valgum**—At all ages together (2-5) and in all individual age groups, there was a slightly higher incidence in the nurseries except among boys of 2-3 years, where the home group had a slightly higher rate. No differences were statistically significant except in girls of 2-3 years, where the nursery rate was significantly higher. **Pes valgus**—The nursery rate was higher throughout, and all differences were significant except among girls and boys of 4-5 years. Pes valgus was about two and a half times more frequent among nursery boys and three times more frequent among nursery girls than in the corresponding home groups.

TABLE VIII—Percentage of Examinations where Poor Posture was found

Age		Boys	Girls
2-3 years	Nursery	4.2	7.4
	Home	4.2	4.9
	Difference	0 ± 2.1	2.5 ± 2.5
3-4	Nursery	16.3	17.0
	Home	11.2	14.4
	Difference	5.1 ± 4.0	2.6 ± 3.9
4-5	Nursery	32.4	18.5
	Home	28.8	14.8
	Difference	3.6 ± 6.2	3.7 ± 4.6
2-5 years	Nursery	16.9	13.6
	Home	11.9	11.0
	Difference	5.0 ± 2.4*	2.6 ± 2.1

* Significant difference

TABLE IX—Percentage of Examinations where Genu Valgum was found

Age		Boys	Girls
2-3 years	Nursery	7.4	14.4
	Home	9.7	7.4
	Difference	-2.3 ± 2.9	7.0 ± 3.3*
3-4	Nursery	27.2	21.1
	Home	19.2	12.0
	Difference	8.0 ± 4.9	9.1 ± 4.0
4-5	Nursery	22.6	12.6
	Home	21.3	12.2
	Difference	1.3 ± 5.6	0.4 ± 4.1
2-5 years	Nursery	18.6	13.6
	Home	15.4	10.3
	Difference	3.2 ± 2.5	3.3 ± 2.1

* Significant difference

TABLE X—Percentage of Examinations where Pes Valgus was found

Age		Boys	Girls
2-3 years	Nursery	13.9	12.1
	Home	5.5	5.6
	Difference	8.4 ± 3.1*	6.5 ± 3.0*
3-4	Nursery	16.8	11.3
	Home	7.2	1.2
	Difference	9.6 ± 3.9*	10.1 ± 2.6*
4-5	Nursery	10.3	1.3
	Home	5.0	0
	Difference	5.3 ± 3.8	1.3
2-5	Nursery	13.7	8.9
	Home	5.9	2.5
	Difference	7.8 ± 2.1*	6.4 ± 1.5*

* Significant differences

7 Comparison of Weights

Table XI compares the average mean weight of the nursery and home children for every 3-monthly age group.

TABLE XI—Mean Weights in Pounds (1 lb = 454 g)

Age in Months	Nurseries		Home Group		Differences (N-H)
	No	Mean	No	Mean	
Boys					
0- 3	1	10.8	6	12.0	-1.2
3- 6	20	13.4	23	14.8	-1.4 ± 0.85
6- 9	24	17.2	33	18.5	-1.3 ± 0.57*
9-12	46	20.1	44	21.8	-1.7 ± 0.50*
12-15	40	22.0	53	23.1	-1.1 ± 0.67
15-18	50	23.0	63	24.6	-1.6 ± 0.45*
18-21	40	24.8	66	26.1	-1.3 ± 0.48*
21-24	43	26.7	52	27.2	-0.5 ± 0.54
24-27	47	28.1	44	27.6	0.5 ± 0.58
27-30	50	30.4	43	28.4	2.0 ± 0.66*
30-33	49	31.4	33	29.0	2.4 ± 0.72*
33-36	44	32.1	31	30.1	2.0 ± 0.69*
36-39	36	31.8	27	30.5	1.3 ± 0.86
39-42	34	32.8	35	32.0	0.8 ± 0.80
42-45	45	34.2	34	32.9	1.3 ± 0.92
45-48	45	35.6	30	34.8	0.8 ± 0.91
48-51	32	36.4	22	36.1	0.3 ± 1.1
51-54	34	37.2	28	36.6	0.6 ± 0.85
54-57	44	37.3	26	36.6	0.7 ± 0.62
57-60	42	38.4	11	37.6	0.8
Girls					
0- 3	2	11.1	2	9.7	2.4
3- 6	22	12.6	30	15.0	-2.4 ± 0.50*
6- 9	22	15.9	50	17.9	-2.0 ± 0.71*
9-12	48	18.4	55	20.4	-2.0 ± 0.50*
12-15	42	20.5	45	23.0	-2.5 ± 0.60*
15-18	52	22.5	51	22.8	-0.3 ± 0.48
18-21	66	24.2	63	24.1	0.1 ± 0.45
21-24	53	25.1	60	25.4	-0.3 ± 0.53
24-27	53	26.7	47	26.3	0.4 ± 0.67
27-30	43	28.3	41	28.3	0.0 ± 0.76
30-33	56	29.3	37	28.9	0.4 ± 0.73
33-36	51	30.1	46	30.3	-0.2 ± 0.65
36-39	37	31.5	38	30.4	1.1 ± 0.81
39-42	39	32.2	44	31.4	0.8 ± 0.72
42-45	41	33.4	39	32.7	0.7 ± 0.86
45-48	55	34.4	39	33.6	0.8 ± 0.53
48-51	39	35.3	27	34.9	0.4 ± 0.89
51-54	40	36.7	33	35.7	1.0 ± 0.73
54-57	32	37.2	33	36.4	0.8 ± 0.97
57-60	26	37.8	18	35.6	2.2

* Significant differences

from 0 to 5 years of age. The results for boys and girls are given separately.

Results—(a) Boys—The mean weight of boys in the home group was greater than in the nursery group up to 2 years old, the difference being significant in four out of seven groups. Over 2 years the nursery boys had a greater mean weight in every age group, the difference being significant in three out of 12 groups (between 2 and 3 years). **(b) Girls**—Among the girls under 2 years the mean weight was greater in the home group in six out of eight age groups, the difference being significant in four of these groups (all under 18 months). Over 2 years the nursery girls had a greater mean weight in 11 out of 12 age groups, the differences not being significant in any age group.

The children in the nursery group therefore were on an average lighter under 2 years.

gained weight more rapidly between 1½ and 3 years, but up to 1½ years and over 3 years the rate of weight gain was closely similar in both groups

Sex Differences

At all ages over 6 months in both groups the boys showed a slightly greater mean weight than the girls. The general condition of boys was also on the whole very slightly better than that of girls, though this was not found in every age group. This finding was the same for nursery and home groups. In every other physical finding relating to tonsils, cervical glands, respiratory infections, and postural conditions in both groups the girls had a slightly better record. The difference between boys and girls was not more marked in one group than in the other.

Seasonal Variations in Physical Condition

The seasonal variations in physical condition were closely similar in nursery and home groups, but throughout the year the incidence of all cervical gland enlargements, of tonsillar enlargement, and of chronic nasopharyngeal infections was about 2 to 4 times greater in the nursery group.

Incidence of Specific Infectious Fevers

At each examination a full history was taken of any infection contracted since the previous examination of that child. Only definite accounts of infections were recorded, doubtful instances where evidence was insufficient being excluded. It is probable, therefore, that the figures given below represent somewhat less than the actual total occurrence. Accounts of "diarrhoea," "pneumonia," and certain other infections have been omitted, since these terms cover such a wide range of variable illnesses. In the case of pneumonia particularly, the early use of sulphonamides has made it unlikely that a record of pneumonia on hearsay account would be reliable. For similar reasons accounts of infections of the respiratory tract have been excluded, unless seen also at the time of examination. The incidence of measles, pertussis, varicella, and mumps has been compared, and of these only measles developed often enough for a detailed study of the incidence.

It will be clear that the total incidence of infectious diseases refers to a period of rather less than 11 months, since no account could be taken of infections occurring at the extreme beginning or end of the survey, before a child's first visit or after the last visit. Likewise the figures are based only on those children attending more than once—432 in the nursery group and 409 in the home group.

(a) The total incidence of varicella, mumps and pertussis (Table XII) was very low in both groups, varicella and

TABLE XII—Total Incidence of Infectious Fevers during Survey (November–October)

	No under Observation	Measles	Pertussis	Varicella	Mumps
Nursery group	432	111	11	14	9
Home group	409	33	18	7	2

mumps being slightly more numerous in the nursery group and pertussis in the home group. Over 80% of the children in both groups gave no history of a previous attack of any of these three fevers. Some children in the nursery group had received prophylactic injections against pertussis; this was extremely rare in the home group.

(b) Measles (Tables XIII and XIV)—Measles was present in epidemic form in Birmingham during the winter period of the investigation.

1 The total recorded incidence of measles in the nursery group during the survey was 111 out of 432 children. This

TABLE XIII—Percentage Incidence of Measles (All recorded cases during survey)

Measles	No under Observation	Previous Attack		Presumed Susceptibles		Total Incidence of Measles	Incidence in Total Population	Incidence among Presumed Susceptibles
		No	%	No	%		%	%
Nursery group	432	158	36.6	274	63.4	111	25.7	40.5
Home group	409	81	19.8	328	80.2	33	8.1	10.0
Differences		16.8 ± 3.1*		16.8 ± 3.1*			17.6 ± 8.2*	30.5 ± 3.4*

* Significant differences

TABLE XIV—Age Distribution of Measles (Percentage distribution of all cases recorded during survey)

		All Ages 0–5 yrs	Under 18 mths	18 mths –3 yrs	3–5 yrs
(a) Age Distribution based on Total Population Observed					
Nursery group	No under observation	432	123	152	157
	Cases of measles	111	36	45	30
	% developing measles	25.7%	29.2%	29.6%	19.2%
Home group	No under observation	409	148	150	111
	Cases of measles	33	7	17	9
	% developing measles	8.1%	4.7%	11.3%	8.1%
(b) Age Distribution based on Presumed Susceptibles only					
Nursery group	No of presumed susceptibles	274	107	94	73
	Cases of measles	111	36	45	30
	% developing measles	40.5%	33.6%	47.9%	41.0%
Home group	No of presumed susceptibles	328	139	120	69
	Cases of measles	33	7	17	9
	% developing measles	10.0%	5.0%	14.2%	13.0%

was considerably higher than in the home group—33 out of 409—the difference being statistically significant. The percentage incidence during the period was 25.7 in the nursery group and 8.1 in the home group. There was a marked difference in the percentage of those who had already had measles, the proportion being significantly higher in the nursery group. These may be termed 'presumably immune,' and the others who had not had measles before the survey began may be termed 'presumably susceptible.' The presumably susceptible were 63.4% in the nursery group and 80.2% in the home group. If the total incidence be expressed as a percentage of the presumed susceptible, then 40.5% developed measles in the nursery group during the survey compared with 10% in the home group. These differences are statistically significant and are striking. The closer daily contact of children in nurseries naturally encourages greater spread of infection, and probably accounts in large measure for this difference in incidence.

2 The Age Distribution of Measles—At all ages (0–5 years) the recorded percentage incidence of measles was markedly higher in the nurseries group than in the home group. Among all children from 0–18 months old the percentage incidence of measles was more than 6 times greater in the nurseries group than in the home group. Between 18 months and 3 years of age and between 3 and 5 years the percentage incidence of measles was about two and a half times heavier in the nursery group than in the home group. In the nurseries group the percentage of children under 18 months old who developed measles during the survey (29.2%) was greater than the percentage incidence for all ages (25.7%), whereas in the home group the percentage of children under 18 months old who developed measles during the survey (4.7%) was little over half the percentage incidence for all ages (8.1%). Among those children who had no previous history of an attack of measles—the presumed susceptibles in each group—the proportion who developed measles during the survey in the nurseries group was 40.5% and in the home group only 10%, for all ages (0–5 years). Of those under 18 months old, 33.6% of the presumed susceptibles in the nurseries group developed measles during the survey, compared with 5% in the home group. These results show that the higher incidence of measles in the nursery group affected children of all ages up to 5 years but especially those under 18 months old. Thus the nursery children not only were much more likely to develop measles but tended to develop it at an earlier age than the home

children. This is particularly important in view of the greater mortality rate of measles in young infants and the greater risk of serious complications.

3 Seasonal Variations—In each of the six winter months of the survey (November–April) an average of 8.9% of the mean population under observation per month developed measles in the nursery group compared with 2.5% in the home group. In the six summer months (May to October), the incidence of measles per month in the nursery group was 0.05% of the mean population under observation in each month, compared with 0.2% in the home group. Thus measles was more evenly spread over the year in the home group, whereas the nursery group had a higher epidemic incidence in the winter, followed by a very low summer rate—a noteworthy difference when the increased mortality rate of measles during epidemics is considered.

Conclusions and Discussion

The main results of the survey may be summarized as follows:

1 The average weight of children under 2 years of age attending day nurseries was consistently less than that of the children living in their own homes, but from 2 years onwards the average weight of nursery children increased more rapidly and finally exceeded that of the home group of children.

2 The general condition as recorded from the clinical impression, was inferior in nursery children under 2 years old to that of children of the same age living in their own homes.

3 The incidence of respiratory tract infections, including acute and subacute infections present at examination and chronic conditions such as mouth-breathing and chronic tonsillar and cervical gland enlargements, was from two to eight times greater in the nursery children than among those living at home. This excess was manifest at all ages and in every season.

4 A significantly higher incidence of specific infectious fevers occurred in the nursery group, and the epidemic occurrence of measles was more marked than in the home group. Among those children "presumed susceptible" in the nursery group, the incidence of measles was four times greater than in those "presumed susceptible" in the home group.

5 Poor posture, genu valgum and pes valgus occurred more often in the nursery group than in the home group.

Before conclusions are drawn from the above findings it must be stated that this survey was confined to an investigation only of the physical health of the children, and no attempt has been made to assess the effect of nursery life on the child's psychological development or well-being.

The above findings are closely similar as regards respiratory tract infections and weights to those of the recent report of the Day Nurseries Committee of the Medical Women's Federation on the health of children in day nurseries. That report was based on the results of a single restricted examination of a large number of children (4,587) by many workers in many parts of the country, thus attaining a "cross-section" result, whereas the results of the present survey have been obtained by repeated, more detailed examinations over a period of one year by a single worker of a small group of children (1,198) in a single town and these results include also data on specific infections, fevers, postural conditions, etc.

In the report referred to above the physical condition of children seen within one week of admission to a nursery was assessed separately in order to determine whether there were any significant physical differences between welfare-centre children and nursery children at the start of nursery life. Statistical interpretation of these findings showed that the high rate of respiratory tract infections in day-nursery children could not be accounted for on these grounds. The inference that there were no significant physical differences at the start of nursery life between day-nursery children and

those living at home may reasonably be assumed to apply also to the present survey.

Only Ministry of Health wartime day nurseries were included in this survey, comparable results would, however, be likely in any similar aggregation of young children such as in nursery schools and classes, though it must be remembered that children of the youngest age groups do not attend nursery schools.

It was hoped to include in this survey a comparison of the incidence of infections in those nurseries housed in adapted private or other dwellings and those in specially constructed one-story buildings, the children of which spent a considerable amount of time out of doors. However, the numbers available for comparison between these two types of nurseries in similar social and economic areas were too small to be of statistical value. Conflicting opinions exist on this point, but the impression gained during the survey was that in the one-story "Mayerete"-type of nursery buildings there was a lower incidence of respiratory and other epidemic infections, associated probably with the free ventilation and the extra time spent by the children in the open air.

The superiority in weight of the older day-nursery children over the home group may be correlated with the more generous diet available to them under wartime arrangements. In this survey the nursery children under 1½ years showed a rise in average weight equal to that in the home group, and a more rapid rise in average weight than the home group from 1½ years of age. This more rapid rise in the nursery group continued until 3 years, and after this the rate of weight gain was practically the same in each group, with the nursery group having a higher average weight than the home group, although under 1½ years it had been lower. Nursery children were in fact gaining weight more rapidly from the age of 1½ years. This is roughly equivalent to the time at which the more liberal diet available to children attending day nurseries might be expected to begin to take effect. The improvement in general condition as recorded from clinical impressions followed a similar pattern, though differences between the older nursery and the home children were not statistically significant. It would be interesting to study the effect on both weight and general condition of allowing a similar extra amount of rationed food to children living in their own homes.

The increased weight and better physique of the older day-nursery children did not apparently influence their liability to infections of the respiratory tract. The findings in this investigation endorse the view that when children under 5 years of age are congregated together indoors for long periods a great increase in respiratory and other infections will occur, in spite of careful measures taken in the management of the day nurseries to minimize the spread of infection. It is realized, of course, that wartime staff shortages and use of adapted premises have created difficulties, and that under ideal conditions with generous staffing with trained personnel and ideal buildings the infection rate might be considerably less but these conditions are not likely to be achieved on a large scale.

The signs of fatigue noted in the nursery group in the higher incidence of pes valgus may be associated with the long hours kept by the nursery children, who were frequently and inevitably up for 13 to 14 hours daily while their mothers were on full-time work. These long hours were a special feature of an emergency period and should not continue.

The much higher incidence of respiratory and other infections and the increased liability to epidemic infections which, according to the evidence, is associated with nursery

life must be an important factor when a large-scale future provision of day nurseries is considered. Short of ideal conditions (and the economic possibility of attaining these is remote), a large amount of respiratory infection, with the usual aftermath of ill-health and complications, may be expected, and must be balanced against the possible advantages of communal life for young children. The possibility exists that the risk of respiratory infections might be reduced considerably by part-time attendance at day nurseries, and the incidence of respiratory infections in children attending nurseries for two or three half-days a week is a question worthy of investigation.

Reference must be made to other work on this subject published since this survey was begun. The report by the Day Nurseries Committee of the Medical Women's Federation (1946) on the health of children in day nurseries revealed a higher rate of respiratory infections in children attending day nurseries than in those living at home, and showed evidence that "for children under 2 years old nursery life had an adverse effect on physical health."

In a study of infections in wartime day nurseries in Oxford (Allen-Williams, 1945) routine health records of children in day nurseries and attending welfare centres were analysed, and it was deduced that there was a greater liability to infections among nursery children, and that these infections occurred at an earlier age, than among children living at home. The records of infections and other details were, however, admittedly incomplete.

A study of the progress of children under 2 years of age in day nurseries in Leyton (Menziès, 1946) concluded that "a substantial proportion of children under 2 years old do not make satisfactory progress on admission to a nursery, as judged by the weight gain", in spite of the very liberal diet in the nurseries, and drew attention to the importance of including in a survey of the health of children in day nurseries those who leave after a relatively short time of attendance because of "fretting" or contracting an infection.

Summary

An investigation in the health of children attending wartime day nurseries was carried out in Birmingham in 1944-5. During a period of one year repeated examinations were made by a single examiner of 557 children attending day nurseries and of a control group of 641 children living at home.

The results are based on a total of 3,250 examinations of children from 0-5 years old.

1 Respiratory tract infections were from two to eight times more frequent among nursery children than among the home group. This excess was manifest at all ages and at every season.

2 The incidence of measles was significantly higher in the day-nursery group, and was four times greater among those presumed susceptible in the day nurseries than in the home group. This excess was marked at all ages, but affected particularly those under 18 months old. The epidemic occurrence of measles was more pronounced in the nursery group than in the home group. These findings are important in view of the increased mortality from measles under 18 months of age and during an epidemic.

3 Pes valgus was more than twice as common among day-nursery children as in those living at home. The significance of this as a sign of fatigue is discussed.

4 Children over 2 years of age attending day nurseries were heavier than the children living at home, and they gained weight more rapidly between 1½ and 3 years of age. This may be correlated with the extra allowances of rationed foods (meat, bacon, cheese, eggs, etc.) available under the rationing system to children in day nurseries.

This investigation was made possible through the generosity of a donor who wishes to remain anonymous. Grateful acknowledgments are made to Dr W J Martin for his statistical assistance, and to Dr Newsholme and Dr Jean MacKintosh, of Birmingham

Public Health Department, for kindly providing facilities for the survey. Lastly, many thanks are due to the staffs of the nurseries and welfare centres, for whom this survey involved much extra work for their enthusiastic help and co-operation throughout.

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DE MORGAN'S SPOTS

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The minute round ruby-coloured macules known as De Morgan's spots are of common occurrence in adults. They are most often seen in the skin of the abdominal wall. They vary in size up to a diameter of about 5 mm and in number up to 20 or occasionally more. Microscopically they have the character of simple haemangiomas.

The spots are named after Campbell De Morgan, surgeon to the Middlesex Hospital from 1842 to 1875. Tradition holds that De Morgan believed the spots to indicate or presage malignant disease, particularly of the stomach. If this was his view he did not (so far as we have been able to discover) commit it to paper. In his book *On the Origin of Cancer* (1872) he does indeed mention the spots, but only as the merest aside. In the course of developing the argument that cancer is not due to an infective agent he says (p 16) "I have noticed, and it has been verified by the observation of others, that concurrently with, or following on, the development of cancer, small outgrowths of warty or vascular or dermoid structure are frequent. Now one would imagine that, if there were a cancer poison in the blood, these or one of them would become the seat of the disease. But—" And he makes no further reference to the spots which are now known by his name.

The literature on the ruby spots is extremely meagre, and the only paper of note is Sampson Handley's in 1909. He points out that the spots are found in atrophic skin, and begin as small nodules of connective tissue under the epidermis. As the spots enlarge, wide blood channels make their appearance and by their bulk elevate the epidermis, causing further atrophy. He draws attention to the common belief that the spots occur more often in patients affected with cancer, but emphasizes that this belief lacks corroboration. From this brief review of previous work it will be clear that, although the ruby spots by virtue of their brilliant appearance often arouse comment and keen though transitory interest, there is an entire absence of precise information on their significance. Accordingly, it seemed to us useful to collect data over a series of cases large enough to demonstrate their frequency and incidence.

Frequency and Incidence of Spots

Method of Investigation—The greater part of this paper is based on observations made on 1,300 patients at three Glasgow hospitals—the Western Infirmary, Stobhill Hospital, and the Radium Institute. The routine adopted was to visit in turn each of the general medical and surgical wards and to make observations on every patient available for examination. The area of skin examined for spots extended from the nipple line to the pubis, and laterally as far as the mid-axillary lines. This area was chosen for

convenience and because it is much the commonest site of the spots. For each patient a record card was prepared giving the age, sex, and provisional diagnosis, as well as information about the spots. The spots were classified into groups according to their diameter (as measured by a simple celluloid template), and the number of spots in each size group was noted.

The observations here presented were made in 1944, during our term of office as house-surgeons in the Western Infirmary, Glasgow. Since then one of us has been able to observe at routine medical inspections a large number of healthy men and women of the R.A.F. and W.A.A.F., and the opportunity has been taken of recording (though in less detail) the presence or absence of ruby spots. These observations are contrasted with those made in hospital. It has to be stated explicitly that none of the patients or Service personnel was chosen for record because of the presence or absence of ruby spots.

Influence of Age on Incidence—Since, as Sampson Handley pointed out, the spots rarely occur before middle life, it is clear that an apparently high incidence of spots in patients with cancer (who are nearly all elderly) might well be fallacious. Accordingly, before proceeding to other considerations it is necessary to determine the relationship of age to the incidence of spots. In Fig 1 we have included all Glasgow patients, male and female, cancerous and non-cancerous, and analysed the figures according to the number of patients with spots in each age group. It will be seen that the proportion of patients with spots rises progressively with age, at all events up to the age of 70. Thus in adolescence some 5% of patients have spots, but thereafter the proportion increases throughout adult life till in old age about 75% have spots. It is

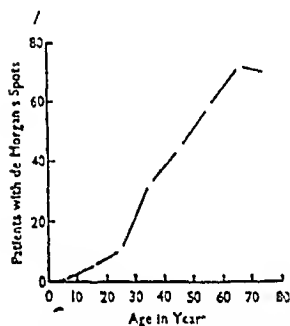


FIG 1—Age incidence of De Morgan's spots (three hospitals, both sexes)

thus quite clear that the number of patients with spots in any series will vary greatly with the ages of the patients considered, and it will therefore be essential to make comparisons at each age group separately when comparing one series with another.

Frequency in Hospital Patients as Compared with Air Force Personnel—A comparison of the frequency of spots in hospital patients and in Air Force personnel is shown in Fig 2. It will be seen at a glance that, age for age, the proportion of individuals with spots among the Air Force personnel was much less than among the patients. Analysis confirms that the discrepancy is too great to be readily attributed to chance, and some other explanation must be sought. What the explanation may be is open to speculation, for the two series differ in many respects—in race, in health, in sex composition, and doubtless in other ways. It should be noted that the Air Force personnel

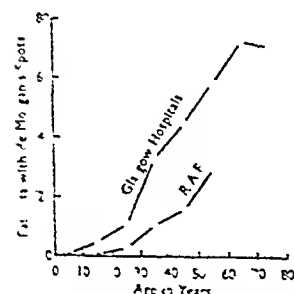


FIG 2—Incidence of De Morgan's spots in hospital patients and Air Force personnel

were in the main English, whereas the patients were drawn from the West of Scotland. The possibility of a racial difference in the incidence of spots is attractive and merits

further study. On the other hand, we are inclined to think that differences in sex composition and in health are probably not important. The evidence on which we base this opinion is given below.

Sex incidence—For the purpose of discovering if there was any sex difference in the incidence of ruby spots, we combined all patients from the Western Infirmary and Stobhill Hospital, and classified them (irrespective of disease) according to sex and the presence or absence of spots. It will be seen from Fig 3 that the frequency of patients with spots (age for age) is almost the same in males and females, and analysis confirms that any small differences are readily attributable to the chances of sampling.

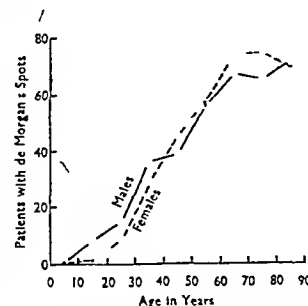


FIG 3—Sex incidence of De Morgan's spots (two hospitals, all diseases)

Influence of Disease on Incidence of Spots

In order to find out if there was any such influence we divided our patients into three broad categories: *Group 1* patients without systemic disease (e.g., fracture cases) and those with acute disease (e.g., pneumonia); *Group 2* patients with chronic disease (e.g., tuberculosis); *Group 3* patients with malignant disease. A comparison of the incidence of ruby spots in "acute disease" and in "chronic disease" was made by combining the patients from the Western Infirmary and Stobhill Hospital (irrespective of sex) and classifying them according to the presence or absence of spots. It will be seen from Fig 4 that the frequency is almost the same, analysis confirms that the small discrepancies are readily attributable to the chances of sampling.

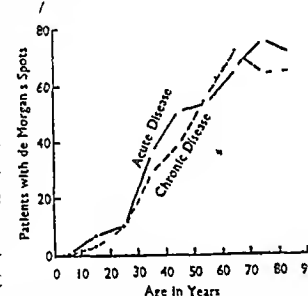


FIG 4—Incidence of De Morgan's spots in acute and chronic disease (two hospitals, both sexes)

A comparison of the incidence of ruby spots in malignant disease as against the incidence in all other diseases combined was made by pooling all patients (irrespective of sex) from the three hospitals and classifying them according to the presence or absence of spots. Fig 5 shows that in malignant disease the frequency of patients with spots was a little higher than that in non-malignant disease at all ages. It should, however, be noted that the differences are small, except at age 31–40 years (where the group of malignant cases comprises only 15 patients). Indeed, analysis reveals that a total discrepancy of the magnitude found might be expected to arise through the chances of sampling about once in eight such experiments, and the differences found cannot therefore be regarded as important. The very fact that a series consisting of 160 malignant and 784 non-malignant cases is insufficient to establish a significant difference in the incidence of ruby spots indicates clearly that the presence or absence of spots has no diagnostic importance.

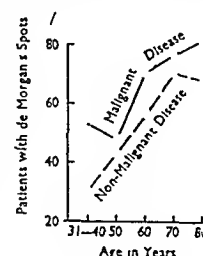


FIG 5—Incidence of De Morgan's spots in malignant and non-malignant disease (Western Infirmary, Stobhill Hospital, and Radium Institute, sexes combined)

The somewhat unlikely possibility that cancerous patients might have spots which were unusually numerous or unusually large was investigated by comparing the malignant and non-malignant series, and no significant differences were found.

Increase in Number and Size of Ruby Spots with Age

Hitherto we have restricted attention to the question whether ruby spots were present or absent. It remains to describe how they increase in number and size as age advances, and to attempt an estimate of their rate of growth. For this purpose it has seemed best to pool all the information available from the three Glasgow hospitals. Among the data recorded for each patient was a count of the number of spots of diameter less than 1 mm, between 1 and 3 mm, and over 3 mm. The number of spots of each size (per 100 patients) was therefore easy to determine for each age group. These estimates are illustrated in Fig 6.

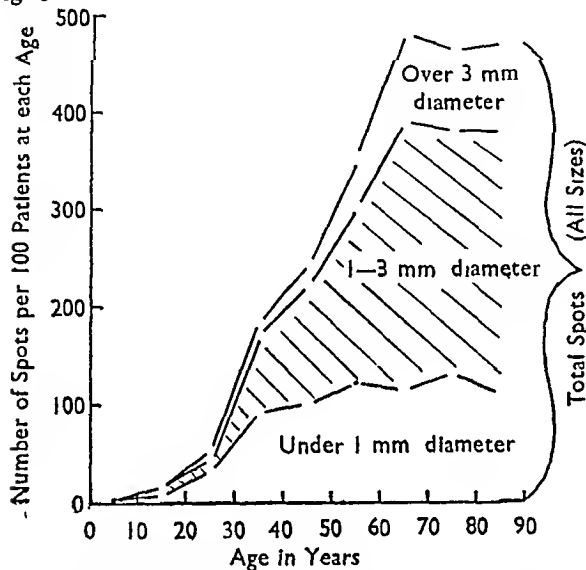


FIG 6—Influence of age on number and size of De Morgan's spots

It will be seen that the total number of spots per 100 patients (represented by the top line in Fig 6) increases at first slowly from zero at age 0-10 years to about 50 at age 21-30, and then increases rapidly to close on 500 at age 61-70, thereafter there is no increase. Again, it will be observed that the size of the spots, as well as the total number, increases with advancing age. Thus under the age of 30 years the majority of the spots are small (less than 1 mm in diameter). Thereafter as age advances there is an ever-increasing proportion of spots of medium size (between 1 and 3 mm in diameter). The proportion of large spots (over 3 mm in diameter) also increases with age, but they never become very numerous: thus at age 21-30 years they account for about one-tenth of the whole, whereas in old age they account for about one-fifth of the whole.

The data already given (Fig 6) can be made the basis of a rough estimate of the average rate of growth of the ruby spots. The estimate was made as follows:

Fig 6 shows reasonably smooth sequences except at age 61-70 years, and the values given were therefore used direct except that at this age the total count was arbitrarily reduced (at the expense of spots of medium size) from 481 to 430. The average number of years taken by the spots to attain a given diameter was then read off from the graph by a method best explained by illustration. Thus at age 36 (the mid value of the decade 31-40) there was a total of 183 spots per 100 patients, of which 93 measured 1 mm or more in diameter and the

remainder were smaller. It was assumed that the larger spots had been present longer than the smaller spots. But a total count of 93 spots was present (reading from the graph) at age 29 years. It was inferred that the spots which measured 1 mm or more at age 36 had been present for at least seven years. Using this method the following estimates of the average time taken by ruby spots to attain a given diameter at various ages were obtained:

Age in years	No. of years required to attain a diameter of	
	1 mm	3 mm
6	—	—
16	6	—
26	9	17
36	7	22
46	12	28
56	13	30
66	13	38
76	22	47

A high degree of precision cannot be claimed for these estimates, but the general statement can be made that the rate of growth of ruby spots decreases as age advances. Thus to attain a diameter of 1 mm the spots require about seven years in early adult life, and about twice or thrice this period as age advances. Similarly, to attain a diameter of 3 mm the spots require about 20 years in middle age, and about double this period in old age.

Summary

The literature of De Morgan's spots is reviewed and their possible connexion with cancer discussed.

Data on the incidence of ruby spots were obtained from observations on 1,300 patients at three Glasgow hospitals.

No difference was found in sex-incidence.

The proportion of hospital patients with ruby spots rises from 5% in adolescence to about 75% at 70 years of age. The spots also increased in number and size with advancing age, but their rate of growth decreased.

The proportion of Air Force personnel with spots was found to be much less than that of the hospital patients.

De Morgan's spots were slightly commoner in malignant than in non-malignant disease, but not sufficiently so to be of diagnostic importance.

The observations recorded here were made for the most part during our terms as house surgeons under Prof. Illingworth in the Western Infirmary, Glasgow. We are indebted to the physicians and surgeons in charge and to the medical superintendents of the Western Infirmary, Stobhill Hospital, and the Radium Institute for permission to examine their patients. Our particular thanks are due to Mr R. A. Jameson for his help in preparing this paper and in the statistical analysis, and to Dr R. A. Robb, of the Mathematics Department of Glasgow University, for suggesting the method of estimating the rates of growth. We have to acknowledge our indebtedness to the Air Ministry for permission to publish the data referring to Air Force personnel.

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Gleneagles Hotel taken over for hospital purposes in 1939 by the Department of Health for Scotland, and since 1943 used as a fitness centre for the rehabilitation of miners, is being returned to the LMS Railway Company. The Centre reopened at Bridge of Earn Hospital, Perthshire, on April 28, where its facilities will be extended by association with the work of a general hospital. Although originally miners only were accepted, any person in industry may now be admitted to the Centre if suffering from a disability which may yield to treatment. Patients can be admitted on application to the Medical Superintendent by their family doctor or the medical officer of a hospital. The Consultative Committee appointed by the Secretary of State for Scotland in 1943 to advise on the Centre is being reconstituted under the chairmanship of Sir Robert Nimmo. The Committee will now include representatives of the National Coal Board, the mining industry, employers and workers in industry generally, and the British Medical Association.

RELAPSING FEVER IN CYRENAICA

BY

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The objects of this paper are to describe four cases of relapsing fever seen in Cyrenaica, one of which was contracted in Benghazi, to discuss the relevant literature, and to bring to light some new information (not our own) regarding vectors of relapsing fever in Cyrenaica.

The pre-war Italian work on the disease in this area is worth noting. Vernoni¹ was the first to describe a case of relapsing fever with positive blood film, this occurred in Barce (El Merg). Medulla has contributed a number of articles on the subject. In 1931 he drew attention to various types of recurrent fevers in Cyrenaica, most of which, however, had negative blood films.² In 1933 he described two cases, confirmed microscopically, which may have been infected in Benghazi,³ and in 1934 he reported a further four cases which were infected while on military manoeuvres in the Jebel, near Cyrene, only two of these appear to have had positive blood films.⁴ In 1935 he published three more cases from the same source, in only one of which were spirochaetes seen in the blood.⁵ In the same year he described a further well-proved case from Apollonia, in this instance the attendant doctor accidentally pricked himself with an infected syringe needle and five days later developed relapsing fever with positive blood film.⁶ In 1937 Medulla reported a further three cases infected in Barce.⁷ It is of interest to note that most cases in British troops during the war came from around Tobruk.^{8,9}

The following four cases were seen by us at 82 General Hospital in Benghazi.

Case 1

A Palestinian driver aged 21 had fever, headache, malaise, general aching, vomiting, cough and constipation which started on April 30, 1944. He was admitted to hospital on May 3 when the temperature was 100.6° F (38.1° C). The liver was tender and enlarged one fingerbreadth below the right costal margin. The spleen was tender but doubtfully palpable. The axillary, inguinal, femoral and epitrochlear lymph glands were tender and slightly enlarged; the tenderness in the axillary and inguinal regions being considerable. On May 4 the temperature was morning 102.4° F (39.1° C), evening 104° F (40° C). The lymph glands were less tender and the abdominal tenderness had gone. A blood film revealed fairly numerous spirochaetes. There was much sweating. Next day the morning and evening temperatures were 102° F (38.9° C) and 104.2° F (40.1° C). The white cells numbered 15,000 per cmm (polymorphs 85%, lymphocytes 10%, monocytes 5%, eosinophils 1%). The blood films were again positive. N-acetylsalicylic acid (NAB) 0.6 g was given intravenously. The temperature fell to normal by crisis the next morning and remained down. The lymph gland tenderness had gone and the patient was feeling better. Further doses of 0.6 g of NAB were given intravenously on May 12 and 19. There was no relapse and convalescence was uneventful. The fever lasted six days but he was never more than moderately ill.

This patient had not set foot outside Benghazi for a full month before the onset of his illness.

Case 2

An Italian POW aged 27 started to get vague abdominal discomfort, headache, and feverishness on June 13, 1944. He was admitted to hospital on June 15, when, apart from a temperature of 100.2° F (37.9° C), the only sign of disease was a spleen enlarged two fingerbreadths below the costal margin. There was no history of malaria. Early the next day the temperature had risen to 104.2° F (40.1° C) (Chart 1), and spirochaetes were found in the blood, he was given 0.6 g of NAB intravenously at once. The headache lasted one more day but the fever persisted until June 21 (the ninth day of disease). On June 23 and 30 he received further doses of 0.6 g of NAB intravenously but on June 25 a prolonged irregular pyrexia began which lasted until July 16. Repeated blood slides during this period were negative. At first he complained only of intermittent headache, but by July 4 (the 22nd

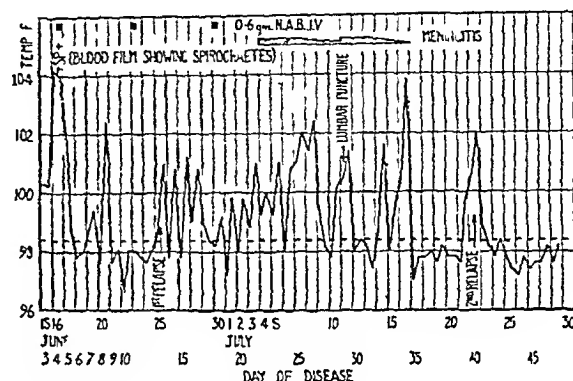


CHART 1—Case 2

day) he was vomiting and the headache was severe. Two days later he was also drowsy and uncooperative. The white cell count was 9,600. After a short period of improvement vomiting recurred on July 11, and there was again severe headache, now with moderate neck stiffness, but no Kernig sign. A lumbar puncture produced clear cerebrospinal fluid under a pressure of 180 mm of water, containing 600 cells (all lymphocytes) per cmm, protein 180 mg per 100 ml, chlorides (as NaCl), 700 mg per 100 ml, no spirochaetes. Two days later he was much improved, but still complained of abdominal discomfort. He became symptomless by July 17, but on the 21st the ophthalmologist reported mild bilateral papilloedema. There was further fever (second relapse), after which he remained well. The haemoglobin (Sahli) was 110% on Aug 14. The splenic enlargement diminished but did not disappear.

This patient's movements during the incubation period are not known in detail, but he came from Western Cyrenaica.

Case 3

An Indian pioneer aged 25 first became ill with fever, headache, malaise, and constipation on June 14, 1944. He was admitted to hospital on June 16. The temperature was 100.2° F (37.9° C) later rising to 103.4° F (39.7° C), with a rigor during which spirochaetes were found in the blood. Lungs cough with numerous generalized rhonchi, many expiratory. Abdominal tenderness in the iliac fossae, pronounced on the right but considered not appendicular. The symptoms and fever continued for another day—temperature 102° F (38.9° C). On June 17 NAB 0.6 g, was given intravenously. The fever had gone by the next day, but the chest was not clear of signs until June 21. On June 19 the white cell count was 4,000 (polymorphs, 78%, lymphocytes, 15%, monocytes, 7%). Further intravenous injections of 0.6 g of NAB were given on June 24 and July 1. There were no relapses and convalescence was rapid.

The movements of this patient during the incubation period could not be determined with accuracy, but they were wholly within Cyrenaica, and he had spent much of this time in Benghazi.

Case 4

A British lance corporal aged 33 had sudden onset of headache, malaise, aches in the limbs, feverishness, and sweating on June 19, 1944, and was admitted to hospital the same day. The temperature was 101° F (38.3° C) (Chart 2). There were no other signs of disease, and the blood films were negative. There was a rigor on the next day and he vomited. The first blood film to show spirochaetes was obtained on June 21 and the patient received 0.6 g of NAB intravenously at once. The vomiting lasted one more day and the fever four days in all. The spleen became palpable on the last day of fever. There was no history of malaria. NAB, 0.6 g, was given intravenously on June 28 and July 5. On the 5th began a low irregular fever lasting four days (first relapse), the spleen remained palpable and there was headache and much sweating. A three day symptomless afebrile period followed, after which, beginning on July 13 (the 25th day of disease), there

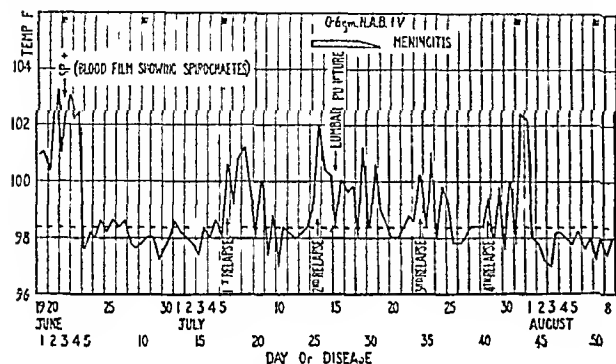


CHART 2—Case 4

were six days of relatively low-grade fever (second relapse). Headache returned and worsened. On the 15th there was mild neck stiffness. A lumbar puncture on this date produced a clear cerebrospinal fluid under a pressure of 250 mm of water, containing 40 cells (all lymphocytes) per cmm, protein, 45 mg per 100 ml (globulin not increased). A rabbit was inoculated with the cerebrospinal fluid but developed no infection. All symptoms had gone by July 19. The optic fundi remained normal. A low fever developed on the 21st (third relapse) and lasted three days, this pyrexial bout was relatively symptomless. A fourth relapse began on July 28 and lasted four days. Thereafter recovery was uninterrupted. Two more injections of 0.6 g of NAB were given intravenously on July 31 and Aug 7. On the last date the haemoglobin was 80% (Haldane). The spleen became impalpable during convalescence. Numerous blood films from July 6 onwards were all negative.

This patient spent two nights in a billet in Tobruk within the incubation period and may well have contracted the infection there. Otherwise his movements had been inside Benghazi only.

The following is a summary of the symptoms and signs in the four cases.

Abdomen—Vomiting (3 cases), constipation (2), vague pain (1), spleen enlarged (2), spleen tender (1), liver enlarged (1), liver tender (1), tenderness in iliac fossae (1).

General—Fever (4), prolonged irregular fever (1), headache (4), malaise (3), shivering (2), general aches and pains (2), cough (2), noticeable sweating (2), lung rhonchi (1), mild anaemia (1), lymph glands enlarged and tender (1), meningitis (2).

Meningitis—Headache (2), neck stiffness (2), abnormal cerebrospinal fluid (2), vomiting (1), drowsiness (1), papilloedema (1).

Other Points—Relapses: two cases had none, one had two and one had four. Length of pyrexial attacks (all treated), 1–22 days. Length of apyrexial intervals, 2–12 days. Length of stay in hospital: Cases 1 and 3, 20 days; Case 2, 73 days; Case 4, 69 days.

Spirochaetes were scanty in the blood films of Cases 2, 3 and 4, in Case 1 they were moderately plentiful. The effect of neoarsphenamine treatment was poor.

Discussion

It was not possible to carry out investigations to discover the species of spirochaete. However, none of the patients was lousy, and there was no reason to suppose that any had been in contact with lice. It can be assumed with a fair degree of certainty that the spirochaetes were tick-borne in origin, although it is just possible that in Case 1 they were louse-borne. The variation in the symptomatology and clinical courses of these four cases illustrates well the different forms that tick-borne relapsing fever can present. The rather long initial fever of Case 1 is more like the louse-borne type. The high incidence (2 out of 4) and type of neurological complications and the poor response to treatment with intravenous arsenicals are consistent with the findings of others reporting relapsing fever from Cyrenaica and the Egyptian western desert, notably Medulla,³ Cooper,¹⁰ Bulmer,¹¹ Scott,¹² McAlpine,¹³ and reports and publications by Army medical consultants, MEF.^{8, 14, 15}

The question of the vector in Cyrenaican relapsing fever is of some interest. The origin of the infection in Case 1 at least was Benghazi, Case 4 very possibly contracted it in Tobruk, a well-known infective centre.^{8, 10, 13, 14} In Cyrenaica, as in America, Palestine, Southern Russia, and more recently, Cyprus,^{16, 17} the tick-borne disease, once recognized, will probably be found to be of wide potential if not actual distribution, corresponding to a wide scattering of *Ornithodoros* ticks capable of transmitting *Spirochaeta duttoni*. It is quite possible that louse-borne relapsing fever also occurs, serving to complicate the picture, the local inhabitants are frequently lousy. We have been informed by Major Walmsley that groups of nomadic Libyans in the hills of Cyrenaica periodically have minor epidemics of relapsing fever in their small communities. It is possible that this might be a result of camping in some spot infested with infective ticks, but such epidemics may be louse-borne or even mixed. Medulla³ spoke of "the endemic illness in the highland districts" which is "transmitted by lice and by different *Ornithodoros* found in Cyrenaica." Manson-Bahr¹⁸ states that the louse-borne infection is prevalent among the Bedouin Arabs of North Africa, especially in the winter months.

In most of the Italian papers reporting cases no indication or conjecture is given as to the source of the spirochaetes. But note was periodically made that patients had had no contact with lice.¹⁹ On clinical and epidemiological considerations Medulla⁴ thought that the four cases he reported in soldiers from the Cyrene Jebel were probably tick-borne, he suspected two *Ornithodoros* ticks known to be present in the district. In 1927 Lodato collected specimens of an argasid tick at Gadhames, Tripolitania.²⁰ Franchini and Taddia,²¹ recording cases at Bardia of what was probably "tick-bite fever," reported the finding of "a new species of *Ornithodoros* that lives in grottoes, probably on small rodents." The ticks from both these collections were apparently first thought to be *Ornithodoros lahorensis* Neumann, but were identified by Maria Tonelli Rondelli as *O. franchini*, n. sp.^{21, 22}

Parrot²³ described in detail a new *Ornithodoros* tick found in the Algerian Sahara, he named this tick *O. foley*, n. sp. Roubaud and Colas-Belcour²⁴ described a new tick from French North Africa which they named *O. delanoei*, n. sp. This tick was differentiated from *O. foley* Parrot and *O. lahorensis*. From a comparative study these authors came to the conclusion that *O. foley* Parrot and *O. franchini* Rondelli were probably the

same. However, Franchini^{25, 26} thought they were different species and claimed that he first described the tick later called *O. franchini* Rondelli in 1927. Warburton²⁰ considers that *O. franchini* is probably the same as *Argas brumpti*, Neumann, 1907, a tick which has characters of both *Argas* and *Ornithodoros* genera.

Garibaldi² summarized the geographical distribution of argasid ticks in Italian North Africa. He stated that *Argas persicus* (Olen) had been found at Benghazi, Kufra, Marada, Tobruk, and Tocrá, *O. savignyi* Audouin at Augila, Kufra, Ghalo, Giarrub, and Marada, *O. franchini* at Porto Bardia, Kufra, and Marsa Lucch (the latter being between Bardia and Tobruk, on the coast). He stated that *O. moubata* Murray and *O. lahorensis* had been found only in Tripolitania, although Franchini¹⁹ said that these two ticks had also been found in Cyrenaica. Previously Zavattari,²⁴ Gaspare,²² and Franchini¹⁰ had engaged in a controversy as to the presence of *O. moubata* in Libya—that is, in Italian North Africa. Franchini³¹ stated that *O. savignyi* had not so far been found naturally infected with spirochaetes in Cyrenaica, but he was able to transmit *S. duttoni* to white mice through nymphs of *O. savignyi* from Agedabia. However, Kirk²² states that in this tick the infection is not hereditary and that *O. savignyi* has never been found infected in nature.

In a publication by GHQ, MEF¹⁵ it is stated that relapsing fever is "not uncommon" in "all parts of the western desert." Dewar and Walmsley³³ mentioned only ticks as vectors in the Egyptian western desert and in Libya (presumably they mean Cyrenaica). Stuart²⁴ reported that the louse-borne type is said to be very prevalent in Libya—that is, Italian North Africa—and that the tick-borne form also occurs there. He also said that three recognized carriers of the disease have been recorded from Libya—namely *O. moubata*, *O. savignyi*, and *O. lahorensis*. We have been unable to find any evidence in the literature that the last-named should be incriminated as a vector in Cyrenaica. Indeed, in spite of a considerable volume of work performed with *O. lahorensis* in other parts of the world, although there are some confusing opinions, no one has ever produced reliable evidence that it can transmit any strain of relapsing-fever spirochaete^{24, 34, 35}. The same remarks apply, but with more force to *Argas persicus*, a tick which in the past has been often wrongly spoken of as a transmitter of human spirochaetosis^{32, 40, 43, 51, 52}.

It must be admitted that a study of the literature relating to relapsing fever in Italian North Africa leaves one with a rather confused picture as to the vectors responsible. No one so far as we are aware has ever inoculated human blood infected with Cyrenaican strains of relapsing-fever spirochaetes into laboratory animals in order to determine the vector (louse or tick). Little work on that aspect of the disease in this area has been possible during the war. Neither time nor facilities were available to us for laboratory or field work, and we know of only two collections of ticks made from this region during the war. One of these was at Tobruk in 1942 by Major Joc Bryant, R.A.M.C., and after leaving his hands this collection has not been traced. Bryant stated that his ticks were certainly *Ornithodoros* sp. The other collection consisted of one tick produced by a private soldier on admission to hospital at Tobruk with relapsing fever. The patient stated that he had bitten him, but there is no record of the time of onset of bite to onset of fever.³⁶ This tick was sent at once to Prof. Adler who informs us that during the war he also received two ticks from the Egyptian western desert as three ticks being the same species. We are informed by Prof. Adler and Dr. Theodor that all

the ticks they received from the western desert were *O. tholozani* (syn. *papillipes*), Laboulbène and Mégnin. This is a new piece of evidence of considerable value. Hitherto *O. tholozani* had not been found west of Cyprus.¹⁶ Transmission experiments performed with these ticks showed the two ticks from the western desert to be free of infection, but the tick from Tobruk was proved to be naturally infected with relapsing-fever spirochaetes (Adler and Theodor—personal communication)³⁸.

A final point of much less importance may be raised. It must be remembered, especially in connexion with cases occurring in towns, that some evidence has been produced that bed-bugs (*Cimex lectularius*)^{19, 67, 72, 73} and dog-ticks (*Rhipicephalus sanguineus*)^{80, 87} may cause isolated cases of relapsing fever. However, the evidence for this is by no means conclusive. The former are widespread in North Africa, and the latter have been identified in numerous places in Cyrenaica.²⁷

Summary

Four cases of relapsing fever, probably tick-borne, are described. All contracted the infection in Cyrenaica, one was infected in Benghazi.

Two of these cases were complicated by meningitis, one of which had papilloedema. In these and other respects the four cases were of similar clinical type to cases from this area described by other authors.

The relevant literature, especially the Italian, is discussed.

Before the war Italian workers claimed to have identified one possible and two known carriers of relapsing-fever spirochaetes in Cyrenaica respectively—*O. foleyi* Parrot (syn. *O. franchini* Rondelli), *O. moubata* Murray, and *O. savignyi* Audouin.

Recently Adler and Theodor have identified ticks collected from Tobruk and the Egyptian western desert during the war as *O. tholozani*, Laboulbène and Mégnin, and have shown the Tobruk tick to be naturally infected with relapsing-fever spirochaetes.

Our thanks are particularly due to Prof. S. Adler and Dr. O. Theodor, of Jerusalem, for their kindness in supplying information about the ticks from the western desert. Thanks are also due to Prof. P. A. Buxton, Prof. R. M. Gordon, Brig. S. Smith, late R.A.M.C., Col. J. S. K. Boyd, late R.A.M.C., Dr. R. Kirk, Sudan Medical Service, and Major J. M. Drennan, R.A.M.C., pathologist, for valuable help in compiling this paper.

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TWO CASES OF FERROUS SULPHATE POISONING

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After reading Dr Gilbert Forbes's (1947) paper on poisoning with a preparation of iron, copper, and manganese I am prompted to record two further cases. It would seem that the condition may not be rare, and it is certainly one demanding increased precautions to prevent it.

Case 1

A 16 months old girl was admitted to the Dundee Royal Infirmary on May 3, 1944. About 10.30 a.m. on that date she obtained a packet of 40 tablets, each containing ferrous sulphate exsic gr 3 (0.2 g) copper sulphate gr 1/25 (2.6 mg) and manganese sulphate gr 1/25. She swallowed all but one of these, and vomited almost at once bringing up one tablet. Her mother gave her salt and water to drink, when about 12 more tablets were vomited. She thus retained about 26 of them. The child then became hot and drowsy and kept coughing and vomiting. The vomit contained mouthfuls of dark blood stained materials.

She was admitted to hospital at 11.50 a.m. On examination she was rather pale, and was coughing and vomiting. The vomit was blood stained. There was no rash or marked drowsiness. The temperature was 96° F (35.6° C), pulse 140, and respirations 24. The pulse was of slightly diminished volume. Her tongue was somewhat furred, the fauces were healthy. The abdomen was slightly distended. There was neither tenderness nor resistance on palpation. Nothing abnormal was noted in the central nervous system. Gastric lavage with a sodium bicarbonate solution was carried out, and brownish material was obtained. Some normal saline was left in the stomach. "Nepenthe" 1/2 min (0.03 ml) was given at once and 2½ gr (0.16 g) of bismuth carbonate was given four-hourly.

In the evening she was breathing heavily, but was otherwise comfortable. There was no cyanosis during the night. No vomiting occurred, but one loose stool containing mucus and dark blood was passed. The temperature rose suddenly to 101.2° F (38.4° C) at 7.30 a.m. on the second day, her breathing became very difficult and she became cyanosed, she struggled seemed to choke on inspiration, and died immediately.

Post-mortem Report (Dr G H Smith).—A well nourished female infant rather cyanosed. Thorax Heart and pericardium normal, both lungs show areas of patchy collapse and rather oedematous mucopurulent material in bronchi and trachea no oedema of glottis. Abdomen No free fluid in peritoneal cavity and no evidence of perforation. Stomach Somewhat dilated. There is a large amount of brownish black fluid present. The gastric mucosa is the seat of intense inflammatory change and there is a marked degree of necrosis and sloughing limited to the crests of the longitudinal rugae. Necrotic material from the stomach gives an intense iron reaction the appearances being consistent with those due to corrosive poisoning. Numerous haemorrhagic points are apparent. Microscopical section shows necrosis of mucous membrane extending down to muscle. Intestines Apart from a few patches of congestion in the upper jejunum, the intestines are healthy and the only contents present are black semi fluid material resembling altered blood. Those contents are confined to the lower bowel, chiefly the pelvic colon. Liver There is passive congestion. Neither hepatitis nor necrosis is present. Gall bladder and pancreas Healthy. Spleen Healthy but congested. Kidneys and suprarenals Healthy apart from venous engorgement. Ureter and bladder Normal. Head Brain and meninges healthy.

Case 2

A boy aged 2 years swallowed about 10 tablets similar to those mentioned above about 9.30 a.m. on March 4, 1947. Approximately half an hour later he began to vomit green bile.

Two tablets were returned whole. There was no change in his colour. His colour became waxy but had improved before admission to hospital the same day at 2.5 p.m. He was very thirsty. A stool passed later in the day was dark and gave the guaiac reaction for blood.

On admission he was rather flushed listless and drowsy. His pulse was regular and of good volume. There was neither tenderness nor abnormal resistance over his abdomen. Treatment consisted of mist magnesium hydroxide and bismuth along with glucose and saline. Later changed to milk and subsequently to milk diet. By March 6 the vomiting had ceased and on the 9th the stool was normal with no blood. On the 13th the child was very well but the stool was dark and the guaiac test positive. He had had no meat since admission. On the 16th the stool was again dark and on the 18th he was well and there was no melena.

Comment

Ferrous sulphate poisoning is a serious risk in view of the wide spread use of this type of tablet. It is important that they should be kept in a place where children cannot obtain them, and that their potential toxicity should be realized by the profession.

The first patient died after consuming about 26 tablets. The second survived after retaining about eight. B.A.L., which was referred to in an annotation (*Journal*, March 22, 1947 p. 386) was not available for the former case in 1944 and was not required in the latter one.

An old name for ferrous sulphate is green vitriol.

It is important to realize that these cases and the two quoted by Forbes have all resulted from gross overdosage.

REFERENCE

Forbes G (1947) *British Medical Journal* 1 367

Medical Memoranda

Chronic Lymphatic Leukaemia in Man of 84

The following case in which the leucocytes outnumbered the erythrocytes seems worth recording on account of the advanced age of the patient.

CASE REPORT

A retired 84 was admitted to Chase Farm Hospital at mid-day on July 14, 1946, with the preliminary diagnosis of pernicious anaemia. He was not fit for interrogation but his daughter stated that he had been yellowish in appearance and breathless on exertion for some time. On examination he was well covered, with a pale but not lemon yellow tint. His tongue was smooth. Rales were heard throughout both lungs, and there was a soft systolic murmur at the apex. The liver was palpable three fingerbreadths and he had two finger breadths below the costal margin. Reflexes were normal, and ankle jerks present and equal, plantar responses negative. Lymph nodes were not palpable in the neck or axilla. At 4 p.m. he was given 2 ml of neohepatex intravenously and 1 ml of analgamin intramuscularly. He died at 4 p.m.

Autopsy showed erythrocytes 680,000 per c.mm., leucocytes 250,000 per c.mm., reticulocytes 19.6%, thrombocytes, 100,000 per c.mm. Because of the high bilirubinaemia it was found that there was a moderate anaemia by Haldane's method. It was found that the blood was old, and that the venous blood was old. The blood did not show normal clotting. The differential blood count (2,000) showed a predominance of small lymphocytes. Macrocytosis was evident. There were numerous reticulocytes and many of the red cells were old. The venous blood showed a moderate anaemia. The plasma protein was 7.7%. The plasma urea was 250 mg. per 100 ml. The plasma creatinine was 0.8 mg. per 100 ml. The plasma uric acid was 4.5 mg. per 100 ml. The plasma cholesterol was 250 mg. per 100 ml. The plasma triglycerides were 150 mg. per 100 ml. The plasma glucose was 100 mg. per 100 ml. The plasma albumin was 4.5 g. per 100 ml. The plasma globulin was 3.2 g. per 100 ml. The plasma total protein was 7.7 g. per 100 ml. The plasma urea was 250 mg. per 100 ml. The plasma creatinine was 0.8 mg. per 100 ml. The plasma uric acid was 4.5 mg. per 100 ml. The plasma cholesterol was 250 mg. per 100 ml. The plasma triglycerides were 150 mg. per 100 ml. The plasma glucose was 100 mg. per 100 ml. The plasma albumin was 4.5 g. per 100 ml. The plasma globulin was 3.2 g. per 100 ml. The plasma total protein was 7.7 g. per 100 ml.

14 lb (680 g) and was of firm consistency, the cut surface showed enlarged Malpighian bodies. The lymph nodes were moderately enlarged in the mediastinum, abdomen, and groins.

COMMENTARY

The case was remarkable for the following reasons: the age of the patient, the leucocytes exceeded the erythrocytes, a reticulocyte count of 19.6% the unusual degree of bilirubinaemia, the high plasma uric acid, and the possibility of coexisting pernicious anaemia. Panton and Valentine (1929) found that the average age incidence in 25 cases of chronic lymphatic leukaemia was 55 years, but the age of the oldest patient was not recorded. Biggs (1936) reported a case of lymphatic leukaemia in a man aged 83. Emile-Weil *et al* (1938) described a series of cases of lymphatic leukaemia in patients aged from 64 to 81 years, the man aged 81 being the oldest leukaemic patient that they had seen. Although the leucocytes rarely outnumber the erythrocytes, high counts have occurred in other aged leukaemic patients. In Biggs's case they numbered 245,000 per c.mm. and I found 418,000 per c.mm. in a woman aged 75. Emile-Weil's cases however, were all crypto leukaemias or subleukaemic forms the highest count being 15,000 per c.mm.

The blood for the reticulocyte enumeration was taken 20 minutes after the injections of liver extract. It is, however, difficult to believe that the high reticulocyte count resulted from the injections, moreover, Roth (1943) has reported a leukaemia with 18% of reticulocytes. It is of interest to note that the patient's colour never suggested the high degree of bilirubinaemia present. The raised plasma uric acid was possibly associated with the numerous nucleated red cells or the increased fragility of the lymphocytes as shown by the smear cells. The signs of subacute combined degeneration of the cord suggested possible coexisting pernicious anaemia, but the data are not complete enough for a satisfactory diagnosis. Wintrobe (1942) considers that there have been only four acceptable cases in which the two diseases have existed simultaneously.

I wish to thank Dr P. Hamill under whom the patient was admitted for permission to publish the case.

T. H. TIDSWELL M.R.C.S. L.R.C.P.

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Trichobezoar

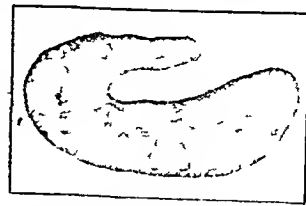
The following case is placed on record owing to the large size of the hairball and because of the few symptoms it caused.

CASE HISTORY

A girl aged 18 was admitted to the Clayton Hospital, Wakefield on April 5, 1946. She had been in good health until 10 days previously, when she started complaining of left sided abdominal pain "knife like" in character and associated with anorexia.

On examination a large tumour could be felt extending across the upper abdomen, the shape of a dilated stomach. An x-ray examination of the stomach and duodenum was carried out and Dr Rose reported as follows: "This seems to be a very rare and interesting case of a huge hairball (trichobezoar) forming almost a cast of the lumen of the stomach."

At operation on April 12, Mr E. R. Flint removed the hairball. The patient developed an acute dilatation of the stomach on April 14, this responded to treatment, and she was discharged from hospital on May 8. The hairball measured 17 in (43 cm) along the greater curvature, 15 in (38 cm) along the lesser curvature, and 8 in (21 cm) in the largest diameter. The girl admitted to eating her hair as a child mainly just before she went to sleep, but stated that she had not done so since she was 12 years of age.



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Reviews

ARTERIAL THROMBOSIS

Thromboses Artérielles Physiologie Pathologique et Traitement Chirurgical By René Leriche in collaboration with Dr. Ivan Bertrand (Pp 537 illustrated 600 francs) Paris Masson et Cie 1946

Two of Leriche's earlier works—*The Surgery of the Arteries* which appeared in 1943, and *The Surgical Treatment of Vasmotor Disorders of the Arteries* published in 1945—constitute with the present volume a rich store of facts observations and clinical experience, but also stand as a permanent memorial to the vision and industry of the author as a pioneer in a field of surgical endeavour with which his name will always be associated. Though he has already contributed so much we look forward with eager anticipation to the next publication, and with good reason, for he devotes the early pages of his book to an eloquent plea for a revival in France of an interest in experimental surgical research.

After reviewing the causes of arterial thrombosis, among which he stresses the influence of endocrine disorders upon blood vessels, Leriche lays down certain rules about the relationships which exist between the state of the arterial coats and the extent of thrombosis and the organization of clots, and also about the ischaemic effects of thrombosis, which are due partly to mechanical obstruction of the arterial lumen, but also to neurogenic spasm of the more distal vessels. By the onset of spasm, which may be precipitated by remote factors such as haemorrhage, inflammation, cold, or a heart lesion thrombosis suddenly becomes manifest. But the most important consideration in prognosis is the effect upon collateral vessels: thrombosis is well tolerated if it is localized and in the proximal part of a limb, but it is serious if the clot blocks many collaterals and disastrous if the process spreads to involve the companion vein.

The detailed description of the clinical manifestations of arterial thrombosis is arranged in three parts, the first dealing with traumatic thrombosis following contusion or rupture of arteries. In treating a wounded limb which shows signs of ischaemia the mere exploration of the artery and blocking the sympathetic nerve supply is not enough. If the artery is in spasm it should be stripped of its outer coat, if it is thrombosed or badly contused the affected part should be excised, and the sympathetic block must be repeated as often as is necessary. Arterectomy is undertaken in order to abolish vasomotor spasm as well as to prevent extension of the clot. These measures can abolish the pain of the causalgia type which appears immediately after wounding and will prevent Volkmann's contracture. The "chronic contusion" of arteries by pressure of a cervical rib, a crutch or a bone after a dislocation or fracture is also described.

In the second part the author discusses spontaneous thrombosis in obliterative arteritis, devoting special attention to thromboangitis obliterans. One of the few criticisms which may perhaps be allowed is that more attention has not been paid to the not uncommon thrombosis, of the popliteal artery especially in the absence of Buerger's disease, and little notice is taken of the relation of the arterial blood pressure and arteriosclerosis to spontaneous thrombosis. The most interesting feature in this section is the author's support for the theory of the endocrine origin of thromboangitis obliterans, and his advocacy of unilateral adrenalectomy (incidentally without a warning about the danger of removing a solitary suprarenal) in addition to lumbar ganglionectomy in its treatment.

In the third part he considers arterial thrombosis apart from the limbs—particularly at the bifurcation of the aorta and in the coronary arteries. The frequency of aortic thrombosis as quoted here seems astonishing at first sight but it must be that the symptoms of fatigability atrophy and trophic disorders in the legs, associated with impotence are often attributed to some nervous or constitutional disorder the diagnosis being missed because the absence of arterial pulsation distal to the bifurcation of the aorta has not been noticed. He advocates high lumbar ganglionectomy and, in favourable cases, excision of the bifurcation for this condition. In the section on coronary

thrombosis Leriche gives a complete review of angina pectoris in which he has had a special interest for many years. In this as in many other chapters, those who are already familiar with his writings will recognize some of the lessons they have learnt from him before, but the fact that they are as welcome and as satisfying when repeated as when they were first heard is a high tribute to the author's genius.

J PATERSON ROSS

X RAYS AND THE SKIN

X-Rays and Radium in the Treatment of Diseases of the Skin By George M. MacKee, M.D., and Anthony C. Cipollaro, M.D. Contributor, Hamilton Montgomery, M.D. Fourth edition, thoroughly revised (Pp 668, 321 engravings and 4 coloured plates 50s) London Henry Kimpton 1946

This edition of what is probably the best book in the English language on its subject has been thoroughly revised. It is no longer that with the passage of time a therapeutic weapon so potent as x rays becomes narrowed in its application rather than widened, yet this as the authors point out, is what has happened. In the early days x rays were employed in many conditions in which later experience has shown them to be either unsuitable or less suitable than other agents. Nevertheless it is still true, as Dr W. A. Pusey remarked over thirty-five years ago, that roentgen therapy is the most widely useful addition to the treatment of skin diseases that has been made. The importance of the ill-effects of x rays may be judged by the space given to the consideration of radio-dermatitis and radiocarcinoma. The pitfalls which lie in the path of the foolhardy are illustrated by the chapter on the medico-legal aspects of the subject.

The authors' account of cutaneous radiotherapy is well proportioned. The effects of radiation on living tissues are fully considered, and also the methods used and the results obtained in the treatment of all the varieties of skin disease which may be submitted to radiotherapy. Dermatologists will find this part of the book the most interesting. The authors hold the balance evenly between the extremes of uncritical optimism and unrelieved pessimism, and they found their conclusions on a comprehensive knowledge of the literature of the subject.

The format of the volume is well up to the best American standards, the clinical photographs are excellent and so are the four coloured plates, all of which are devoted to various aspects of x-ray disaster—an allocation somewhat out of proportion. However, any temporary false impression which examination of the coloured plates alone might convey will be amply dispelled by further study of the book, and we commend it unreservedly to all who are interested in cutaneous therapeutics.

H. HALDIN DAVIS

LIVES OF THE OLD

Old People Report of a Survey Committee on the Problems of Ageing and the Care of Old People under the chairmanship of B. Seebohm Rowntree, C.H., LL.D. (Pp 202 illustrated 3s 6d) London Published for the Nuffield Foundation by Geoffrey Cumberlege, Oxford University Press 1947

For the first time an attempt has been made to discover how old people live and to assess their particular needs. The Nuffield surveyors' report discloses a disquieting state of affairs. Most old people continue to reside in their own homes, but the conditions under which they live vary greatly. Many are well cared for, some live in a single room where they eke out a precarious and miserable existence. Many—and this also applies to those who live with their relatives—would be willing to enter a hostel or home for old people if such were available. The number of suitable homes is small, and any one that opens is at once overwhelmed with applicants seeking admission. Some are nothing better than "farms" for the aged. The surveyors recommend that all such voluntary homes should be open to inspection, but it is difficult to define such places in terms that would exclude a hotel or boarding house.

The report emphasizes that, though dire poverty is no longer a real problem for the aged, loneliness may be. Opening clubs for them may relieve it, but this provision is often difficult at present. An adequate supply of food is another difficulty. Many old people find shopping, with its waiting and queueing

almost unbearable, and live on a miserable fraction of their rations. There is evidence that an appreciable amount of preventable ill health, leading often to admission to hospital, is caused by underfeeding. The provision of meals by mobile canteens supplied if necessary from Civic Restaurants, would make a great difference to the comfort of many old people.

The surveyors discuss at some length the employment of the elderly in suitable work and quote an impressive amount of evidence showing that they have a valuable contribution to make towards the nation's wealth—an important observation on our ageing population and one that should be studied. In a short note a medical subcommittee outlines a programme of long term research into the factors that lead to ageing and other problems. The subcommittee remarks upon how little work has been done on the relationship between economic and social environment and the disabilities of old age. Inquiries are being carried out in Wolverhampton and Glasgow which should be fruitful. The lack of suitable homes in this country for old people of all social classes is notorious. The Poor Law has made its not very satisfactory contribution and the rest has been left almost entirely to voluntary bodies.

AMULREE

FOOD IN THE HOME

Nutrition in Public Health. By Lucy H. Gillett, M.A. (Pp. 303, illustrated 14s.) Philadelphia and London: W. B. Saunders Company, 1946.

Lucy Gillett has written this book for the public health nurse of America. It should interest health visitors and midwives in England provided they keep in mind the great differences in the food situation between the two countries. Meat purchases, writes Lucy Gillett, 'need careful watching to prevent them from crowding vegetables and milk from family meals. Fats should not be used too freely.' The English reader will also study the food needs per week in tables 18, 19, and 20 with some of the envy depicted on the faces of the two children in the advertisement for a well known brand of gravy powder. The book is based on sound common sense, is easy to read, and does not over simplify a complex subject. The scientific principles of nutrition are made clear to the housewife, she is taught how to plan a meal for all circumstances and how to budget economically.

Men and women consume the following approximate minimum amounts of foodstuffs per week: milk 41-6 quarts (4.8-6.8 litres), eggs, 4, meat 2 lb (0.9 kg), fats 12-16 oz (0.34-0.45 kg), sweets, 12 oz (0.34 kg). The author recommends that for a low income family of four persons with the man working at a desk all day, the woman doing all the housework, a boy of 14 who plays football, and an athletic girl of 10, the weekly marketing list in the late fall should include 9 quarts (10.2 litres) of fresh milk, 12 tall cans of evaporated milk (equal to 10 quarts (11.3 litres) of milk), 6 oz (170 g) of cheese, 1 dozen eggs, 8 lb (3.6 kg) of meat, 3½ lb (1.5 kg) of fats, 3 lb (1.4 kg) of sweets, 19 lb (8.6 kg) of cereals, and 24 lb (10.6 kg) of vegetables and fruit.

One might wonder why a book on the principles of nutrition should be required in the land of plenty, but the fact is that educating the housewife is more necessary where food abounds than where supplies are hoarded and doled out in exchange for coupons. Scarcity has taught us much, there is now greater need for such education where rationing is unknown.

FRASER BROCKINGTON

The sixteenth edition of *Stedman's Practical Medical Dictionary* (London: Baillière, Tindall and Cox, 42s.), edited by Dr N. B. Taylor, contains a new etymological section on medical terms. Mr A. E. Taylor has tabulated the Greek and Latin roots from which so many of these words are built up, and the student learning, for example, the meaning of the root 'sehi' (from the Greek *σῆω*) will recognize it in such words as schizophrenia and schizogenesis. Appendices include tables of weights and measures, the chemical elements (though neptunium and plutonium are not shown), and a list of pathogenic micro organisms with the old and new nomenclature. Though the spelling preferred is American words are listed also under their English form—for instance, anemur and anemur. Brief historical notes on men whose names are used eponymously enliven the text. Students and practitioners will find that 'Stedman's' is a valuable reference book.

BOOKS RECEIVED

[Review is not precluded by notice here of books recently received]

Synopsis of Operative Surgery. By H. L. Mobley, M.D. F.A.C.S. 2nd ed. (Pp. 416, 30s.) London: Henry Kimpton, 1947.

A summary of the technique of operative surgery, this edition includes an account of recent advances, many illustrations.

Janus, the Story of a Doctor. By John Plesch. (Pp. 579, 18s.) London: Victor Gollancz, 1947.

An autobiography by Prof. Plesch, with a portrait of Einstein by the author and anecdotes about many of his famous friends including the Curies, Wassermann, Einstein, Fritz Kreisler, and Tescanini.

Dynamic Aspects of Biochemistry. By Ernest Baldwin, B.A. Ph.D. (Pp. 457, 21s.) Cambridge: University Press, 1947.

Designed as an introductory textbook to biochemistry for students specializing in this subject.

Forensic Medicine. By Keith Simpson, M.D. (Pp. 335, 16s.) London: Edward Arnold, 1947.

A textbook of forensic medicine and toxicology intended for medical students, many illustrations.

Scoliosis. By Beatrice Woodcock. (Pp. 111, 11s. 6d.) Oxford: University Press, 1947.

Described as a practical and simple approach to the treatment of scoliosis with many illustrations.

Tutoring as Therapy. By Grace Arthur, Ph.D. (Pp. 125, 8s. 6d.) New York: The Commonwealth Fund, 1946.

By 'tutoring' the author means the individual teaching of children who have the intellectual capacity to understand school work but suffer from some mental or physical disability. She discusses the selection, training, and administration of teachers as well as therapy.

A Touch of Glory. By Frank G. Slaughter. (Pp. 272, 10s. 6d.) London: Jirrols, 1947.

A novel about a doctor's struggle against medical 'rackets' in Mexico.

La Reticulose Histio-monocytaire. By P. Carré. (Pp. 195, 350 francs.) Paris: Masson, 1946.

A monograph on a group of pseudo leukemias—malignant diseases of the reticular stroma and the hemopoietic system. In French.

Handbook of Correctional Psychology. Ed. by Robert M. Lindner, Ph.D., and Robert V. Scherer, M.D. (Pp. 691, \$10.00.) New York: Philosophical Library, 1947.

A symposium by various authors on the practical handling and rehabilitation of prison inmates.

Principles and Practice of Obstetrics. By Joseph B. De Lee, M.D., and J. P. Greenhill, M.D. 9th ed. (Pp. 1011, 50s.) Philadelphia and London: W. B. Saunders.

This edition includes new material on foetal erythroblastosis, premature labour, postpartum, and the care of premature babies.

Experiences with Folic Acid. By Tom D. Spies, M.D. (Pp. 110, 21s.) Chicago: The Year Book Publishers, 1947.

A monograph on the use of folic acid in the treatment of megaloblastic anaemias.

Improvised Equipment in the Home Care of the Sick. By Evelyn M. Olson, R.N. 4th ed. (Pp. 265, 7s. 6d.) Philadelphia and London: W. B. Saunders, 1947.

An illustrated manual on improvised first aid and nursing measures intended primarily for those who nurse the sick at home.

The Population and Epidemics of Exeter. By Ransom Pickard, C.B., C.M.G., M.S., F.R.C.S. (Pp. 83, No price.) Exeter: James Townsend, 1947.

An account of the population changes and epidemics of communicable diseases in Exeter since the 14th century.

Maladies et Syndromes Rares ou Peu Connus. By Prof. A. Aimes. (Pp. 205, 300 francs.) Paris: Masson, 1946.

Short notes on a large number of rare diseases with bibliography.

BRITISH MEDICAL JOURNAL

LONDON

SATURDAY MAY 10 1947

DAY NURSERIES AND INDUSTRY

During the war local authorities were urged by the Ministry of Labour to provide day nurseries for infants and children under 5 years of age whose mothers undertook full-time industrial work. These nurseries were established not for the sake of the mothers or children but with the specific object of increasing the woman-power available to the State, and mothers with more than one child, or at most two children, or mothers unable to work during their own illness, were therefore not allowed to use these nurseries. Of the women in industry at the beginning of 1945 about 1% had children in day nurseries.¹ After the war, though many nurseries were closed, the majority remained open. The shortage of man-power is still acute and is likely to remain a feature of our social life for years to come. So the Ministry of Labour is once more pressing for more full-time day nurseries. In some areas, particularly in the cotton spinning districts of the North-West, firms are themselves providing nurseries or crèches for the infants and children of their women employees. Under existing legislation such industrial nurseries are not subject to the control of any outside body and may be good, bad, or indifferent. For many decades past, members of our profession, as well as social reformers, have urged that the employment in industry of mothers of young children is detrimental to the well-being both of the children and of the family, and that women should be encouraged and helped to look after their own young children at home. Have we reason now to reverse this policy? Our answer should depend on whether the provision of nurseries does in fact liberate essential woman-power, whether the physical and mental health of mothers and children is affected advantageously or adversely, and whether home life does or does not suffer thereby. Information is available on some of these points.

The women released by admission of their children to day nurseries cannot give steady service, since when the child is sick the mother must stay at home, and therefore they, like their children, presumably have an absentee rate of 25% and often more. Because of the absentee rate of children day nurseries admit to their registers some 20% more than they can accommodate. The investigations of F Grundy,² Medical Officer of Health for Luton, are illuminating. After reviewing the figures available to him (number of mothers with two children in nurseries, number of children attending half-days or absent, number of nursery workers) he estimated that the provision of wartime day-nursery accommodation for 100 children would release 27 persons for whole-time work in industry. He also esti-

mated the net annual cost of the nursery service (excluding administration costs and capital expenditure, but including loan charges on capital) as £192 per person released for whole-time industrial work. That was in 1943, and costs have risen steeply since then. Grundy's figures ignore all labour absorbed by the nurseries except that of women directly employed in them. To this, therefore, should be added the man-power consumed in medical supervision, in administration, clerical work and accountancy in the local authority offices, in laundry work, and in provision of equipment and replacements—a heavy item. When an absent child is sent to hospital the mother may remain in work, but trained labour is absorbed by the hospital services provided. It is obviously impossible to compute all this labour force accurately. We are paying a large subsidy for every mother thus entering industry, but it seems doubtful whether the nurseries do not absorb more labour than they free.

Every doctor, but not every business man requiring labour, knows that to congregate children in large groups increases the incidence of infection among them, and the younger the child the greater the risk. In an article in the last and present issues of the *Journal* M McLaughlin gives data on the incidence of certain infections in day nurseries, based on work carried out over a period of 12 months in Birmingham, where work for the welfare of children is well known to be of a high standard. The results are clear-cut and striking: respiratory tract infections were two to eight times more frequent in children attending local authority nurseries than in a control group living in their own homes. The degree of difference in infection rates may surprise many doctors. It is true there were inevitably various differences in the social background of children in the two groups, but that this did not invalidate the comparison is shown by a previous large scale investigation³ organized (like the Birmingham investigation) under the auspices of the Medical Women's Federation, and carried out by child welfare medical officers in twenty-two local government areas in Great Britain, the results being analysed by W J Martin. This showed that nursery children examined within one week of admission, and home children examined as controls, had an approximately similar incidence of enlarged tonsillar glands, of mouth breathing, and of bronchitis, but that the incidence of these conditions rose strikingly in children over 6 months in the nurseries. Hence we can legitimately conclude that nursery life caused a deplorable increase in respiratory tract infection. McLaughlin found that 22.6% of the boys and 16.0% of the girls at nurseries suffered from chronic nasopharyngeal infection, as against 2.8% and 2.0% among home children. What this portends in chronic sinusitis, and its sequelae, in later years among these nursery children is still unknown. Measles was epidemic in Birmingham during the year of the investigation, and the percentage of children under 18 months of age developing measles was more than six times greater in the nursery group than in the home group. Thus nursery life greatly increased the proportion of children developing measles when ver-

¹ Menzies H. *Lancet* 1946 2 499² Statistical Report to the Luton Borough Council 1943³ *British Medical Journal* 1946 2 117

young the fatality rate among cases of measles in London fever hospitals before the war was about nine times as great for children under 2 as for those aged 5 to 9 years. Such is the cost of life in a day nursery to children's health—and this cost cannot be offset by the interesting fact that children over 3 years of age in the nurseries usually averaged about half to one pound heavier than the controls living at home—a fact which may result from the increased rations available to day nursery children under our present rationing schemes.

There exist no statistical data on the comparative mental health of children living at home and of children in day nurseries, and controversialists will no doubt continue to adhere to their own diverse opinions as to the relative value of home life and nursery life until statistical data are available. There is, however, a large body of opinion in support of the view that at least under the age of 3 years the child needs the security of his home and of proximity to his mother, and often suffers severely from being left in a nursery.

Double responsibilities and double work, in the home and in the factory, are well-recognized causes of illness among women workers. The task of shopping, washing, cleaning, mending, and cooking, and of tending husband and small child, in addition to doing a man's full-time work in factory or shop, is superhuman, and something must go to the wall. M. Back⁴ has noted the squalor in the homes of some of these mothers. Some women who are not forced to earn for themselves and their children undoubtedly prefer factory life to minding the baby in the cramped quarters of their homes, though probably most of even this minority would choose to stay at home were they aware of the danger to children's health involved in nursery life. Menzies¹ has drawn attention to the large number of children withdrawn from the nurseries by their mothers "on account of fretting," or because they contract an illness.

It seems inescapable that the cost in children's well-being is such that the policy of encouraging mothers to take full-time work and leave their young children in a nursery cannot be justified except on grounds of overriding national economic need. If, as seems probable, day nurseries consume as much labour as they free, or more, all basis for this policy disappears, and it would be in the national interest to pay a family allowance to the necessitous mother sufficient for her to undertake the important work of caring for her family herself instead of paying a heavy subsidy for her labour in industry.

This is not to say that day nurseries have not a part to play in the social scheme; there remains the need of helping many mothers and young children—hampered by health, temperament, home circumstances, and other causes—by provision for the care of young children out of the home. Foster homes, "good neighbour" schemes, nursery schools, part-time and full-time day nurseries, and resident nurseries can all play their part, but this is a large problem and an essentially different one from that of the wartime or industrial day nursery. In the one case the guiding principle is the well-being of the individual mother and child,

in the other the provision of more hands for industry. It behoves us to orientate our national policy on day nurseries in the light of the data available, and to obtain more factual information than at present exists as to the relative merits and demerits of various other methods of helping the overburdened mother of young children, or the young child needing other care than his mother's.

We know very little of the incidence of infection among children in residential nurseries, nursery schools, or part-time day nurseries; information which is essential when planning for child care. McLaughlin's cogent work compels attention in this field.

RESEARCH ON THE COMMON COLD

Little has been done in investigating the aetiology of the common cold since the work of Dochez and his collaborators in the early part of the last decade. This work fully confirmed the existence of a filtrable agent in nasal and throat washings from persons with colds which reproduces the disease in a substantial proportion of inoculated subjects, either chimpanzees¹ or human volunteers.² A further claim was made later that the virus could be cultivated in a medium containing chick embryo tissue cultures retaining their capacity to reproduce the disease throughout numerous transfers occupying several months; this observation is now regarded somewhat sceptically. It is noteworthy that during the period covered by this work Wilson Smith, Andrewes and Laidlaw³ discovered the transmissibility of epidemic influenza to the ferret. Research on influenza has proceeded steadily since that time whereas that on the common cold has lapsed into oblivion. The reasons for this contrast are clear: the possibility of transmission to an animal which is available reasonably cheaply and in large numbers is almost a *quæ non* for the thorough study of any virus disease. With this resource and the subsequent discovery of a simple method of titrating antibody the study of influenza has been enabled to cover a very wide field. Such methods have yet to be discovered and applied to the common cold.

It is to this problem that members of the staff of the Medical Research Council have been addressing themselves during the past year, and on May 2 the section of Epidemiology and State Medicine of the Royal Society of Medicine visited the Harvard Hospital, Salisbury to see the conditions under which transmission experiments are conducted, and to hear of the results hitherto obtained. A report of the formal proceedings will be found elsewhere in this issue (p. 650). This hospital was a gift to the British nation from the U.S.A. and was staffed during the war by the Harvard Research Unit, formed originally for the study of epidemic disease under war conditions in England. Now vested in the Ministry of Health, the hospital could be used for no purpose more appropriate or more consonant with its wartime tradition than the prosecution of the present research.

¹ Dochez A. R., Shibley G. S. and Mills Katherine C. (1930) *J. exp. Med.* 52: 701.

² Long P. H., Doull J. A., Bourn Janet M. and McComb Emily (1931) *Ibid.* 53: 447.

³ Dochez A. R., Mills K. C., and Kneeland Y. (1936) *Ibid.* 63: 509.

⁴ *Lancet* 1933 2: 66.

is extensive staff quarters have been readily converted into a series of completely self-contained units each housing a pair of volunteers, who are isolated from all human contact—except during the daily visit of a gowned and masked medical officer and matron—for a period of ten days. After three days' isolation they are inoculated intranasally with experimental material, and all the features of any cold which may result are carefully recorded. The meeting had been fixed for the penultimate day of an isolation period, and the visitors were therefore permitted to enter the quarters and interview their inmates. It was surprising and gratifying to hear that a visit to Salisbury for the purpose of serving as a human guinea-pig is looked upon by university students and others as a very enjoyable holiday: some volunteers have served twice and applied for a third admission when the prescribed interval of 6 months is over, and admissions are fully booked until the end of this year. It is very greatly to the credit of the organization that such *enthusiasm should have been produced*. The Harvard Hospital has no claim to beauty: it is situated on a bare and very bleak hill-top, and the huts, although commodious and warm, are plain and simply furnished. The volunteers can walk where they will in the surrounding country, they are liberally supplied with books and papers, and each unit has its radio and telephone. These amenities, and no doubt the sense of participation in an important scientific experiment, must explain the popularity of this peculiar type of holiday.

The fortnightly influx comprises 12 pairs of volunteers, of whom 2 pairs are inoculated with known positive material, and 2 pairs with plain broth. None of those in clinical charge knows the content of the different fluids used: hence there can be no possible bias in assessing results. The inclusion of these two types of control leaves only 8 pairs in each group for inoculation with unknown test material, and owing to the fact that fully active filtrates produce colds in only about one-half of inoculated subjects the resources of the team were likened by Andrewes to those of an experimentalist restricted to the use of about a dozen mice per month. Thus, in spite of the elaborate organization which has been set up, progress is likely to be slow. The main object in employing this laborious method is indeed to discover another which shall be more readily applicable. Progress is likely to be achieved only when the virus can be propagated in some other way than in the human volunteer or chimpanzee, and among methods which are being tested is propagation in the developing egg. As Andrewes pointed out, there are four different routes for inoculating eggs, and the stage of their development may also affect the result: moreover, of 60 different viruses which have been studied in this way, three-quarters have been successfully propagated. There are therefore good reasons for hoping that this much simplified technique may prove applicable, fortunately, normal egg fluids produced only one cold and 3 doubtful responses among 20 volunteers.

A good deal of basic information about the behaviour of the agent in active filtrates has already been obtained. An epidemic of colds at Harrow, where the secretions of about 20 affected boys were pooled, furnished a stock of

material which has been extensively used. The filtrate of this material retained its activity during storage at -76°C for over 4 months: it has also been determined that storage at -10°C is satisfactory for one month, and that activity is retained at $+4^{\circ}\text{C}$ for 3 days—a fact which enables material to be transported in an ordinary ice-box instead of being packed in carbon dioxide snow. The effect of dilution is not yet certain, and concentration has not been achieved. Particle size has been determined approximately by the use of graded filters, and the indications are that it is of the same order as that of influenza virus: since the number of volunteers tested with each filtrate other than that from the standard grade of filter was only 4, this conclusion must be regarded as only provisional. The incubation period of inoculation colds was most often 2 days but sometimes 1, 3, or more: they appear to have been mild and uncomplicated, possibly owing to the absence of accompanying bacterial infection. An interesting observation, not easily explained, is that the frequency of positive results from inoculation has been unrelated to the length of the interval which has elapsed since the subject's last natural cold. It is to be hoped that this does not boken the existence of numerous antigenically unrelated cold viruses.

The progress of this study, slow though it is likely to be, will be watched with much interest. It is reassuring to know that one of the principal lines of approach to the most banal and at the same time one of the most baffling problems in medicine is being pursued methodically by a full team of experts. Their anxiety that no early benefits should be expected is easily understandable: that progress in aetiological study does not necessarily afford any ready means of prevention or cure has been illustrated in the history of influenza. Whether any ultimately discovered means to this end will be on immunological, chemotherapeutic, or purely hygienic lines few would venture to predict. It is perhaps significant that the laboratory study of air disinfection by chemical and other means has also been transferred from Hampstead to the Harvard Hospital. Air sanitation is at least a practicable proceeding, the effects of which on respiratory infections are now being studied, and may well prove valuable.

SIR ALMROTH WRIGHT

By the death of Sir Almroth Wright British medicine has lost one of its most brilliant workers and one of its most picturesque characters. An account of his life is given in the obituary columns, here we shall attempt to appraise some of his contributions to medical science. Wright's father was a distinguished clergyman who had to educate a large family on a small income, so for economic reasons Almroth Wright had to win scholarships in such varied subjects as literature and law in order to pursue a university career. When he subsequently adopted medicine as his calling it was some time before he could decide which branch of medical science he should make his own. He worked at physiological problems with Wooldridge in Cambridge and with Ludwig in Leipzig, where he came

into contact with Pfeiffer, a leading figure in the then young science of bacteriology. It was as a physiologist that he went to Sydney, and although since his appointment as Professor of Pathology in the Army Medical School at Netley he has been called and known as a bacteriologist he remained to the end essentially a physiologist. Early in his career sleepless nights caused by a crying infant fed on cows' milk led him to apply his physiological knowledge, and by adding citrate he stopped the clotting of the milk in the child's stomach. He published his observation, but it was only many years after that citrated milk was advocated by paediatricians. He devised a method of measuring the coagulation time of the blood and by means of this estimated the effect of calcium salts, carbon dioxide, and other substances. He gave much time to the consideration of haemophilia, and wrote the chapter on this subject in Allbutt's *System of Medicine*. Another subject that interested him was acidosis, especially in scurvy, and later on in gas gangrene when this problem was presented to him in the war of 1914-18.

Almroth Wright's acceptance of the post at Netley must have marked his decision to give up physiology as a career. He soon became interested in the possibility of preventing bacterial infection by heat-killed vaccines. This was, of course, long after Pasteur had demonstrated that vaccines could make animals immune against bacterial disease, but Pasteur's vaccines were living attenuated cultures which, though suitable for immunizing sheep and cattle, were too dangerous for general use in man. Roux and others had shown that filtered cultures or dead cultures could produce immunity, but in these experiments they considered the fluid to be the active immunizing agent and not the bacteria, if present. Wright's original typhoid vaccine was a killed broth culture, but it was his conception that the active constituents of this vaccine were the dead bacteria. By blood tests of inoculated individuals he found that the vaccine stimulated the production of agglutinins and bactericidal substances. When he visited India as a member of the first Plague Commission he found opportunities of testing the efficacy of typhoid vaccine in some of the garrisons. These early observations convinced him that the vaccine did confer immunity. The vaccine was used to some extent in the South African War, but the resulting figures were very confused as at that time typhoid and paratyphoid fevers had not been properly differentiated. The statistical results in regard to typhoid vaccine in this campaign were the subject of considerable controversy, and in 1902 Wright left the Army Medical School and went to St Mary's Hospital, which at that time was seeking for a head of the pathological department. At St Mary's he founded his famous school of bacteriology.

For the next ten years he was preoccupied with the problem of vaccine therapy—the treatment of established infection by means of vaccines. With Douglas he developed the opsonic index and used it to control doses. The idea of vaccine therapy so controlled made a great appeal to doctors throughout the world, and for several years after 1905 workers from many countries came to Wright's laboratory at St Mary's to learn his methods. In 1912 Wright went to South Africa to investigate pneumonia in

the gold-mines, and he instituted a system of prophylactic vaccination which was continued for many years by Lister. In the war of 1914-18 Wright went to France as a consulting physician and set up a laboratory in the Casino at Boulogne, where he remained until the end of the war. He lived during these four years in the Rue Daunou, a few doors from the house in which he had, as a boy, stayed during the Franco-Prussian War. In Boulogne a number of his assistants from London joined him, and the team did much good work on the bacteriology and physiology of septic wounds and gas gangrene. It was then that extensive trial was made of the hypertonic salt treatment of septic wounds—a method which Wright had advocated many years before. This was based on the principle of drainage of the infected walls of a wound in contradistinction to the ordinary surgical drainage of the cavity of the wound. This method gained many adherents, and was the basis for the magnesium sulphate paste so commonly used in the casualty rooms. During these years Wright devised many interesting and beautiful methods of studying the function of leucocytes in relation to wound sepsis. He also introduced the method of immuno-transfusion. He had shown that the addition of a small dose of staphylococcus vaccine to human blood outside the body caused a rise in the non-specific bactericidal power of such blood, and in cases of severe sepsis patients were transfused with such vaccinated blood or with blood from an immunized donor. In the years after the war Wright continued this work on non-specific immunity and in the course of it evolved some useful methods—notably the slide-cell method for the evaluation of the bactericidal power of whole blood. This slide-cell method has been used for other purposes, especially by Fleming in his work on antiseptics and penicillin.

Almroth Wright's work and personality have had a profound influence on medical science. The success of typhoid vaccine stimulated research on other prophylactic vaccines—research which is still actively proceeding. The introduction of vaccine therapy provided another much-needed means of combating established infections, and it is a pity that this method has been abused. The discovery of the sulphonamides, and the development of antibiotics subsequent to the discovery of penicillin by Wright's pupil, Alexander Fleming, have made much of his work on vaccine therapy now a matter of academic interest only. Perhaps his greatest contribution has been his insistence that blood and other tests should be used to control therapeutic and preventive measures so that they may be used with intelligence. Bernard Shaw says elsewhere in this issue that men of science are usually rich in facts and poor in logic. Shaw's friend Almroth Wright was rich in both.

ASEPSIS IN SPINAL ANAESTHESIA

Since the earliest days of spinal anaesthesia a small proportion of patients given spinal anaesthetics have subsequently developed a type of meningitis which we discussed in these columns earlier this year.¹ In a number of recently reported cases in which meningitis has fol-

¹ *British Medical Journal* 1947 1 187 see also the article by Kremer *M. Jbid.*, 1945, 2 309

lowed a spinal anaesthetic the nature of the infection has not been such as to suggest the skin, either of the patient or of the operator, as its source. It has been due, almost without exception, to some sort of Gram-negative bacillus, either *Ps. pyocyanea* or a nondescript organism of the type commonly found in non-sterile water. Moreover, non-sterile water has been incriminated as its source, the needle and syringe used having been "dished up" in supposedly sterile water which was subsequently suspected or proved not to have been sterile. The clearest proof of this origin was obtained in the Sheffield series of cases described by Barrie², 11 out of 96 patients given spinal anaesthetics in one operating theatre developed meningitis, and the source of infection was found to be a defective Berkefeld filter supplying supposedly sterile water. A similar source was suspected in the two fatal cases of *Ps. pyocyanea* meningitis described by Evans³. Suggestive evidence of this possibility was furnished by the finding of the same organism in the cerebrospinal fluid of another patient without meningitis, this contamination being traced to a Winchester quart bottle of "sterile" distilled water. A bottle of sterile distilled water or saline cannot be depended on to remain sterile if it has once been opened.

A further series of cases due to the same type of infection, but of undiscovered origin, was recently described in this *Journal* by Vuylsteke⁴. Evans, in a further publication,⁵ and Garrod,⁶ who has recently reviewed this problem, make suggestions for a sterilization technique whereby such accidents can be avoided. Everything used for lumbar puncture, whether for spinal anaesthesia or for any other purpose, should be adequately sterilized by heat. Boiling will serve if necessary, dry heat is much to be preferred, and has the advantage that it can be applied at leisure, the apparatus then being always available for use when required. What should be avoided at all costs is some sort of chemical treatment, often itself unreliable, such as storage in spirit, and "dishing up" in water alleged to be sterile. This seemingly innocent liquid, harmless enough if introduced into any other part of the body, is fraught with danger.

IMMUNITY AFTER PENICILLIN

Is it possible for chemotherapy to be too successful? That is to say, may infection be overcome so exclusively by the chemotherapeutic agent alone that the normal defence mechanism need not function, that no immunity results, and a second attack may consequently follow? There are scattered items of clinical evidence suggesting this. Rantz, Boisvert, and Spink⁷ found that when patients with streptococcal sore throats were treated with penicillin antibody formation was deficient. Plummer and his colleagues,⁸ studying the same disease, found that a short course of treatment might be followed by a recurrence as severe as the original attack. This is evidently a question worthy and capable of experimental study, and P. E. Harrison⁹ has undertaken this with most illuminating results. Rabbits were inoculated intradermally with pneumococci, the so-called "dermal pneumonia" of Goodner being produced. This is a spreading inflammatory lesion of the skin proceeding to septicaemia and death, and has the great advantage

that the progress of the lesion can be directly observed. When penicillin treatment was begun in such animals four hours after inoculation the infection was aborted and no immunity whatever followed. This was tested by three methods: neither agglutinin nor protective antibody could be demonstrated in the animal's serum, and reinoculation produced a progressive and fatal infection. On the other hand, when treatment was begun 24 hours after inoculation the spread of infection was still checked and a high degree of immunity followed, as demonstrated by each of these methods. It is therefore evidently possible for penicillin given sufficiently early, to eliminate infection with little or no co-operation by the body defences: this is perhaps to be expected from the fact that its action on bacteria in the early phases of growth is rapidly bactericidal.

These observations are made doubly interesting by parallel tests with sulphapyridine, sulphadiazine, and sulphamerazine. These three drugs acted alike and with quite different results. The infection became more extensive and was more slowly brought under control, and the immune response was greatest when treatment was begun after four hours, when it was delayed for twenty-four hours the response was poor, even though the animal recovered. The explanation of this reversal of the finding resulting from penicillin treatment derives from the fact that the sulphonamides do not immediately check bacterial growth, this continues for a time, liberating further antigen, the quantity of which is apparently optimal for antibody response under the chosen conditions when treatment is begun early. Delay results in the formation of an excess of antigen, which neutralizes some of the antibody formed. That this is the true explanation was proved by demonstrating the specific soluble substance of the pneumococcus in the blood of rabbits treated with sulphapyridine at a late stage, and by showing that the injection of this substance depressed antibody formation. Closely comparable results were obtainable in mice, in which the sole criterion was resistance to reinoculation. When the primary peritoneal infection was treated with penicillin the maximum resistance to reinoculation was obtained when treatment had been begun after twelve or eighteen hours. With sulphadiazine resistance was maximal only when treatment had been begun at the time of inoculation or after two or four hours, with longer intervals the ensuing resistance steadily diminished.

It is of course possible that these findings, especially those concerning the sulphonamides, are not applicable to infections by all bacteria other than the pneumococcus. Even so it seems justifiable to conclude that there is nothing to lose, and probably everything to be gained, by beginning treatment with sulphonamides as early as possible. In the case of penicillin, on the other hand, there is at least a theoretical possibility that very early treatment may have a disadvantage. Whether any further evidence of deficient immunity following prompt penicillin treatment can be gleaned from clinical experience will be known only if this possibility is borne in mind.

Dr J. A. Brown, of Birmingham, has been elected for the term of five years a member of the General Medical Council as a direct representative in place of the late Sir Kaye Le Fleming. Dr Brown received 14,035 votes. Dr J. E. Outhwaite, 4,527, and Dr I. Rose, 695.

² *Lancet* 1941 1 242.

³ *Ibid.* 1945 1 115.

⁴ *British Medical Journal* 1947 1 179.

⁵ *Proc. roy. Soc. Med.* 1946 29 181.

⁶ *Brit. Med. Bull.* 1946 4 106.

⁷ *Science* 1946 Mar 22, 352.

⁸ *J. Amer. med. Ass.* 1945 127, 369.

⁹ *J. infect. Dis.* 1946 79 101.

The next session of the General Medical Council will be open on Tuesday, June 3, at 2 p.m., when the President, Sir Herbert Lightfoot Eason, will take the chair.

THE USE, COST, AND PROVISION OF INFANT HEALTH HOSTELS

BY

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It has previously been suggested that homes or hostels for mothers and their babies, which would bridge the gap between their discharge from maternity unit or hospital and their return to poor home conditions, should be a feature of the infant health services of the future (Lewis 1946). Such hostels, however, might have a more important role in counteracting unsatisfactory social conditions than that of mere post natal sanctuaries, and the subject clearly merits detailed thought. The local authority with which I was connected decided to set up a hostel, and the problem was examined from the local point of view. The results may be of general interest, because, apart from a review by the *Lancet* (1946) of convalescent-home facilities, this subject, especially as applied to the prevention of baby deaths and the promotion of infant health, does not appear to have received adequate objective treatment. For want of a better name, these hostels might be called infant health hostels and their purpose would be to combat the unsatisfactory social and environmental conditions that only too often interfere with the rearing of healthy infants.

It would not be difficult to write at length on how they would do this. In brief however they would be used to conserve the health and well being of the mother in the pre natal period and so prevent premature labour and reduce the incidence of prematurity, to act as the link between maternity units and hospitals and the home and thus save the infant from being exposed to unsatisfactory home conditions until it could stand them—the baby would in fact be "hardened off" in a hostel, to assist certain mothers by providing means by which for a period they could give all their attention to the baby, to help selected unmarried mothers and to give concentrated teaching in homecraft and baby care for most of the mothers admitted would need instruction in these important subjects.

To obtain the greatest benefit from an infant health hostel it could be necessary to ascertain the households where conditions were prejudicial to the healthy rearing of an infant, and to do this as early in the pregnancy as possible. We have called these households "observation households" for they should be kept under careful observation throughout the pregnancy, with a view to ameliorating the adverse conditions.

Cost of Infant Health Hostels

General—In setting up an infant health hostel there seem to be two principles to follow. (a) As the function of the hostel would be to give individual help to mothers beset with social difficulties and to impart concentrated instruction in homecraft and baby care, the proportion of staff to patients should be relatively high. (b) Although the babies admitted would not be under 2 or 3 weeks old there would still be a risk of the various forms of cross infection to which babies in institutions are always liable. If a serious infection were to break out, the smaller the unit the fewer would be the babies exposed. Therefore small units are to be preferred to large ones. The cost of a hostel would depend on its size and the staff necessary.

Size of the Hostel—What is the smallest unit that can be made an economical proposition? The nursing staff would have duties peculiar to this form of hostel for there would be little nursing as such and no need for night duty so long as some responsible person was available when necessary. In order to allow the nursing staff off-duty and holidays in accordance with the Rushcliffe recommendations a minimum of three would be needed. It is considered that a staff of three could run a hostel containing 10 to 12 mothers and babies and this would accord with principles (a) and (b) mentioned above. Considering the fairly heavy overhead charges to which a smaller hostel would be subject, the availability of suitable premises, and the scale of provision of hostels it is probable that a hostel of 10 to 12 beds and cots is the optimal size to aim at.

Staffing—The matron, or sister-in-charge, would be the key to the success of the hostel and must be carefully selected. She

should be an SRN possessing the SCM and the Health Visitor's Certificate and should have had practical experience of sociological and public health work. An active interest in and knowledge of baby-care and mothercraft should be an essential qualification. The other two nurses should have special knowledge and interest in young babies, should possess the SRN with experience of infants or should be State registered children's nurses. As in the case of the matron, an interest in the teaching of mothercraft would be essential. In view of the special qualifications required it might be possible to pay a small honorarium over and above the Rushcliffe scales in order to attract suitable people. It is anticipated that the mothers themselves would help in the domestic work of the lighter type, so there would be no need for a large domestic staff. One cook with two daily workers would be sufficient.

Capital Outlay—When new maternity units or hospitals are being built it might be possible to incorporate an infant health hostel in the main building thus reducing overhead charges, but for the present it would be necessary to adapt a large private house. Some guidance on what is required is given by Brodie (1946), who deals with homes for unmarried mothers but with minor modifications, her recommendations would apply to infant health hostels as also would those put forward by the National Council for the Unmarried Mother and her Child (1946). The large old-fashioned type of house would generally have to be used and it would need a good deal of alteration. A house of the size and type required could be purchased to day for about £5 000. Alterations might amount to £1 000 and equipment to £2 000—a capital outlay of about £8 000.

Yearly Expenditure—The following estimate of yearly expenditure is partly based on the running costs of a small maternity home of 12 beds, allowance having been made for the differences in the types of institution.

Salaries of nursing staff	£770
" " domestic staff	568
National insurance, rates, and insurance	100
Superannuation contribution	40
Printing and stationery	25
Cleaning materials painting repairs, renewals	100
Maintenance of patients and staff	400
Petty cash, sundries, telephone	30
Bedding drapery, earthenware goods	60
Light and fuel	300
Furniture replacements	50
Drugs and medicine	30
Gardening	300
Total	£2,773

Assuming that the 10 beds and cots were occupied throughout the year the approximate cost per mother and baby would be £5 a week.

Provision of Infant Health Hostels

The scale of provision of infant health hostels would vary according to the area. Where social conditions were very bad the need would be greatest, and this would usually be in industrial areas where housing conditions were bad and the social environment poor. Powers to set up infant health hostels are apparently given by Section 204 of the Public Health Act 1936.

The following gives some rough idea of the extent of the need. In 1945 of the 77 infant deaths investigated by Lewis and Blackwood (1946) it was estimated that a hostel might have helped to save 19 babies, in 1946 in a similar survey the estimated number was 16. It would however be the greatest mistake to consider only mortality, for there would be many babies whose lives might not be in acute danger but who would benefit in health and well-being from being admitted to a hostel. This problem is better considered in terms of infant health than of infant mortality. By so doing the net would be widely cast and in saving the lives of the few the many would benefit. In the ascertainment of observation households referred to above it was estimated that between July and December, 1946 25 mothers or mothers and babies would have benefited by admission to a hostel over the whole year this would mean that about 50 should have been admitted. During 1946 there were 61 infant deaths in the area so that according to these figures provision might be made for approximately one bed for each infant death.

Assuming that each mother and baby remained in the hostel for one month, 10 beds would provide accommodation for 120 cases a year. It is likely however, that many mothers would be unwilling or unable to stay that time, to offset this, some might stay longer and there might be an occasional long period case. If this approximate standard were adopted it is clear that only those authorities with over 100 infant deaths a year would find these hostels an economic proposition, unless joint hostels were set up or arrangements made for the admission of mothers and babies from adjoining local authorities.

There is virtually no well documented practical experience of the use of hostels for saving infant lives, for while many authorities have made arrangements for sending mothers and babies to convalescent homes, a definite attempt to combat the effects of adverse social conditions at all stages of foetal and infant life by the extensive use of a hostel has never, so far as can be ascertained, been made. It would, moreover, avail little to set up a hostel unless this were accompanied by the ascertainment of observation households as early in pregnancy as possible. Remembering the relatively high cost, both capital and revenue, of infant health hostels and that they must at first be experimental, it is evident that no extensive provision on the scale of one bed per infant death could be considered, but as an experiment in social and preventive medicine their use in selected areas may rightly be advocated. They can do no harm, they are certain to do some good, they may prove to be a means of saving many infant lives. To achieve this any reasonable expenditure of public money would be justifiable.

Summary

The uses of infant health hostels as a means of combating adverse social conditions are set out, the functions of hostels are referred to, and the indications for admitting mothers and babies are considered.

The optimal size of a hostel is 10 to 12 beds and cots. Staffing is dealt with and an estimate of the capital and revenue expenditure made.

The need for hostels is assessed. It is suggested that provision might be made on the scale of approximately one bed and cot per infant death per year. Until, however, the uses and value of infant health hostels are more clearly defined, they should in the first instance be experimental, and be set up in those areas where the infant mortality rate is high, as an organized attempt to reduce it.

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SOCIETY OF BRITISH NEUROLOGICAL SURGEONS

The Society held its spring meeting in Lisbon on April 10 and 11 under the presidency of Sir Hugh Cairns. The meeting was arranged to pay tribute to Prof Egas Moniz for his pioneer work. It was he who introduced arteriography (in 1927), which was used in cerebral work first. The leucotomy operation for certain mental disorders was a later conception and was first performed by Prof Lima in 1935. The visitors, including members from several European countries, were welcomed by Prof Flores of the Lisbon Faculty of Medicine, Prof Moniz's successor in the Chair of Neurology.

Prof Moniz spoke on thrombosis of the internal carotid and its branches and on the interpretation of cerebral angiograms, especially the striking difference in circulation rate through the internal and external carotid systems. Prof Lima described the diagnosis of subdural haematomas by arteriography. Prof Furtado and Dr Marques spoke about the Arnold Chiari malformation, Prof da Costa on the neuroblastomas, and Prof Fernandes on leucotomy. The technique of carotid arteriography was demonstrated by Dr Imaginário and of aortic arteriography by Dr dos Santos. An excellent exhibition of cerebral angiograms included the early experimental procedures and instruments used for them, now of interest historically. Several communications, mostly relating to Prof Moniz's work, were given by the visitors including Mr Norman Dott's on intracranial aneurysms, and Prof Geoffrey Jefferson's on frontal lobectomy.

Reports of Societies

COMMON COLD RESEARCH UNIT

INTERIM REPORT ON A TRANSMISSION EXPERIMENT

A meeting of the Epidemiology and State Medicine Section of the Royal Society of Medicine was held on May 2 at the Common Cold Research Unit, Harvard Hospital Salisbury, where for about a year, under the auspices of the Medical Research Council and the Ministry of Health an investigation into the aetiology of the common cold has been undertaken. A succession of groups of volunteers have accepted isolation for a fortnight at a time in order that they might be tested with the common cold virus. The conditions and the outcome of the research so far are described in this report and are the subject of a leading article at p 645.

Members of the Section and others, who attended in large numbers, were received by the staff of the unit. They visited the isolation quarters—flats—of the volunteers and the hygiene laboratory, and then assembled in the lecture hall where a film produced by the Central Office of Information was projected. Dr H J PARRISH who presided, said that the common cold was responsible for the loss of 40 million man days a year, yet he believed this was the first time the Section had had a discussion on the subject.

History of Harvard Hospital

Dr W H BRADLEY gave an account of the origin of the hospital and of the unit. At about the time of Dunkirk the Harvard University planned to send to this country a group of field and laboratory workers to assist in the control of epidemics which were expected to arise. The Harvard unit grew into a team of more than 100 doctors and others. 22 buildings, prefabricated in the United States, were transported to this country and erected on a site near Salisbury secured and prepared by the Ministry of Health, and the hospital was formally opened in September, 1941. In selecting the location regard was paid to the suitability of the place for epidemiological studies of the detailed and intimate type called "clinical epidemiology." This part of Wiltshire had for the epidemiologist much the same kind of advantages as the 'Pickles' country of Wensleydale. The hospital was for a while perhaps overburdened with beds (125), it became a E.M.S. hospital for both civil and military cases of communicable diseases, and no group of patients suffering from such diseases ever before received so much investigation and therapy. The course of the war unfortunately prevented the full benefit of the studies from being reaped, but some of the work was published in the reports for the war years of the Chief Medical Officer of the Ministry. With America's entrance into the war the hospital passed into the hands of the U.S. Army, and became the central laboratory for the American Army Medical Corps in the European theatre. The laboratories were extended and adapted for special purposes, and research units were established—one, for example for the study of rickettsial disease. The place rapidly acquired a reputation as one of the foremost laboratories devoted to preventive medicine. With the invasion of France in 1944 the central laboratory was transferred to the Pasteur Institute in Paris, and with the cessation of hostilities in May, 1945, the American military authorities finally withdrew, though the place remained an important link between the United States and Great Britain and between Harvard University and its Faculty of Medicine on the one hand and the Ministry of Health and the Medical Research Council on the other.

The hospital was built specifically as an institute for the study of communicable diseases, and it was decided to adapt it to the purposes of a long term research into the aetiology and transmission of the common cold. The staff and personnel house was converted into flats for the use of volunteers, and the staff of the unit and of some of the laboratories was housed in what had previously been the wards. The work was started in May, 1946, on plans which were first discussed less than six months previously.

It was seldom clear how projects of this kind began, but the first knowledge of it was a memorandum by Dr C H Andrewes.

suggesting that the advances made in virus work might now be applied to the study of the common cold, and this limited objective was adopted. The plan was to discover a method of studying the virus, which could not at present be handled in the laboratory by existing techniques. Human volunteers—the justifiability of using them was agreed to after much debate—were employed as indicators of the presence of common-cold producing agents, and it was hoped that eventually a substitute would be found for them. Colleagues were always telling him that there was much else to be done in the study of the common cold. An attempt had been made to assess the priority of the various researches proposed, and they must not bite off more than they could chew. Many extensions of the present research would occur to all of them, and these would be explored in due course.

The Plan of Research

Dr C. H. ANDREWES said that it had been known for more than thirty years that a cold could be transmitted from one person to another by means of bacteria-free filtrates, and that such colds were transmissible in series. It had also long been known that chimpanzees—but no other kind of animal—could also be infected. A claim to have cultivated the virus in a tissue culture medium had not been confirmed. The most likely working hypothesis was that the filtrable agent which would produce transmissible colds in series was a virus, but not much was known of its properties because of the clumsy way in which it was necessary to study it. The primary objective was to find some substitute for the human volunteer, some laboratory method by which to recognize the presence of the virus. They were attempting, first of all, to adapt to the study of the cold a number of virus techniques which had been developed during the last fifteen years. They were concentrating attempts to grow the virus in fertile eggs, because about 60 different viruses had been studied in this way, and in about 75% success had been attained by one or other technique, so that there was a three to one chance of finding some technique of growing viruses in eggs. They tried to grow the agent in the egg, and then they had to use the human volunteer in order to decide whether the experiment was getting them anywhere.

It was not expected to solve this problem quickly. A succession of volunteers would be required for a period of years, and therefore the conditions must be attractive. The first volunteers were students during university vacations, and the idea was so popular that some of the students came again after a six months' interval. But it was necessary to get more volunteers, and on an appeal being made to the public 2,000 applications were received. It was thought that solitary confinement would be a deterrent and therefore the volunteers were housed in pairs. They were given every possible freedom consistent with carrying out the experiment. If they had been required to wear wet socks and sit in draughts their noses might have run more freely, but the flow of volunteers would have dried up. The volunteers were kept for three days before receiving inoculation in case they had arrived already incubating a cold. It had been suggested, particularly by recent work in America, that there might be some infections simulating the common cold but with a much longer incubation period than two or three days. That was a serious criticism of the technique at present employed in the unit, but they were following it with their eyes open, and they hoped that if there were any diseases simulating the common cold they would not be led astray. If they had a longer incubation period—a fortnight or more to allow for the mild form of atypical pneumonia which simulated colds—they would halve the speed of the work.

The volunteers were isolated on the assumption that they were likely to pick up colds by contact with other people. No stringent precautions had been taken to prevent the infective agent reaching the volunteers by means of inanimate objects such as newspapers or milk bottles, it was not believed that these were serious sources of danger. The system of controls was such that they would get some indication if these precautions were inadequate. A full blown cold was not difficult to detect clinically, but there were bound to be many intermediate conditions, mild sniffles, and so on. To avoid any bias in any trial, certain volunteers received normal egg fluids or other material known not to contain cold virus, and nobody but the laboratory worker knew what was given to any volunteer, each person receiving the material from a numbered bottle.

Twenty-four people—twelve pairs—were taken at each trial. Two of the pairs received a negative control material, and, in most trials, two a positive control material. This left eight pairs for the material it was desired to test. Something like 50% of people were resistant to the material, so that to test any one material it was necessary to take at least four subjects, two pairs, as the minimum. Their speed of progress was roughly that of the laboratory worker who was supplied with twelve mice a month. There must be no disappointment if progress was rather slow. Other angles of approach were possible in the future—a study of the individual resistance of the patient, epidemiological studies, air hygiene, climatology and orthodox bacteriology, but they felt that orthodox bacteriology had been studied rather more than other aspects.

Routine of Experiments

Dr D. K. M. CHALMERS, who has had the actual handling of the volunteers at the unit, said that the task was first to provide the bacteriologist with human subjects in isolation under such standard conditions as were practicable, and then to make the clinical assessment on which the results of the experiment were based. He described the recruitment, first of undergraduates, then members of the Red Cross, workers from certain selected industries, and finally the general public. The age limits were 18 to 40—after school age and before the setting in of the chronic catarrhal conditions of later life. People with asthma, hay fever, sinusitis, or a history of pulmonary tuberculosis were excluded. Conditions had to be as attractive as possible, not to spoil the volunteers but to retain their good will. There was almost complete freedom, except that they must not mix with other people. A distance of 30 ft (9 m) was regarded as beyond the reach of cross-infection. Each trial lasted for ten days. After a communal lunch on arrival the volunteers were given a preliminary talk, underwent a medical examination of life insurance standard (but including an x-ray examination of the chest), and then went into quarantine for seventy-two hours to exclude incubating colds. Materials believed to contain virus or materials known not to contain virus were instilled into the nose, 0.5 ml into each nostril, with the subject maintaining the supine position for two minutes, followed by the prone position for one minute. Neither the subject nor the doctor knew whether the one or the other material was used in a particular instance.

Clinical assessment began on the fourth day, and continued throughout the remainder of the trial. The matron recorded pulse and temperature daily on a chart. The criteria of each assessment were subjective and objective. Each volunteer reported any symptoms he or she might have. The appearance of the fauces was noted, and especially the evidence of what could be blown out of the nose on to the handkerchief. It might well be that the experimental cold induced in the unit was not the same thing clinically as the cold seen outside. For one thing, there should be less secondary infection. But the induced colds varied from the doubtful abortive cold to the abundant rhinitis. The incubation period was from twenty-four hours to five or six days. The Americans said that they could distinguish two types—one with a short incubation period of from twenty-four to forty-eight hours, and the other with a much longer period of from five to nine days. In the former the symptoms of running nose and coryza predominated, in the latter, sore throat and constitutional symptoms. This suggested that there might be more than one virus associated with the cold. In conclusion he stressed the fact that both the administrative arrangements for the volunteers and the methods for excluding extraneous infection were still in the experimental stage, but they were learning as they went along.

Interim Report

Dr F. FULTON gave an interim report on the results of the transmission experiments. He described the method whereby the material was collected from the subject, sent to the laboratory and centrifuged. The filtrate, which was cleared of all bacteria, was then stored. The first problem was to determine whether it was possible to go on storing the material indefinitely and still maintain the life of the virus. It had been shown that the filtrate could be stored for at least four and a half months at -76°C . He showed tables indicating activity at this and at other temperatures. At ordinary icebox tempera-

re + 4 C, activity persisted for three days. An attempt was also made to determine the size of the agent responsible. The washings could contain substances of quite different sizes. It could not be said that the lower limit of size was fixed, the upper limit was fixed, but not the lower. The most common incubation period was two to three days, but a few colds developed after five or six days, which was the limit of the period of observation; therefore the present observation period was not ideal though the majority of colds would probably exhibit themselves within that time. It did not appear to signify whether the subject had had a cold during the previous month or had had no cold for six months. 'The only thing we are certain about is that we have got some agent in the common cold filtrates which will induce colds in a percentage of the people, all the other results are tentative.'

Questions

Dr PARRISH said they were not yet at 'the end of the beginning of this investigation. The suggestion that women were much more susceptible to colds than men might be followed up, also an investigation might be undertaken into the determining factors in colds—an infection plus, probably, some depression of resistance due to climate, under-nourishment, or some other factor.

Asked whether any complement fixation tests had been tried, Dr ANDREWES said that this had been kept in mind, but it was suspected that they would have to get the virus present and growing in greater concentration before that could be successful.

Did the particle size exclude the possibility of a filter-passing bacterium? Dr FULTON replied that the filtrates had been cultivated under conditions which would be likely to grow these agents, and no growth had been observed at all.

Dr ANDREWES in reply to a further question, said that no intensive studies had been made on secondary infection because most of the laboratory work had been done at the National Institute for Medical Research, Hampstead, and the clinical work at Salisbury, but now that there was a bacteriologist on the spot it would be possible to do more along that line. No attempt had been made to induce secondary infections.

A questioner wished to know whether the filtrates had been stained and smeared and small bodies seen. There was a possibility of the use of fluorescent dyes in this connexion. Dr FULTON said that that had not been tried. The electron microscope or ultra-microscope, said Dr ANDREWES had not been applied to the filtrates because the use of these instruments required considerable concentration of the material.

Dr CHALMERS in reply to a question as to whether one of the pair of volunteers who had a cold could pass it on to his partner in the flat, said that if a volunteer resisted the artificial cold given to him, and his partner took it, the former would resist also cross infection. On the other hand, people who developed colds during the period of quarantine frequently conveyed such colds to their partners. He explained that each pair was given the same material.

In reply to Dr J A H Brincker, Dr CHALMERS said that it was always recorded whether the volunteer had undergone tonsil or adenoid operations, but no correlation had yet been worked out. In further answer Dr Chalmers said that only in two cases had a volunteer developed tonsillitis, and in one case bronchitis, which lasted for about a week. As for precautions against infection conveyed by those who handled food for the volunteers, he said that any member of the small domestic staff who developed a cold reported it at once. The handling of food was very carefully supervised.

Dr SUTHERLAND said that he understood that during these experiments only one person had had to go to bed with the cold, and he only for a short time, which rather suggested that the type of cold was not comparable with that experienced by the ordinary patient. Dr CHALMERS replied that the people were always asked the date of their previous cold and how many colds they customarily had in a year, and whether they had had to stop work and go to bed, and the answer to the last question was invariably "No."

Dr ANDREWES said that it was possible that the cold encountered in the outside world was a mixture of a virus and a bacterial infection, while in the unit a pure virus infection was given. The people had less chance of picking up secondary

organisms from one companion in the unit than from many with a number of people. The volunteers were given a card and asked to describe what happened after their to ordinary life. Frequently those who while in the unit had developed a cold which had cleared up developed a worse cold a day or two after resuming contact with the outside world.

Dr ASHWORTH UNDERWOOD asked whether consideration had been given to the extension of the time of observation to seventeen days or three weeks, especially in view of the small number of samples. Dr ANDREWES said that the time would have to be a number of weeks for convenience of administration. If one or two odd colds were found turning up when they should not, he did not think it would upset the experiment. They would have to tighten up their regulations and extend the period of observation.

Dr CHALMERS, in reply to a question as to whether particulars of menstruation were taken in the case of the women volunteers in view of the frequency with which the nasal mucosa became congested just before or during the menstrual period, said that such particulars were recorded, but so far there had been no opportunity to work them out.

Dr ANDREWES who was asked whether it would be possible during the incubation period to get some information as to the flora of the nose, said that this was possible but hardly worthwhile, because there was such an enormous literature of bacteriology in relation to the nose and very little had come out of it.

Asked about work in America, Dr ANDREWES said that his teams were working there on lines similar to their own, one of them was using as volunteers prisoners in a reformatory.

Dr W BUTLER asked whether those concerned were satisfied that the whole clinical field of the common cold was embraced. If the experiment were reversed and the virus excluded, would there not be a certain number who would get a common cold though perhaps distinguishable in some respects from the cold which were virus-produced? Dr ANDREWES replied that he was constantly talking to people who spoke of pneumococcal and bacterial colds. Some colds might be caused by such organisms, but he would like to have an opportunity of studying such colds in order to learn whether it was possible to reproduce them with cultures. It would be interesting to take one of these pneumococcal colds and use a filter and see whether the cold could be reproduced with the filtrate.

Correspondence

Endocrines in Gynaecology

SIR—I shall be glad of an opportunity of replying to the interesting and instructive letters from your correspondent during the past few weeks. The emphasis has been laid chief on the principle of receptor substances or the specific sensitivity of the various tissues to the action of individual hormones having been recognized for many years. This is well illustrated by the letters of Dr G I M Swyer, Dr S L Simpson, Dr Raymond Greene and others. I did not wish to suggest that the receptor mechanism was a new concept. It is the basis of much of the maintenance of physiological processes of the body, including the intricacies of immunology.

In my address published in the *Journal of Jan 18* (p 79) I said, "I have *seldom* seen it [the idea of receptors] mentioned and *never* considered, in therapeutics." The italics should have been used in the original publication. While agreeing with your correspondents that the conception of receptors is not new yet I still feel that, compared with the enormous amount of therapeutic energy devoted to the activating hormone relatively little or no consideration has been given to laboratory or clinical research on the responsiveness of the organs we wish to treat. The important point is not so much the recognition of the principle of tissue receptivity but how far the idea has provided a basis for research into its tangible reality. So far very little.

I confess that I cannot understand Dr Swyer's appeal (Feb 1 p 98) not to "complicate" the issue by adding the notion of receptor substances. All biological processes are complicated, but this should be, and has already been, a stimu-

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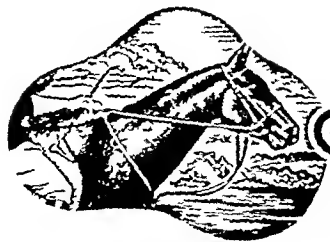
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rather than a deterrent to research. Some failure in physiological advance fifty and more years ago was due to the passion for simplifying processes which we know now to be of the most amazing complexity. Renal excretion and carbohydrate metabolism are two of innumerable examples. And now the clinical failure of endocrine treatment implies that until the problem becomes more "complicated" for the physiologist we shall make no further progress from our present static position. "Static" is the word. For some years we have achieved no real advance in this branch of endocrinology.

Prof. E. A. Doisy, of St. Louis University, has written personally to point out that it was the late Dr. Edgar Allen who concluded that cornification of the vagina is due to a hormone found in the Graafian follicle of the ovary. The important work of Stockard and Papanicolaou undoubtedly influenced the pioneer work on the ovarian hormones which was done by Dr. Allen and Prof. Doisy.

While discussing the general difficulties of hormone therapy I dwelt upon the paramount importance of the nervous factor in the control of the hormone system in man, and thus I agree strongly with Mr. Everard Williams when he draws attention (Feb. 8, p. 234) to the overriding influence of emotional disturbances acting through the nervous system in producing symptomatic effects in the various end organs. It is almost certain that emotion such as the fear and fright of the air raids acted both through the pituitary and directly on the end organs through their nervous supply. In addition to Mr. Williams's examples of menstrual troubles I remember the remarkable effect of the near-by bursting bomb in starting the immediate onset of premature labour.

Some correspondents have discussed details of treatment. Dr. Donald Fraser (p. 234) makes a plea for progesterone in metropathia. I quoted the work of Dr. Scowen in support of this treatment and also success following the use of testosterone. It is nevertheless true that many cases suffer relapses, which will compel us ultimately to treat these patients by x-rays or hysterectomy. Dr. Raymond Greene's remarkable case of cure of eunuchism (March 8, p. 311), as proved by a subsequent pregnancy, is of great interest, and an encouragement to treat similar and less well established cases on the lines he describes.

But perhaps the best summing up of the difficulties of endocrine therapy is given by Dr. A. P. Cawadias (March 22, p. 390) when he describes the disorder not as a separate disease of one or more of the six chief glands but as a pathological "complex" based upon irregular function of the whole psychosomatic system, including the endocrine glands, and all in relation to environmental factors. Through all your correspondents' letters can be traced agreement, with varying emphasis, on some fundamental points. The idea of cell receptors in the end-organs is by no means new, but it has not yet been exploited by researches which might enable us to expand our resources in treatment.

Finally the patient apparently suffering from an endocrine disorder such as metropathia, amenorrhoea, and many others must be regarded not as one suffering from a terminal symptom but as a victim of genetic liability and environmental stress. The second of these will include such varied factors as nutrition, human relationships, conditions of work and play—indeed all the manifold impacts inherent in our modern and troubled civilization—I am, etc.,

London W 1

ALECK BOURNE

d-Tubocurarine in Electric Convulsion Therapy

SIR—I have read with interest the articles on the use of d-tubocurarine in electric convulsion therapy, and in view of the fact that Drs. J. A. Hobson and Frederick Prescott (April 5, p. 448) state that they intend to adopt this method "as a routine" I should like to make some comment on this. Whereas one cannot fail to be impressed by the use of this method in a few of the cases mentioned I consider that it is high time that some of the nonsense written about the dangers of ECT should be contradicted by those of us who use this form of therapy on a large scale. In this hospital alone an average of 400 convulsions are administered each week, and in a period of six years well over 100,000 treatments have been carried out without major accident. It should be noted that some of the patients treated were over 75 years of age.

The occurrence of fractures and dislocations is, in my opinion, to be attributed to faulty technique rather than to the method itself, and I consider that the use of restraint by nurses is to be strongly deprecated, as it most definitely introduces a factor which may be fraught with danger. Figure 1 in Dr. Hobson's article (p. 447) illustrates this point. It should be quite unnecessary for anyone to actively restrain a patient during an electrically induced convulsion unless, of course, in the very rare instance where a patient may be in danger of falling out of bed.

The first case described by Drs. A. Gillis and D. D. Webster (p. 451) is of great interest, but it is unfortunate that the authors do not state the exact time which had elapsed between the receipt of injury and the commencement of ECT. I can see no reason why ECT should have been contraindicated in the second case in the absence of vertebral injury, as severe back pain is not a very uncommon symptom but one which usually disappears during the course of treatment.

In making these criticisms I do not wish to detract in any way from the value of d-tubocurarine in a few cases, but, as the authors admit, it calls for skilled technique, and as the method itself is not without danger it should surely be used with the greatest discrimination—I am, etc.,

St. James Hospital, Portsmouth

W. LIDDELL MILLIGAN

Phaeochromocytoma

SIR—Are not the symptoms of phaeochromocytoma of the adrenal medulla, described in two interesting articles in the *Journal* of April 26 (pp. 563 and 564), suggestive of those of the so-called "anxiety crisis" writ large? As a victim of these crises, the full nature of which can be understood only by those who undergo them, I have the most profound sympathy with the young woman who "was 'nervous' and anxious to demonstrate that her disease was not functional."

No reasonable person would be anxious to demonstrate that his symptoms had their origin in so grave a condition as a suprarenal tumour, but neither does a reasonable person find it satisfying to be told that his prostrating attacks are purely functional, due to some underlying worry of which he has never been conscious. His own rational brain gives him all sorts of reasoned assurances as his bout develops, but his instinctive feelings are filled with the most positive certainty of his imminent exitus and are suffused with fear, not the fear which he may have felt when exposed to real and obvious danger such as heavy air-raids, but the horrible paralysing fear which arises in the worst type of nightmare and which strips from him the last vestige of his self-respect.

My own attacks have beset me for more than a dozen years. During the intervals between them it is easy to tell myself that if their origin was serious I should not have continued to survive yet each bad one finds me as vulnerable as any of its forerunners.

As I grow older in practice I find myself more and more convinced that much illness which we now glibly dub "nervous" and hand over to the psychiatrists will be found to have a purely physical basis, which may well have a quite trivial importance when compared with its effect on the psyche. If the day ever comes when necropsy by a skilled pathologist is obligatory for everyone, it will probably bring an enormous acceleration in medical learning and it is at least possible that our present unsatisfactory fumbling with the human mind will be diverted into more useful channels.

In view of the personal nature of this letter may I have your leave to sign myself

The Adrenal Medulla and Hyperpnea

SIR,—In regard to the annotation on the adrenal medulla and hyperpnea (April 26, p. 572), we have repeatedly tried to discover whether the adrenaline content in the blood is raised in hypertony, but without success. But the following experiments which O. Weiss and I performed many years ago are significant.

Adrenaline was injected into a cat and arterial pressure taken by kymograph. There was a very pronounced rise of pressure but lasting only a moment. After the arterial pressure in this cat had returned to normal, blood was taken from it and injected in another cat. The latter animal produced the same

adrenaline reaction as the first. Thus it has been established that although the adrenaline content of the blood in the first attack was still abnormally high, after an initial rise of pressure it did not further affect the blood pressure level. But after severing the nerves from the blood vessels of the ear, the adrenaline effect lasted for hours. It is quite clear that the vasoconstrictors and vasodilators counteract any factor which tends to produce abnormal pressure. The level of pressure is conditioned by the requirements of the body and not by abnormal substances in the blood such as adrenaline or renin which tend to raise the pressure. This is the reason why it is so very difficult either to raise or to lower arterial pressure for any length of time—I am, etc.

Liverpool

I HARRIS

The Revolution in Anaesthesia

SIR,—Dr John Halton (April 19, p. 543) has painted a fanciful picture of the benefits conferred by curare on the inefficient anaesthetist. No one will gainsay that curare is, in certain circumstances, of great help to surgeons and anaesthetists, but the patient is the most important person in the operating theatre and the benefits conferred on the patient are more questionable. When anaesthetized by ordinary methods he has at least a reasonable expectation of recovering consciousness and of a convalescence free from complications. In a series of over 50 gastrectomies relaxed with curare which have come under my observation the incidence of collapse of the lung base confirmed by X-ray, is 20%, and this high figure has been confirmed by other observers. Bleeding with curare is often considerable and I have been asked by a surgical colleague to refrain from using it for this reason alone. Several deaths have been reported from regurgitation of stomach contents into the lungs. Relaxation can be carried a little too far.

The introduction of a new drug is always accompanied by a pendulum-like swing of enthusiasm followed by a swing in the reverse direction, after which the true position of the drug in medicine is determined. I suggest that the time has come to cry halt and reflect on the lethal possibilities of this very potent drug. Dr Halton has spoken of a revolution in anaesthesia, but history contains many examples of revolutions which have not proved beneficial—I am, etc.,

London W 1

MASSEY DAWKINS

SIR,—Dr John Halton's masterly exposition on the use and abuse of modern anaesthetic technique (April 19, p. 543) will be greeted with acclamation by every anaesthetist who understands the physiology of respiration and is thoroughly conversant with the action of the drugs and agents which he uses. My only comment is that he made some omissions in his true and vivid picture; he made no mention of the final 'shot of tubarine' to enable the peritoneum to be closed and to guarantee the production of "the twilight of that half-world known as 'recovering from the anaesthetic,' which justifies matrons of nursing homes pressing for the abolition of curare" (*Journal* Jan 18, p. 111, Feb 8, p. 234).

He rightly stresses, but no one could overstress the need for maintaining adequate tidal exchange and the avoidance of anoxia; he omits to mention the danger of an insidious build-up of carbon dioxide responsible for the production of so called "cyclo shock" (*Anesthesiology* 1947, 8, 15). Surely when the respiratory centre is depressed by opiates, barbiturates, and what you will in the way of anaesthetic agents and has its peripheral response stultified by intercostal paralysis, possibly combined with diaphragmatic paralysis or paresis, the final physiological insult is to expose it to excess of carbon dioxide by cutting out the absorber or adding from a cylinder.

No absorber is too efficient, the danger of losing the 'Bohr effect' and producing the 'acarbia' spoken of by Yandell Henderson is a relic of the past and could only be produced now by the most energetic hyperventilators, who could, no doubt, also squash your alveolar capillaries flat and kill you with a chest full of oxygen. Equally nefarious is the practice of relying primarily in times of crisis on alleged antidotes such as "prostagmin," picrotoxin, "coramine" etc. rather than maintaining normal or near normal oxygen-carbon dioxide balance.

As one of the first to suggest that the advent of curare cast doubts on the theories of Crile (*Proc Roy Soc Med* 1946 39,

410) may I join with Dr Halton in his hope that the rational use of curare will make it a milestone in anaesthesia rather than that by abuse it should become a tombstone—I am, etc.,

Aylesbury

H W LOFTUS DALI

BCG Vaccination by International Exchange

SIR,—The Scandinavian countries, with their many years' wealth of BCG experience are now exporting not only advice but also personnel. Dr Konrad Birkhaug, who was in charge of the BCG laboratory in Bergen before and during the war has gone to the USA, where the State Health Department has borrowed his services. In Denmark the Danish Red Cross has a scheme for BCG teams, each consisting of a doctor two nurses, and a secretary, to go to Warsaw, Budapest, and Rendsburg to vaccinate their populations, children first. What about a loan of Scandinavian experts to England? Assuming that BCG vaccination is not an all-British watertight compartment I would suggest that the Ministry of Health or the National Association for the Prevention of Tuberculosis sends a 'come over and help us' call to their opposite numbers in one of the Scandinavian countries, say Sweden—I am, etc.,

Sunnfjord Norway

CLAUDE LILLINGSTON

Acid Drinks and Sulphonamide Therapy

SIR,—The danger of renal complications during sulphonamide therapy and the importance of giving extra fluids to patients receiving these drugs are universally recognized, but the necessity for avoiding acid fluids and maintaining alkalinity of the urine have not been given the same prominence in the literature.

The M.R.C. War Memo No. 10 (Medical Use of Sulphonamides) states that 30–80% of the total dosage can be recovered from the urine either as the sulphonamide itself or as its acetyl derivative. The following table, also taken from the Memo, shows the solubilities of some of the sulphonamides and of their acetyl derivatives in both acid and alkaline urine and from this I have worked out the daily output of urine necessary to hold 3 g. of each of the sulphonamides in solution—that is, 50% of an average daily dose.

	Solubility in Urine (mg./100 ml.)		Volume of Urine Needed to Dissolve 3 g.	
	Acid	Alkaline	Acid	Alkaline
Sulphathiazole	102	859	3 000 ml.	350 ml.
Acetyl sulphathiazole	10	265	30 000	1 200
Sulphadiazine	17	187	17 500	1 500
Acetyl sulphadiazine	50	229	6 000	1 300
Sulphamezathine	130	335	2 300	900
Acetyl sulphamezathine	86	216	3 500	1 400
Sulphamerazine	38	209	8 000	1 400
Acetyl sulphamerazine	78	227	3 800	1 300

This table shows that with an average daily output of 1,500 ml. of the urine must be alkaline, otherwise part of the sulphonamide excreted will be thrown out of solution.

In most hospitals extra fluids are supplied in the form of imperial drink, lemonade or orangeade. These substances are highly acid, as the following rough experiment shows. Samples were taken from the patients' jugs in the wards and neutralized with sodium bicarbonate. The quantity of bicarbonate required to neutralize 1 oz. (28 ml.) of each fluid was as follows:

Orangeade	15 gr. (1 g.) of bicarbonate
Lemonade	15 gr. "
Imperial drink	11 gr. (0.72 g.) "

Thus with a daily intake of only 3 pints (1.7 l.) of the fluids in question the amount of bicarbonate required to neutralize it works out at 900 gr. (60 g.) for lemonade and orangeade and 660 gr. (44 g.) for imperial drink—this before alkalimination of the patient can begin. The usual routine practice of giving a dose of alkali with the tablets can only serve to neutralize a small part of the fluid with which they are washed down and the forcing of fruit drinks increases the acidity of the urine.

It is therefore apparent that if renal complications are to be avoided when giving sulphonamides, all fruit drinks must be strictly forbidden, and the extra fluids required must be given as water, milk, tea etc.—I am, etc.,

London E 7

PETRONELLA POTTER

Shortage of Nurses

SIR—My father died recently after a long illness. Towards the end I engaged a man to help with the night-nursing. He was an excellent fellow and a most competent nurse. He made a living doing casual private nursing as he was not qualified to obtain the responsible hospital post he desired. Twelve years he had spent in the R.A.M.C., and although he had left the Service with an excellent character and the qualification of First Class Nursing Orderly he had sought in vain for a civilian nursing post suitable for a man of his ability. He was only 30, keen, competent, and reliable—but he had no civilian qualifications. Training for State Registration was out of the question, he was a family man and had to live. He could call himself a Service Trained Male Nurse, but this would open to him only the menial and less responsible positions in nursing.

This must happen so often, Sir, that I wonder how the Service medical authorities can be blind to its effects. Time and time again good ex-Service male nurses drift into other occupations because they are unqualified by civilian standards. This loss to nursing is all the more tragic at the present time when public assistance hospitals are closed for want of trained staff. My experience has convinced me that a scheme could be evolved whereby orderlies in all three Services would be obliged to obtain a nursing diploma as a prerequisite to advancement. The professional examinations for higher rank or rating could and should be brought into line with civilian standards. In this way the qualified Service nurse would automatically be a qualified civilian nurse and could be fully and usefully employed on his discharge from the Service.

I know it will be argued that while in the Service these men have the chance of taking civilian examinations if they wish. I doubt if this is always true, but in any case the initiative should be with the authorities. If this waste of nursing personnel is to be checked, orderlies must be made to take examinations recognized for a nursing diploma—and the fees must be paid by the State—I am, etc.,

London NW 1

R. HOWELL ROBERTS

SIR—Would it not be helpful if there could be a scheme whereby nurses could attend patients during early convalescence in their own homes, thus allowing more room in hospitals for acute cases and for helping to reduce the present long waiting-lists? If recruitment to the nursing profession were to be carried out according to grades there should be a supply to meet such a demand—say Grade A, where the standard of entry was dependent more on character and personality than on the "knack" of having passed examinations. Such nurses would be able to carry out all the duties required of a good practical nurse without having to pass examinations, which proves so great a stumbling block to the recruitment of nurses at present.

This Grade A nurse would probably include most of those who are lost to the profession at present on account of the amount of theoretical lectures and reading they have to do for even the Preliminary Nursing Examination. They should get a thoroughly practical training and could qualify for an external nursing service attached to their training school or interchange with other hospitals. Under such a scheme nurses could be sent home with early convalescent patients or they could be sent out to attend other patients in their homes at charges drawn up according to scale by the hospital almoner. A system of home nurses should help to reduce the number of patients who have to go to hospital for observation or for only a few days' treatment or because they live alone or have nobody to attend them at home. The external auxiliary nurses should be able to live at the hospital and be called in to help there when necessary for, say, only a limited number of weeks each year. There should be a block of one- or two-room flatlets with service, catering, and laundry facilities. They should be relieved of certain household responsibilities and so get proper leisure. At present private nurses often live in one room or move about from room to room in a club between cases. They should be able to rent the flatlet and come back to their own room and not have to pack up before going to a case. Only so long as they served the hospital should they be allowed to be tenants of a flat, but they should be tenants on the same terms as tenants of any other block of flats in the country.

Grade B nurses would be mostly women who wish to enter the profession when they are older and have gained some experience of the world and people. The age limit of 28 years would not be too high for such entrants. Grade B nurses would most likely be qualified to shoulder the responsibility of sisters, house sisters,

sister tutors, or matrons. If any Grade A nurse proved to be exceptionally able she should be allowed to transfer to Grade B at the end of her first year and have an extended period of training of, say, six months along with the examinations required for Grade B nurses.

Grade O nursing orderlies are those women who like looking after and doing things for other people but who from educational and other reasons cannot take up nursing proper. They could carry out routine duties in the wards, in the kitchen, and in the residential quarters. They should be moved about during their training but later become attached to one special ward or sister when such an arrangement is proved mutually agreeable. They would then take an interest in their ward. They should be allowed to live in or live out.

Why not make nursing a compulsory national service and make the period of it, eighteen months or one year, sufficiently attractive to make the maidens want to continue training or at least look forward to the sixty days' service later as "supplies" for holiday relief of the regular nursing staff? These are just a few points which I think could be further considered by those responsible for the recruitment of nurses—I am, etc.,

Aberdeen

WINNIFRED M. GRAY

Admissions to Hospitals

SIR—One hopes that a recent experience does not reveal the shape of things to come.

In an endeavour to get a patient with pneumonia into hospital (there being no one at home capable of nursing him) I phoned a local authority hospital—his area hospital—and was informed that they now received mental cases only. That is hospital A. I phoned hospital B, on the recommendation of A, and was told that they could not accept the case, as they were not receiving that day. I phoned hospital C, on the recommendation of B, and was told that it was not likely that they could accept and that all they could do would be to put the case on the waiting list, but that they would phone me back. In about an hour C phoned to say that hospital B, which had refused me would take the case. To my protests at the delay and lack of liaison I was told that this was constantly happening since the grouping of hospitals had taken place. This I believe is correct, for in more than 20 years of practice in the same area I cannot recollect having spent one quarter of the time in getting a patient admitted, nor can I recollect having heard the suggestion made that an acute case as this should be put on the waiting list.

In view of the negotiations in progress one feels that this sort of thing should be seriously considered now, and the pros and cons of grouping accurately assessed before the whole hospital system of the country is committed to such a plan—I am, etc.,

London N 6

W. LEES TEMPLETON

Surgical Anatomy of the Vagina

SIR,—Students of gynaecology will be extremely grateful to Mr. Wilfred Shaw (April 12, p. 477) for having described the surgical anatomy and operations of the vagina in his characteristic lucid and masterly style. The terminology suggested for the various grooves and sulci cannot be improved upon except in the case of the "transverse vaginal sulcus," which I think, deserves the nomenclature of "urethro-vesical sulcus" as being more definite, descriptive, and going well with the term "bladder sulcus" of Mr. Shaw. The terms "transverse" and "vaginal" are both quite superfluous because all the grooves described by Mr. Shaw, except the obvious "oblique vaginal folds," are transverse, and they are all situated on the anterior vaginal wall.

In the description of vaginal hysterectomy for severe degrees of uterine prolapse I feel that the name of A. C. Palmer has been inadvertently omitted. The technique independently devised by A. C. Palmer and described by him in the *British Medical Journal* 1934, 2, 899, and in the *Proc. Roy. Soc. Med.* 1937, 30, 1353, though similar to that of Mayo and Franz is not quite identical with it and lays emphasis on certain features which merited at least a passing mention of his name, especially when Mr. Shaw himself, in his *Textbook of Gynaecology* (1941), has associated Palmer's name with Mayo in the description of the operation—I am, etc.,

London WC 1

B. S. SURTT

Vitamin B₁ and Painless Childbirth

SIR,—My attention was recently directed to an article in the *Soviet News* (Jan 10, 1947) entitled *Painless Childbirth—a Promising Soviet Experiment*. The following extracts present the main points.

It has been observed that the urine of women in childbirth even in cases where the ordinary diet includes a sufficiency of vitamins contains an exceptionally small quantity of vitamin B₁. This suggests that the body's demand for this vitamin is stepped up during the childbearing process."

To determine whether deficiency of vitamin B₁ had any relationship to the pain experienced during childbirth the Central Institute of Obstetrics and Gynaecology of the U.S.S.R. carried out an investigation in Leningrad in 1945 and over 900 painless births were achieved. Different routes of administration were tried.

At present the usual procedure is to begin with an intramuscular injection of 60 mg., followed, if the pains recur, either by another smaller injection or by doses through the mouth at an interval of half an hour. Relief from pain was felt within 10 to 15 minutes of the first injection. In nearly half the test cases, 40%, the pains were relieved during the whole process of birth. In 51.2% of the cases there was a prolonged alleviation of pain. In 3.2% of the cases the effect was of short duration. Only in 5.6% was no relief experienced. The expectation that vitamin B₁ would not only relieve pain, but speed up the process of delivery, was based on such facts as that a deficiency of vitamin B₁ in the organism of a woman in childbirth was known to lead to a decrease in the formation of glycogen, resulting in the exhaustion of the muscular tissues. The introduction of the vitamin, therefore by facilitating the accumulation of glycogen in the muscular tissue, would create a reserve of energy of extreme importance in parturition, which demands a big expenditure of muscular energy often over a considerable period of time. The introduction of the vitamin does in fact speed up the process of delivery to a very marked extent: the average time is halved."

Confronted by these facts I decided to put them to the test. Ten consecutive patients admitted to the maternity ward were given vitamin B₁ during the first stage of labour. The dosage adopted was 50 mg. of the vitamin by intramuscular injection followed by 3 mg. orally at half-hourly intervals. There was no marked alleviation of pain in the first seven cases so the dosage was increased to 100 mg. intramuscularly in the remaining three.

Four of the patients said the injections had no effect on the pains, four were relieved for a short period (approximately one hour) and two stated that the pains became more severe after the injections. The increased dosage did not appear to have any different effect on the pains. There was an apparent decrease in the duration of labour after the vitamin was given in all cases but this was impossible to assess accurately without controls. All the babies were born normally and were unaffected by the treatment.

This series of cases is too small to yield statistically significant results and no definite conclusions can be drawn. It was intended as a preliminary experiment before proceeding to a full scale investigation with a controlled group of patients. Unfortunately I am unable to carry out this investigation, but would suggest, in view of the importance of analgesia in labour, that some other investigator continue this research in order to confirm or disprove the Soviet claims—I am, etc.

London S W 20

D M ZAUSMER

Pethidine in Labour

SIR—In her comprehensive article on pethidine in labour (April 5, p. 437) Miss Josephine Barnes touches on the effect of pethidine on the duration of labour. She suggests that to assess this accurately a controlled experiment is necessary, the drug being given to alternate primigravidae in labour.

While I was working in the Nuffield Department of Obstetrics and Gynaecology at Oxford I undertook such an experiment with the help of Mr C. Scott Russell who was responsible for the statistical analyses. The patients selected were primigravidae of 38 or more weeks of pregnancy in the first stage of labour, and they were allotted to a pethidine group and a control group in rotation. On admission the descent of the head and the dilatation of the os were determined. The first

group were given pethidine 100 mg. at once by intramuscular injection. This was repeated every four hours so long as sedation was required. No other sedative was used though gas and air analgesia was allowed. The second group were given a mixture of tincture of opium and chloral morphine, or heroin and hebaral ' according to requirements. They, also, were allowed gas and air analgesia.

When there were 13 patients in each group a pilot survey was carried out to see whether the experiment was likely to yield any useful information. The total duration of first and second stages was estimated and the average for each group was calculated. The average of the pethidine cases was 20 hours as against 26 hours for the control group. An analysis of variance, however, showed that the variation within the groups was so great that the difference between the groups was nowhere near significance level.

The experiment was therefore continued in a modified form. The total duration of first and second stages obviously was not a good estimate of the effect of the drug so in subsequent cases the time from the onset of treatment till the delivery of the baby was recorded. It was thought that useful information might be obtained by analysing the cases in such a way as to compare more accurately like with like.

Each group was subdivided into four categories according to the descent of the head on admission—high engaged, mid cavity and deep. In each category cases were tabulated according to dilatation of the os (0-5 fingers) and age (under 25, 25-35, over 35). It was then fairly easy to select pairs, one from each group, that could reasonably be compared with each other. In selecting each pair I made certain that the weights of the babies were alike and also the mode of delivery—for example a patient who had had a spontaneous birth was not compared with one who was delivered by forceps. By this means of selection 21 comparable pairs were available for study. They showed that from the time of commencement of treatment the labour of those patients having pethidine was shorter than in controls 10 times, longer than in controls 10 times, and exactly the same once. In fact, it was obvious from superficial inspection that there was no material difference in the two groups.

This experiment, then, did not justify any conclusion as to the effect of pethidine on the duration of labour. I record it only in order that others attempting to elucidate the point may design their experiments in such a way as to reach a more helpful conclusion—I am, etc.,

London E 1

ELIZABETH M ROSE

A Spinal Injury Centre

SIR—As a recent importation into a mining area I hesitate in the face of greater experience, but I would appreciate the opinion of other general practitioners in such areas on the question of spinal injuries in the mines. I gather that such injuries are not uncommon as a result of rock and coal falls and usually take the form of compression fractures or spinal contusion. After such injuries, with laminectomy, etc. duly performed when indicated, the patient returns, only too commonly to his own home an object of pity, invalid or semi-invalid, to exist on a pittance of compensation aided by public assistance. Eventually ascending urinary infection or ascending degeneration of the cord concludes his story, but this may be many years later.

I would suggest that there is a strong case for a spinal injury centre, on the lines of the Head Injury Centre at St. Hugh's where such cases could be transferred as soon as they are fit to travel from the local hospitals. Here due attention could be given to mental as well as physical rehabilitation, the man could have the benefit of the best consultant opinion, orthopaedic and neurosurgical, and there would be no problem of shortage of accommodation. The project could deal with all industrial spinal injuries of major character, or, if the Coal Board should consider the problem as important as the provision of hair cream in pit-head baths, perhaps they would like to sponsor the idea for the injured miner—I am, etc.,

Kinsley near Pontefract

K V JACKSON

* An account of the miners' rehabilitation centre at Berrill Hill Hall was given by E. A. Nicoll in an article entitled 'Rehabilitation of the Injured' in the *Journal* of April 5, 1941 (p. 501)—Ed. B.M.J.

POINTS FROM LETTERS

The NHS Act

Dr R H P HICK (Bracknell, Berks.) writes It seems to me that the general trend of the policy of the B.M.A. is a gradual veering round to acceptance of the Bevan Act. You will be doing a great disservice to your members if you do not fight it tooth and nail and encourage every member to back you up.

"Free Health Service"

Dr LESLIE HARTLEY (Camberley, Surrey) writes The public will not mind paying an extra shilling for their packet of cigarettes, as Dr Dalton told them in his budget speech that it was to pay for the free Health Service. When the new Service comes into force on All Fools Day next year, just before the budget, the jovial doctor will no doubt put a shilling on the pint also in Freedom's name.

"Rock a bye Baby"

Dr A P DERHAM (Victoria, Australia) writes I must with thousands of others congratulate you on producing the "blizzard" numbers of which I have received Nos 4494 and 4495. In the latter there is an answer to a question which calls for comment.

Q—Is it harmful to rock a child to sleep? A—No. No answer could be more brief or dogmatic. A better answer would have been "Yes and No." The choice would rest on the question.

What kind of person do you wish the child to be? For brevity I shall be as dogmatic as your "No" authority. A child is rocked to sleep because otherwise it cries or stays awake. A child may cry or stay awake for a variety of reasons: flea, safety pin, wind, wet napkin, overstimulation, etc. Many of these can be diagnosed over the telephone—the most convenient way until we get television. After the first few occasions, however, a child usually cries because he finds that by so doing he can establish a certain power over his parents. He is fulfilling one of his fundamental instincts. If he is rocked to sleep he may become an Alexander, a Napoleon, or even a Winston Churchill, but he is more likely to become a querulous person, hated as his age increases by his nephews and his nieces. If he is allowed to cry it out he may become a Shackleton, an Oates, or a Scott, but he will at least have learnt to make his first adjustment to life the hard way and will have gained a victory over himself instead of over his parents. A young mother once took her baby to a famous French paediatricist. She asked,

Doctor, when should I begin to train my baby? He asked, How old is your baby? She replied, Six weeks old. He replied, 'Madam, you are six weeks too late.' Q—Do I really believe all this? A—Yes and No.

Electric Convulsion Therapy

Dr P L BACKUS (London, NW 1) writes Dr S M Witteridge (April 12, p. 505) gives the necessary emphasis to proper procedure in electroplexy, and it is most timely and important. As a gag I have adopted the use of two or three pieces of heavy stethoscope tubing about 2½ in. (6.3 cm.) long bound together and covered lightly with sterile gauze when in use. This allows a free airway for the passage of the oxygen into the posterior fauces. It has been my custom to use 5% carbon dioxide with pure oxygen, and the administration of the same is continued until the patient rouses sufficiently to reject the mask, or for at least three minutes.

Changing Medicine

Capt D M SINCLAIR R.A.M.C., writes The following little historical note might give one food for thought. While glancing through the sixth (1905-6) edition of Osler's *Principles and Practice of Medicine* I came across this paragraph in relation to diabetes mellitus: glycosuria occurs. This may theoretically be produced by functional or organic disease of the islands of Langerhans in the pancreas. These islands of cells probably produce a glycolytic ferment or body. "The owner of the book, apparently rather progressive in outlook, has crossed out the above paragraph and inserted a marginal note: "There are no islands of Langerhans. They are merely alveolar changes in the pancreas." *Vide BMJ* Sept. 29, 1906, Stirling's article.

* The marginal note refers to an unsigned book review on *Recent Advances in the Physiology of Digestion* by Prof. E. H. Stirling which appeared in the *Journal* (Sept. 29, 1906, p. 781) and in which the following statement occurs: "The islets of Langerhans, of which we have heard so much recently, as the parts of the pancreas especially related to the production of the internal secretion concerned in the assimilation of glucose, and whose destruction has been said to be the cause of diabetes, turn out to be merely stages in the growth of pancreatic alveoli, all parts of the gland reverting to this condition as the result of activity so that there is a constant formation and disappearance of these islets: the relation of the pancreas to diabetes remains an unsolved problem."—*Ed. BMJ*

Obituary

SIR ALMROTH WRIGHT, KBE, CB,
MD, LL.D., FR.S., F.R.C.P.

Sir Almroth Wright died at his home in Pembroke Square, London, on April 30. He was in his 86th year.

A son of the Rev. Charles H. H. Wright, D.D., Almroth Edward Wright was born in 1861. His mother was the daughter of Nils W. Almroth, governor of the Swedish Royal Mint. Almroth Wright received his early education at Dublin University, where he took the B.A. and was awarded a gold medal in



Photograph of Sir Almroth Wright taken in 1940

modern literature. He qualified M.B., B.Ch. in 1883 and, being awarded a medical travelling prize, was enabled to take up a studentship at the Inns of Court in jurisprudence and Roman and international law. Later he studied at the universities of Leipzig, Strasbourg, and Marburg before becoming a demonstrator of pathology at Cambridge University in 1887. While at Cambridge he was granted a Grocers Company research scholarship. Two years later he went on to take the M.D. of Dublin, and accepted soon afterwards the position of demonstrator in physiology at Sydney University. Only three years later, at the age of 31, he became professor of pathology at the Army Medical School, Netley. At this time he had already done important work in devising a coagulometer for estimating the coagulation time of the blood and in indicating for the first time the part played by calcium salts in the coagulation of the blood. His tenure of this chair lasted for ten years, for two of which he was also a member of the Indian Plague Commission. It was in the early part of this century that he became pathologist to St. Mary's Hospital. In 1908 with the aid of Lord Balfour, Lord Ivergh, Lord Justice Fletcher Moulton and others, Wright founded the Inoculation Department of St. Mary's Hospital as a separate financial entity; he remained director of this until last year. The Inoculation Department rented from the hospital certain unused wards; these were fitted out as laboratories and so used

in 1934 when the generous contributions by Lord Iveagh and others enabled the present laboratories to be built adjoining the new Medical School. He was a founder member of the Medical Research Club.

Wright's pioneer work on immunization began in 1896, when, following the inspiration of Haffkine's inoculation of cases of cholera and Pfeiffer's inoculation of two cases of typhoid he introduced the idea of immunization by means of vaccines made of killed bacteria (*Lancet* Sept 19, 1896). On the Association of Serous Haemorrhages with Conditions of Defective Blood-coagulability. In a series of papers on antityphoid inoculation he published one jointly with W. B. Leishman in the *British Medical Journal* of Jan 20, 1900 under the title of 'Remarks on the Results Which Have Been Obtained by the Antityphoid Inoculations'. With S. R. Douglas he gave an account (*Proc Roy Soc Lond* 1903, 72, 357) in 1903 of experiments which showed the presence in the serum of substances (named by him opsonins) which, as Bulloch puts it, 'in some way alter the microbe so that it falls an easy prey to the leucocytes'. From this work Wright developed his 'opsonic index'.

In 1904 Wright published his *Short Treatise on Antityphoid Inoculation Containing an Exposition of the Principles of the Method and a Summary of the Results Achieved by its Application*—the first and perhaps the most important of the books he wrote. It was soon translated into French and German, and editions appeared in many other countries. His *Principles of Microscopy* appeared in 1906, and *Studies on Immunization and Their Application to the Diagnosis and Treatment of Bacterial Infections* was printed in this country and in Germany in 1909. Other books that bore his name marked different phases of his life and varying aspects of his many activities. In collaboration with Leonard Colebrook there was produced in 1912 a handbook for the medical research laboratory and the research ward, *Technique of the Teat and Capillary Glass Tube*—in its own way a classic. This was followed in 1914 by *Pharmaco-Therapy and Preventive Inoculation applied to Pneumonia in the African Native*. A product of his war experience published in 1915 was *Wound Infections and Some New Methods for the Study of the Various Factors which come into Consideration in their Treatment*. His work during the war of 1914-18 on the saline treatment of wounds ended in the Carrel-Dakin-method. He contributed numerous papers to scientific journals throughout the world. In his *The Unexpurgated Case against Woman's Suffrage* he illustrated his anti-feminist outlook. Another example of his polemical ability was his rejoinder to Sir Watson Cheyne's advocacy of antiseptic procedures. Wright concluded by writing this: "I would invite them to the study of the psychology of obsession, and would have as many as follow the intellectually glorious calling of medicine hearken to that saying of Emerson 'God has given to every mind a choice between truth and repose'."

It was in the years 1914-18 that it became clear that Almroth Wright and his colleagues had altered the course of history. Enteric fever had taken a tragic toll in the South African War. Twenty years later had treatment been the same, it is estimated that over 125,000 men in the British Forces alone would have died. Actually deaths from this cause during the whole of the war numbered only 1191. Almroth Wright, who at the outbreak of war was principal of the Institute of Pathology and Research at St. Mary's Hospital and professor of experimental pathology at the University of London, served as a consultant physician in France, while at home, in the first two years of the war, the department he had created at St. Mary's Hospital provided sufficient antityphoid vaccine for the immunization of four and a half million persons—a figure which may be compared with his first large-scale inoculation of over three thousand soldiers in India, two years after he had arrived at his first definite conclusions on the subject of typhoid immunization on the basis of experiments worked out at Netley in the years 1896-7. From this work of Wright's vaccine therapy may be said to have originated. He believed that vaccine therapy had a future in the treatment of established infection and spent much time between 1901 and 1914 in pursuing this idea. During his last years Almroth Wright was engaged in publishing his scientific papers in a series of volumes and in completing his philosophical work on logic and belief.

In 1906 a knighthood was conferred on him, and he was made a Fellow of the Royal Society. Two years later, in 1908, he was awarded the Fothergillian medal of the Medical Society of London. At the International Congress of Medicine in London in 1913 he was awarded the Hungarian prize. He was created a Knight of the British Empire in 1918, having been made a C.B. in 1915. He valued perhaps most, however, the honour which was done him by the Royal Society of Medicine when he became its first gold medallist. It was through the gift of an anonymous Fellow of the Royal Society of Medicine that the Society was able to give a triennial gold medal open to medical practitioners throughout the world, and the donor expressed the hope that the first award would be made with special regard to medical services during the war. On Nov 11, 1920 the President of the Society Sir John Bland Sutton, presented the medal for the first time to Sir Almroth Wright, whose address on this occasion was a general one on the conditions of medical research, in the course of which he pleaded for the institution of research work in hospitals by a staff not of clinical men but of men with clinical knowledge trained in methods of discovering immediate effects.

During and after the war the value of the work he had done for the allied Forces was recognized by the conferment of honours by France, by Belgium, and by Serbia. He was elected an honorary member of the Société Médicale des Hôpitaux de Paris in 1919, and the honorary M.D. of Paris was conferred upon him in 1924. He was an Associate Member of the Académie de Médecine de Paris, and a corresponding member of the Institute of France. He was made an Honorary Fellow of the Royal College of Physicians of Ireland and of the Royal College of Surgeons of Ireland. Dublin made him an honorary D.Sc. and an honorary Fellow of Trinity College. Belfast conferred its LL.D. upon him and made him an honorary Burgess of the City, and the University of Leeds made him an honorary D.Sc. At the Annual Meeting of the British Medical Association in Belfast in 1909 he was president of the Section of Haematology and Vaccine Therapy. Then again at the Centenary Meeting in London in 1932 he was president of the Section of Bacteriology. He had a further point of contact with the Association in 1927, when, in connexion with the Annual Meeting, the University of Edinburgh held a special graduation ceremonial and conferred upon him the honorary degree of Doctor of Laws.

It was on his seventy-fifth birthday that tribute was paid to him by his colleagues, when in the laboratory of the inoculation department of St. Mary's Hospital in March, 1936, Sir Henry Dale unveiled a portrait bust of him, the work of Mr. Donald Gilbert, and presented it, together with a small volume containing an engrossed address and the names of about 250 colleagues who had participated in the testimonial. Paul Ehrlich, Sir Henry Dale observed at the presentation ceremony, once said that he could carry out all the researches he wanted if he were given a supply of dyes and other chemicals, a handful of test tubes, a water-tap, and a bunch of blotting paper. Almroth Wright, Sir Henry continued, was no more exigent in his requirements. A microscope, an incubator, some glass tubing, a few rubber teats, a little plasticine, and some vaseline were all that he needed in the way of apparatus. The material for his research was a few drops of human blood, which he obtained from himself, his friends, or his patients. "I sometimes think," Sir Henry added, "we should regard Sir Almroth Wright as one of the burglars of Nature's mysteries, fashioning the skeleton keys with his own skilful hands from the most homely material, and then using them, with the touch of genius, to force the intricate locks."

Almroth Wright said the praise he valued was the praise of his compeers, and he quoted what Metchnikoff had said of him. He is the sort of man who has very good original thoughts—but he has also many thoughts which are only original. And he concluded his acknowledgment of the presentation with a quotation from Bunyan—from Mr. Valiant-for-Truth who stood at the brink of the river of death looking back over the labour and toil of his life: "I leave my sword to him that shall succeed me in my pilgrimage, and my courage and skill to him that can get it."

[Press Portrait Bureau]

Mr G Bernard Shaw writes In the obituary notices, and specially in the broadcast too much has been made of Wright's early experiments in immunization and too little of his later work.

In my opinion one of his most illuminating and pregnant utterances was the single sentence he interjected at a lecture delivered by me at his invitation in St Mary's Hospital I was calling attention to the reckless crediting to bacterial inoculation of results though all the available controls pointed to sanitation as the real cause Wright's comment on the spur of the moment was "I believe the effect of sanitation is aesthetic"

Little has been said of his treatment of wounds in the 1914-18 war by salines, his advocacy of which involved a contemptuous belabouring of Jenner and Lister as scientific immunizers, and his explicit statement that his study of salines was a reduction to scientific essentials of the rude poultices of soap and sugar used by old wives in Irish villages

Nothing has been said of his efforts to excogitate a scientific method of reasoning, and his invention of new and necessary words To these he attached great importance, knowing that our scientific authorities are strong in facts but weak in logic

The net effect of the obituaries is to underrate Wright even more than he underrated himself

Sir Henry Dale writes It is early yet to attempt a prediction as to the permanence of many individual items of Almroth Wright's large and varied output during his very long career of research He himself showed in his later years what might have seemed at least at first sight, a curious inconsistency of attitude with regard to his own scientific publications He had on the one hand, arranged for the republication of all of them in collected form, believing doubtless that, even where their results had been overtaken by advances made from different angles, they had in their own way and time contributed significantly to the progress of knowledge On the other hand, with his ingenuous curiosity undimmed by age, and a mind still remarkably open to the interest of novelty, he seemed to be eagerly searching for and finding evidence which called for revision of some of his earlier ideas, and preparing to jettison them with something like gusto Wright was a man whose methods of work and ways of thinking together with his attractive and stimulating personality evoked a rare intensity of devotion and enthusiasm in his co-workers, on the other hand, his findings and his presentation of them were apt to excite opposition and dispute—partly, no doubt, because he himself so enjoyed the clash of opinion and the cut and thrust of argument with a well grounded confidence in his own prowess His interests and activities ranged widely over the years, the one unifying character in all his researches being, perhaps their concern with the blood and its constituents, and their various functions and properties—coagulation in his earliest years of research, and, for most of his life the different factors and manifestations of immunity and the ways of modifying them Probably the future will give highest rank, among his contributions to pathology and practical medicine, to his development of active immunization and his vigorous advocacy of its applications at a time when the possibilities of passive immunization with sera was attracting so predominant a share of the general interest His immunization against the enteric bacilli with killed cultures was the first and immensely important outcome some of the later attempts at similar immunization, with heat-killed cultures of other pathogens have had less success, but the principle of supplementing passive by active methods of immunization is still growing in importance, and Wright was the most influential and consistent of its pioneers and early advocates

Those of us who knew Wright well and had the great privilege of his friendship will retain, as the dominant impression of him, the picture of his figure seated all day and far into the night at his laboratory bench, working with tireless interest and always with his own hands and eyes He used the simplest appliances—glass tubing a gas burner, a dab of plasticine a handful of rubber teats—but like his friend Paul Ehrlich Wright made himself a veritable virtuoso of the limited gamut of his chosen instrument He had an artist's, a fine craftsman's joy in his work and he left it only at the compulsion of physical need He still held up that example of devoted and

intensely personal research at an age long past that at which most men feel the need of relaxation and rest One has the feeling that something like an epoch in research comes to an end with his death

Dr John Freeman writes Soon after the Boer War Dr Almroth Wright came to St Mary's Hospital as pathologist he had just resigned from his Army professorship as part of the fight to get adopted his prophylactic inoculation against typhoid Lord Haldane's insistence on a knighthood which Wright genuinely regretted, was another part of the same plan

Wright soon made his presence felt at St Mary's His personality seemed like a draught of wine to the young men of that day his freedom of thought, freedom of manner, and freedom of language, while distasteful to the more orthodox elders, was a heady but stimulating brew for us youngsters His mind seemed free from conventional assumptions He was always ready to consider any proposition however unlikely and by whomsoever presented so long as it was put forward honestly and was backed logically He hated any suggestion of pomposity Dignity is a mysterious gesture of the body designed to hide deficiencies of the mind," he quoted "Except ye become as little children ye shall not enter into the Kingdom of Science," he misquoted to anyone trying to bludgeon him with authority If he thought it necessary he could be ruthless, he had not gone to Trinity, Dublin for nothing and he loved a good fight "Unless the physicians soon learn to do something, they will be reduced to a position little better than that of the head nurse," he declaimed at his first public lecture at St Mary's, and two physicians walked out in a huff

Though he had a short and rough way with the pompous he was always gentle with hospital patients and with all who were trying to work Countless stories could be told illustrating this here is one We were all sitting looking down our microscopes when a fashionably dressed doctor quite unknown to any of us walked in holding his glossy top hat in one hand and his gloves and malacca cane in the other He announced with satisfaction that he had just been appointed Physician in Ordinary to one of the Crowned Heads of Europe and he would like to know if we had any hints of new treatment that could help him Wright looked up from his microscope, said reflectively, "No, I don't think so," and went on with his work again While the resplendent dandy was still standing nonplussed in the centre of the laboratory, a navvy in hobnail boots and corduroy trousers, nervously twisting his cap in his hand, came in and said in a husky voice "I didn't ought be rights to come in here Guvner, but could one of you gentlemen—?" Wright at once bounded to his feet, saying, "What may I have the pleasure of doing for you my friend?"

Wright soon began seeing out-patients in his laboratory their numbers mounted to a flood which blocked stairways and passages Later he bargained for hospital beds to be under our control for special investigations—the "Almroth Wright Wards" as they are now called It was necessary to keep on seeing patients because we all needed the 'pain in the mind' which came when looking impotently at a little understood case, he insisted that we all needed that galling spur to complacency

Forty years ago he asked that we should put on his tombstone a quotation from Emerson's essay on intellect 'God offers to every mind its choice between truth and repose' And he used to add, peering at you over his spectacles and with his eyebrows twitching, "Repose is the more fashionable" He constantly reiterated that we needed this "pain in the mind", it was what drove him to furious work In his strength he would work in his laboratory regularly until 3 a.m., and often this stretched until 5 or 7 a.m. and he was generally one of the last to leave

He was curiously ascetic in his habits "Art is a whore with whom I played in my youth," he said A good dinner he denounced as a "voluptuary pleasure," and I once made him really angry by pressing on him a glass of benedictine—which I knew he loved On the other hand, he took enormous pains to get exactly the colours he wanted in his beloved flower garden at Stoke Poges, for him that was not a voluptuary pleasure He was chary of listening to music because it affected him too much, and made him 'give at the joints'

Yet he could hardly have enough of poetry, and Dante and Milton were his poets during tedious motor journeys in the first great war he would quote Milton to himself from memory—his mouth silently muttering for an hour at a time. I only once got him to go to a theatre the play was *Man and Superman* by his friend Bernard Shaw. Later, of course, Shaw put him into *The Doctor's Dilemma*. Everyone recognized him as the scientific Ridgeon, but I have always thought he was as much like the Irish Sir Patrick Cullen, and that Shaw had split Wright into the two characters—one ruthless and the other so very lovable.

If Art was a whore Philosophy was a beloved mistress from whom he never wished to break free, though Lord Balfour used to beg him to give her up. When I first went to live in his house, forty five years ago, I found a much corrected galley proof headed "The Physiology of Belief", that name has changed many times since, but he was still working at it up to the last days of his life. Almost his last conscious act was to read a recently written bit to his own son.

Dr ALEXANDER ASHER, of Findhorn, Morayshire, died on April 15 at the age of 82. Dr Asher was the son of an Inverness merchant. He was educated at Inverness Academy and Edinburgh University, obtaining his medical qualification there in 1888. He spent his professional life in Thurso, where he built up a large practice. A man of great integrity, he earned the confidence and trust of his patients and was highly respected by all who knew him. In manner he was quiet and unassuming, and one had to know him well to appreciate fully his many excellent qualities. He became a member of the British Medical Association in 1899, and in the work of the Association he found his main hobby. He was honorary secretary of the Caithness and Sutherland Division from 1915 to 1934, and it was in large measure due to his devoted efforts that the work of the Division in a scattered and difficult area was carried on so efficiently. He also acted as president of the Northern Counties of Scotland Branch, and for four years was a member of the Scottish Committee. His activities were not confined, however, to medical matters. His sterling qualities were recognized in his election for a term as provost of Thurso. He was a justice of the peace for the County of Caithness, and was also elected a member of the county education authority. In his later years he was much troubled by failing eyesight and he retired several years ago to the village of Findhorn. He leaves behind him a record of faithful and conscientious service to his fellow doctors and to the community as a whole.

Dr JOHN MORLAND SMITH died on April 16 at the early age of 32. Dr Morland Smith was a student of Middlesex Hospital. He took the Cambridge M.A. and the Conjoint Diploma in 1940, and the D.A. a year later. For a short time he was junior resident anaesthetist at the Middlesex before being appointed senior anaesthetist at the Ministry of Pensions Hospital at Stoke Mandeville. His home was in Bournemouth.

A colleague writes: In the untimely death of Dr Morland Smith the Plastic Surgery Department of the Stoke Mandeville Hospital (Ministry of Pensions) Aylesbury, has sustained a loss from which it will be difficult indeed to recover. He was the most important and indispensable individual member of the team which has worked hard and harmoniously there throughout the difficult war years. "Johnnie" as his likable personality made him known to us all, had a real flair for his specialty, and those of us who watched his progress with fatherly interest predicted for him a position of high eminence among this country's anaesthetists in the spheres of both practice and research. To observe the care and gentleness which he expended on the intubation of infant patients requiring operations for the repair of congenital defects of lip and palate was to realize that here was a true artist at work. Never content with anything merely "good enough" he became a real adept at providing that light degree of anaesthesia which, whilst ample for the surgeon to carry out even lengthy operations without embarrassment left him with a child exhibiting active reflexes when the work was finished. In this way he robbed our work on infants of all anxiety. He was one of those anaesthetists who always saw his patients on the day before operation and followed their progress after operation in his desire to discover faults and devise improvements. He kept careful records of the many hundreds of patients he anaesthetized and it is a tragedy indeed that these may never now be analysed. "Johnnie" was on the eve of marriage and of military service and our sympathy for his mother and fiancée is deep and sincere.

Medico-Legal

MENINGITIS FOLLOWING SPINAL ANAESTHESIA

[FROM OUR MEDICO-LEGAL CORRESPONDENT]

Mr G. G. Voller, of Southsea, fractured the shaft of his right femur when playing football in April, 1944. He was then aged just over 18. He was taken to St Mary's Hospital, Portsmouth, which is maintained by the corporation as a public hospital. After three weeks the fracture had failed to unite and an operation was performed. Earlier injections of "evipan" had not given enough relaxation, and so a spinal injection of "nupercaine" was given. The operation was taking place, for convenience, in the ward, but the syringe and needles came from the operating theatre. Shortly afterwards the patient developed meningitis, which left him with permanent paralysis of both legs and incontinence of urine. Suing through his father, he claimed damages against the corporation, Dr R. J. Hamer Hodges, a resident medical officer, Mr A. Gordon Ord, the consultant orthopaedic surgeon who performed the operation, and Dr S. F. Hans, the senior resident medical officer, who acted as anaesthetist.

All the defendants denied negligence. The corporation denied liability for the acts of the medical practitioners, and Dr Hans pleaded that since the action against him was not started within twelve months from the injury he was protected by the Public Authorities Protection Act, 1934, and the Limitation Act, 1939. Mr Voller also pleaded that no consent to the giving of the anaesthetic had been obtained, but this point was not pursued. The case turned on the propriety of the technique of sterilizing the syringe and the Howard Jones needle.

Mrs V. F. Spacey, formerly a nursing sister, giving evidence for the defence, said that immediately after use a syringe was rinsed with water soaked in pure lysol and then in methylated spirits, and finally placed in a glass container with formalin tablets. So far as she knew, the normal procedure was followed in the present case.

Mr E. Hume Kendall, a consulting surgeon, said that he considered these steps inadequate. Complete protection could be given only by sterilization by superheated steam in an autoclave. He agreed that the risk was small, but recalled reports of a number of cases in the medical journals. The method described was similar to that in general use at the time, but since this accident he himself had given instructions for sterilization by autoclave. He thought that infection could not be introduced into the spinal canal without a breach of technique.

Dr R. C. Macpherson, formerly medical superintendent at St Mary's, said that the hospital had used an autoclave since 1917 but that none of the syringes in use in 1944 would have stood up to the heat. Up to 1946, when he had retired, the autoclave was still not used there for sterilizing syringes.

Dr R. W. Cope, a consultant anaesthetist, said he was satisfied that Dr Hans had administered the anaesthetic in accordance with the approved practice. In a number of similar cases search had been made for breaches of technique but none could be found. He quoted an authority who reported only two cases of meningitis in more than 14,000 injections. He thought airborne infection the most likely source in this case and could not see any fault in the aseptic technique of the hospital.¹

Judgment

Mr Justice Birkett, giving his reserved judgment,² said that he found no evidence against any of the defendants in the treatment of the fractured femur, in the decision to give a spinal anaesthetic, in the treatment of the patient after meningitis had been diagnosed, or in the giving of the injection in the ward instead of the theatre. He found that the meningitis was the direct result of the spinal injection. Bacteriological examination of the cerebrospinal fluid had revealed the presence of *Ps. pyocyanea*. He accepted the evidence of Mr Hume Kendall that, as the bacillus entered the patient's body from without at the moment of the injection, there must have been some breach of the aseptic technique at the hospital. In this connexion he referred to a paper by Dr Frankis T. Evans and a paper by

¹ Portsmouth Evening News, March 17 to March 26.

² The Times, April 30.



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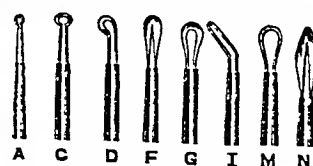


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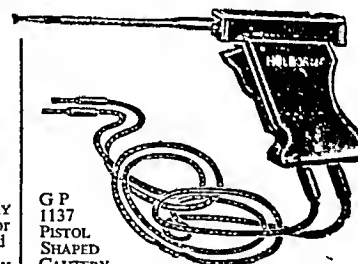
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Dr Michael Kremer on meningitis after spinal analgesia which appeared in the *British Medical Journal* of Sept 8, 1945. He was satisfied that the surface skin of the patient was properly cleansed before the operation, and that Dr Hans had prepared himself in the approved way by "scrubbing up" and had done all that was required. The only remaining source of infection was in the apparatus used for the operation. For all of this the nursing staff of the hospital would be responsible, and for any failure by that staff its servants, the corporation would be responsible according to the decision of the Court of Appeal in *Gold v Essex County Council*¹.

He was satisfied that the aseptic technique used at the hospital in 1944 was adequate in the light of the knowledge available at the time, and that there must have been some breach of that technique. The evidence given on behalf of the hospital on that point did not inspire him with great confidence, and the amount of confusion, forgetfulness, and carelessness which had existed was very disturbing. He was satisfied that the origin and sources of the infection were within the control of the hospital and the nursing staff, and that the infection would not have arisen without negligence on the part of the hospital in the care and control of those sources, and must have been due to a breach of the aseptic technique. He could, however, find no evidence that the medical practitioners had been negligent. He accordingly gave judgment in their favour but against the hospital. In the matter of damages, he said that no money could compensate the patient for the terrible disability from which he suffered, and he awarded £12,000 with costs. He granted a stay of execution in view of an appeal.

The defence of Mr Ord and Dr Hans was undertaken by the Medical Defence Union, whose solicitors, Messrs Hempsons, instructed Mr Milford Stevenson, K.C., and Mr Bristow for Mr Ord, and Mr C. R. Havers, K.C., and Mr H. C. Dickens for Dr Hans.

Comment on this case must be deferred until it is known whether or not there is to be an appeal.

HOSPITAL'S LIABILITY FOR HOUSE-SURGEON'S NEGLIGENCE

In the Portsmouth case, as the doctors had not been negligent, the question of the corporation's liability for their doings did not arise. In another recent case, however, it has arisen in an acute form.

In our issue of April 5 (p. 472) we gave a short account of an action in which a widow was awarded damages against the Hertfordshire County Council in respect of the death of her husband from an injection of cocaine given in mistake for procaine. Mr Justice Hilbery found that the surgeon, the student house surgeon, and the pharmacist had been negligent and held that the corporation was liable for the negligence of the house surgeon but not of the operating surgeon. The full report of the judgment² is of interest and importance, for it sets out clearly the present state of the law governing the liability of hospital governors for the acts of their medical staff and carries the law a stage further in development since the Court of Appeal decided in *Gold v Essex CC*³ that a hospital is liable for the negligence of its nursing and medical auxiliary staff in all matters including those involving professional skill. Until that decision it had been supposed on the authority of the judgments in *Hillyer v St Bartholomew's Hospital*⁴ that the hospital's liability covered only 'ministerial or administrative duties such as the summoning of aid in cases of emergency, the supply of proper food and the like,' and stopped short of duties involving professional skill. The present judgment establishes (if it is not reversed on appeal) that hospital governors may also be responsible for the mistakes of a resident medical officer. This is the first decision that has ever held (though the House of Lords came near to it in *Marshall v Lindsey CC*⁵) that a qualified medical practitioner can in the course of his professional duties be the servant or agent of a hospital or other employer. It had previously been held⁶ that the managers of a hospital merely enabled

patients to meet skilled medical practitioners and did not themselves profess to treat patients or pretend that they had knowledge of treatment.

The judge stressed the uncertainty of the law and was conscious that he was exploring new ground. He pointed out that before *Gold's* case it had been generally accepted that the test was whether the hospital officer was performing his duties under a contract for services or a contract of service. If he was working under a contract of service, the hospital was liable, but if under a contract for services as a professional man, it was not. Several decisions have made it clear that a servant, as opposed to an independent contractor, is a person who is subject to direction and control as to the manner in which he shall do his work. The house-surgeon for whose negligence the Hertfordshire Council Council were held liable was a woman student in her last year who had passed some of her final examinations, including that in pharmacology. She was employed as a whole-time resident medical officer on terms set out in an appointment form. The case turned on the obligation that hospital authorities assume in law towards a patient who comes to them for admission and treatment. Lord Greene Master of the Rolls, said in *Gold's* case that once the obligation is discovered, a person accused of a breach of it cannot escape liability because he has employed another person to discharge it on his behalf, and that this is equally true whether or not the obligation involves the use of skill or is one which the governors could never perform themselves. He went on to say 'So far as consulting physicians and surgeons are concerned, clearly the nature of their work and the relationship in which they stand to the respondents [the corporation] preclude the drawing of an inference that the respondents undertake responsibility for their negligent acts. The same may be true of the house-physicians and -surgeons, but their case is not relevant to the present inquiry and I say nothing about it.'

The position of a resident house surgeon was therefore left open for decision. Mr Justice Hilbery took the view in the present case that part of the amenities which the hospital offered to patients was the presence at all times of a resident medical officer, and that his acts done in the course of treatment were acts for which the hospital was responsible. This view, he thought, accorded with the basis of the decision in *Gold's* case, and was the reason why he held the hospital responsible for the house surgeon's mistake.

The hospital's position with regard to the operating surgeon was he considered, quite different. That surgeon was, it was true, not in the same situation as a consulting surgeon, who, according to Lord Greene's dictum in *Gold's* case, does not involve the hospital in liability for his negligence. The judge also found difficulty in the fact that the surgeon had signed a form which spoke of his employment as a temporary part-time employee undertaking to attend on certain hours for a given basic salary. The judge was clear that these were the terms of an employment and was very doubtful whether the hospital was not also responsible for this surgeon's negligence. On the whole, however, he thought that the surgeon's position was such that the authorities could not in any way control how he was to perform his duties. They could not even say what he should or should not do, they could not order him to do an operation, and still less could they say how he should do it. The same was not true of the house-surgeon, to a very great extent the hospital authorities could say how she should perform her work, and indeed did so under a set of regulations which they intended to be binding on her, though these had not been brought to her attention in a way which would make them binding. The hospital was therefore vicariously responsible for the house-surgeon's but not for the surgeon's negligence.

Points of Interest

This decision obviously bristles with difficult and interesting points. The negligence of the house-surgeon was committed in the course of an act which required relatively little professional skill, she made a mistake in transmitting to the pharmacist the surgeon's prescription for an anaesthetic mixture. Would the hospital one wonders, have been liable if she had been negligent in performing a surgical operation? Although the hospital authorities could possibly have ordered her to perform an

¹ 1942, 2 All E.R. 237

² 1947, 1 All E.R. 633 *Collins v. Herts CC*

³ 1909, 2 K.B. 820

⁴ 1942, 2 All E.R. 237

⁵ *Marshall v. Lindsey CC*, 1937, A.C. 97.

⁶ *Evans v. Liverpool Corporation*, 1906, 1 K.B. 160. *Scottish Insurance Commissioners v. Edinburgh Royal Infirmary* (1913) S.C. 751, and others.

operation it is not easy to see how they could control the manner in which she performed it but not the manner in which the visiting surgeon performed the same operation. The fact that she was not qualified and registered was not material to the judge's decision and so if this stands it will establish the liability of hospital governors for the negligent acts of qualified medical practitioners in certain circumstances. Exactly what those circumstances are, and whether the test will be clearly and definitely that of control by the employer remains obscure.

For instance, if in the Portsmouth case the resident anaesthetist had been found negligent (which he was not) would the corporation have been liable?

A less important but still interesting point in the same case concerned the apportionment of the damages between the county council and the surgeon under the Law Reform (Married Women and Tortfeasors) Act, 1935. Before that Act no contribution had been allocable between tortfeasors, each wrongdoer had been severally responsible for the whole of the damages. That Act however, provided that 'the amount of the contribution recoverable from any person shall be such as may be found by the court to be just and equitable having regard to the extent of that person's responsibility for the damage'. If, said the judge, the sentence had stopped at the word "equitable" it would have plainly meant that the court should have the fullest discretion to distribute the damages according to the varying degrees of culpability of the tortfeasors. It is quite a different matter if the court has to decide the extent to which the negligence of one party or the other was causal in bringing about the damage. In the present case the hospital was negligent right up to the injection and even after it, at the same time the surgeon had the duty of checking to see whether what he injected was what he had ordered. He could have done this up to the last moment. The judge therefore felt quite unable to do otherwise than direct that the hospital and the surgeon should share equally in the responsibility and the contributions.

most important health function would lie in the social and preventive side of health work. In Scotland to-day there were more than 250 hospital authorities, and the result was overlapping unnecessary competition, and gaps in the service provided for the patient. There was general agreement that for the future the hospitals needed to be welded together into a single hospital service organized on a regional basis.

Regional Areas

It was clear that local authorities could not be entrusted with responsibility for running the new service, and the duty of providing it should be placed upon a minister responsible to Parliament. The Government therefore proposed that all existing hospitals should be transferred to the Secretary of State for Scotland. Administration was to be entrusted to a special local and regional organization. Regional hospital boards were to be established as agents for the Secretary of State who contemplated that five would be set up in Scotland, based upon Edinburgh, Glasgow, Dundee, Aberdeen and Inverness. Preliminary consultations were in progress about the boundaries of the areas to be covered by each board. The grouping of hospitals under boards of management would be settled by the regional boards themselves. In England certain hospitals were to be designated as teaching hospitals and for them special boards of governors would be appointed who would be directly responsible to the Minister. In Scotland the Government proposed that all hospitals should come within the field of the regional boards, but that the special position of hospitals in which clinical teaching was carried on should be recognized by inclusion in their boards of management of members nominated by the university concerned and by the teaching board. The reason for this difference was that although the number of hospital beds in Scotland was only about one tenth of the total for the United Kingdom, Scotland was training about one third of the total number of medical students. The Scottish Bill placed a duty on the Secretary of State to provide facilities in the hospital service for the teaching of medicine. Responsibility for the conduct of teaching would continue to rest with the universities, who were given a special position in the proposed hospital organization. These proposals had been worked out by the Secretary of State in consultation with representatives of the Scottish universities. The universities were reasonably confident that the provisions of the Bill would enable them to discharge their teaching responsibilities.

In the treatment of voluntary hospital endowments the Secretary of State had followed a plan adopted not long ago for educational endowments and the Bill proposed a Hospital Endowments Commission. The Bill set up a Scottish Health Services Committee with standing advisory committees. These would provide the Secretary of State with expert advice on every aspect of the Health Service, and they would have power to offer that advice on their own initiative.

Direction and Distribution

LORD ROSEBERY said that in the Bill the Secretary of State for Scotland took on himself far more power than was necessary. He was glad, however, that there would be no *ex officio* officers of the Scottish Health Services Council. The Bill went a long way to destroy the independence and prestige of the teaching hospitals. Contrary to the English precedent the staffs of these hospitals were to be nominated by the regional board. That was an unnecessary degradation of the governors of those hospitals. He hoped the Government would relent, so that the hospital staffs would be directly under the hospital management. Clause 35, which dealt with the distribution of medical practitioners, was totally unnecessary in regard to Scotland. Whatever the case might be for direction in England and Wales there was no such case in Scotland. If the service was made free it would attract doctors to the centres of heavy population where the highest reward would follow the latest practices.

He saw no reason why Clause 36, prohibiting the sale of goodwill should be put in to make a further criminal offence. The restriction on the sale of his house by a doctor to another doctor was outrageous and the Clause was practically unintelligible to the layman. It imposed new crimes on doctors who had not the guilty mind which in nearly every crime or the statute book was necessary to a conviction. He hoped the Government would go once more into this Clause and see if they could make it fairer to the medical practitioner. He thought that the appeal from the judgment of a tribunal against a doctor should be to the Court of Session and not to the Secretary of State.

Results of the Plebiscite

LORD SELWICK said the Bill had not been welcomed wholeheartedly by the medical profession, or by many of the boards of governors of hospitals. In the voting which took place at

Medical Notes in Parliament

SCOTTISH HEALTH SERVICE BILL

In the House of Lords, on May 1 Lord MOLLISON moved the Second Reading of the National Health Service (Scotland) Bill.

He said the discussion on the Bill revolved around the ways of achieving an object about which there was little dispute—a comprehensive health service making every kind of health provision available for every member of the community. The case for an overhaul of Scotland's health service was similar to the case in England. The divergences between the two Bills reflected differences between conditions south of the border and conditions in Scotland. Under this Bill a family doctor was to be available for everybody and in all parts of the country there must be means for securing that the distribution of doctors was not so uneven that some areas got a much poorer service than was generally provided. The Bill did this by abolishing the sale of medical practices and setting up a mainly medical body—the Scottish Medical Practices Committee—with power to forbid a doctor to enter practice in the public service in an area where there were sufficient doctors.

The system of remunerations was to include a basic salary which could be varied to attract doctors to areas where their services were most needed. Such an arrangement resembled the system which had been in operation in the Highlands and Islands of Scotland for the past thirty years. In the last generation there had been a trend away from the individual doctor working in isolation towards the partnership system. Along these lines the Government sought to foster the development of general practice. Doctors would be encouraged to work in groups and would be provided with premises designed for the purpose. These premises were the health centres of the future and in Scotland the Bill placed responsibility for providing health centres directly upon the Secretary of State. It authorized him to delegate his functions in this respect to local authorities but he did not intend to do so in the early years of the new service. Responsibility for the local administration of the family doctor service would be entrusted to executive councils composed as to one-half of professional representatives.

The transfer of hospitals from the local authority field would diminish the direct interest of local authorities and of medical officers of health in the treatment of disease. In future their

Scotland on this subject 55% voted against coming into the scheme and 45% were in favour of it. A regional system of hospitalization was inevitable in Scotland, but the position of the teaching staffs should be safeguarded, and at present it was not. The universities were profoundly anxious. They did not even know if they could appoint their own professors of surgery.

The Duke of MONTROSE said that deaf persons wished to be specifically included in the Bill.

Lord TWEEDSMUIR said there were eighty clauses in the Bill but he could not find anywhere a definition of a proper distribution of doctors.

Replying to the debate, Lord MOLLISON said the reception given by the House to the Bill had been beyond his expectations. He was advised that while the staffs of the hospitals would have their contracts with the regional board all but the senior members of the staff would be appointed by the board of management of the hospital and this board would also have a big say in senior appointments.

With regard to hospital endowments, the Commission would be able to place an endowment with the hospital that provided the services. This Bill was based on medical practice by practitioners registered under the Medical Acts. The question of including unregistered practitioners would need amendment of those Acts. But registered practitioners were not restricted in their methods of treatment and private arrangements were not affected by the Bill. The supervisory functions hitherto exercised by the Board of Control in relation to mental hospitals and mental deficiency institutions would in future rest with the Secretary of State. The Board would continue to exercise all its existing functions relating to the liberty of the subject, and to the interests of the patient as an individual and would also supervise private mental institutions not taken over into the new hospital service. The medical members of the General Board of Control and also the medical officers employed by the Board, would at the same time hold appointments as officers of the Department of Health. Under the Bill it would be possible for deaf people not only to be treated for deafness but to be supplied with hearing aids. The deaf-aid apparatus with which the Government was experimenting was not yet ready. He agreed that the medical services in Scotland compared favourably with those in any part of the world but the health of the people in Scotland did not compare favourably with that of people elsewhere. The Bill was an attempt to apply in an organized way in their own country the outstanding medical attainments of the Scottish doctors.

The Bill was read a second time without a division and was committed to a committee of the whole House.

Streptomycin—On April 21 Capt JOHN CROWDER asked the Minister of Health if he would make a statement regarding the clinical trials of streptomycin organized by the Medical Research Council. Mr BEVAN said the trials were in progress and it was not yet possible to foresee the outcome.

Silicosis—Mr D J WILLIAMS, on April 22, asked the number of applications for certificates received by the Silicosis Medical Board from coalminers in South Wales. Mr JAMES GRIFFITHS replied that during January to March, 1946, 2,312 applications were received and 2,424 cases were dealt with by the Medical Board, of which 1,230 were certified to be suffering from pneumoconiosis. The corresponding figures for 1947 were applications received, 1,520, cases dealt with 2,545, of which 840 were certified. Further steps were taken at the beginning of this year to strengthen the staff of the Silicosis Medical Board in South Wales when six new appointments were made two of them to fill vacancies caused by resignation. There were now fifteen doctors attached to the Board in South Wales as compared with eleven a year ago and eight two years ago.

Indian Medical Service—Mr ATTLEE announced on April 30 that the Government of India had informed His Majesty's Government that they were anxious to avoid the loss of experienced officers. They had stated that they were prepared to give to those members of the Secretary of State's Services who continued to serve under the Government in India the same terms as to scales of pay, leave, and pension rights with safeguards in matters of discipline as hitherto. His Majesty's Government had authorized the Viceroy to announce that they accepted the obligation to see that European officers and certain Indian officers should receive compensation for the loss of their careers and prospects consequent on the transfer of power. They undertook also that the members of the Secretary of State's Services in India who retired would be secured in their rights to the leave then due to them. Opportunities would exist for further Government service for many of those who became entitled to compensation. A White Paper which was issued after the Prime Minister's announcement stated that His Majesty's Government accepted a similar obligation to the Indian Medical Service.

Rights of the Subject—The second reading of the Preservation of the Rights of the Subject Bill is set down for May 15 in the House of Lords. This Bill was introduced by Lord READING on April 24.

Naturopaths and Panel Patients—Mr HOUSE on May 1, asked if the Minister of National Insurance had considered the case of a panel doctor at Birmingham influencing the non payment of national health benefit to a Mr Buckingham, and removing Mr Buckingham's name from the list of his panel patients because the latter, immediately following an accident, attended Mr Oldham, a qualified naturopath, and refused to follow the treatment the panel doctor subsequently prescribed. Mr HOUSE suggested an alteration of the regulations to allow naturopaths to certify for National Insurance sickness benefit. Mr STEELE replied that sickness benefit was only payable on proof of incapacity for work. In considering whether this condition was satisfied in a particular case Approved Societies were not tied to the form of evidence they could accept. Mr HOUSE had been advised as to the steps Mr Buckingham should take if he wished to pursue his claim for sickness benefit.

Medical News

A sessional meeting of the Royal Sanitary Institute will be held at 90, Buckingham Palace Road, London, S.W., on Wednesday, May 14, at 3 p.m., when a discussion on "The Control of Small pox" will be opened by Dr W H Bradley.

The annual general meeting of the Westminster Hospital Ladies Association will be held at the Queen Mary Nurses Home of the hospital on Wednesday May 14, at 3 p.m., with the Duchess of Westminster in the chair. The speaker will be the Dowager Marchioness of Reading, chairman of the Women's Voluntary Services, and the secretary of the hospital will give a short talk on "The Future Outlook."

A dinner and dance has been arranged by Queen's University Club, London, at the Dorchester Hotel, W., on Thursday, May 15, at 7.30 for 8 p.m. Members who have not received notices of the above should communicate with the honorary secretary, at 101, Harley Street, London, W.1.

The next quarterly meeting of the Royal Medico-Psychological Association will be held at Barnwood House, Gloucester, on Thursday, May 15, at 10.15 a.m., when, following the business meeting, papers by Dr E L Hutton and Mrs Bassett, on 'Pre-frontal Leucotomy—Effect on Creative Personality,' and Dr R Sessions Hodge and Mr Y Golla, on 'Urethral Smears in Mental Disorder,' will be read. Prof F L Golla will give a demonstration of simultaneous recording of speech and emotional reaction in pre frontal leucotomy and other cases. At 2.15 p.m. there will be a demonstration of apparatus, including electrotoposcopy, at Barnwood House by Dr W Gray Walter, followed by a paper on 'Brain Metabolism' by Dr W R Ashby and a discussion on 'Electric Convulsion Therapy,' to be opened by Prof Golla.

The opening ceremony of Barnett Hill Red Cross House, Woking, Guildford, Surrey, as the national training centre for British Red Cross Society officers will be performed by the Princess Royal on Friday, May 16, at 3 p.m.

Dr Gordon E Richards (Toronto) will deliver the Skinner Lecture before the Faculty of Radiologists at the Royal College of Surgeons of England, Lincoln's Inn Fields, London, W.C., on Friday, May 16, at 2.30 p.m. His subject is "The Place of Surgery and of Radiotherapy in the Management of Mammary Cancer—A Study of some of the Factors which determine Success or Failure in Treatment." The lecture is open to all members of the medical profession.

A meeting of the Tuberculosis Association will be held at 26, Portland Place, London, W., on Friday, May 16, at 3.30 p.m., when papers will be read by Dr W Santon Gilmour, on 'Tuberculosis in China,' and by Dr Marc Daniels, on 'UNRRA and Tuberculosis in Europe.'

The annual meeting of the Ophthalmological Society of Australia will be held in Sydney in the first week of September. A cordial invitation is extended to doctors in this country.

Prof A J Ballantyne, Emeritus Professor of Ophthalmology at Glasgow University, received the degree of Doctor of Science from the University of Rowanoke, Salem, Virginia, U.S.A., on April 9.

The Edinburgh University Senate has awarded the Cameron prize in therapeutics for 1947 to Prof Hamilton Fairley.

Dr Ivor Campbell, for a number of years medical superintendent of the West Highland Cottage Hospital, Oban, was the recipient of a gold pocket watch and a cheque on March 5, in recognition of the great services he had rendered to the hospital, and the matron and staff presented him with a set of silver backed brushes and a comb.

A deputation of the British Legion led by Brig-Gen Sir Richard Fitzpatrick drew the attention of the Minister of Health on April 14 to the necessity for hospital facilities for the intensive treatment of rheumatism. The deputation urged that units similar to the British Legion Unit of Rheumatology which was established at the Three Counties Emergency Hospital, Arlesey, Beds, in June last year be set up in selected hospitals throughout the country. The Minister of Health replied that he would encourage the provision of more similar units, and announced that the existing unit would be transferred complete to the Royal Free Hospital.

The Edinburgh Clinical Club has renewed its activities (in abeyance during the war) with a winter series of papers and clinical meetings of special value to general practitioners. Prof Stanley Davidson read a paper on folic acid on March 26 at the last meeting of a successful session. At the annual business meeting Dr A Murray Marr was elected to succeed Dr John Young as chairman for next session.

The increased tax on tobacco will involve the West Riding Mental Hospital Board in an additional expenditure of £12 981 12s to supply tobacco to patients in its hospitals. Last year male patients received a minimum of 1 oz a week and female patients 1/2 oz at a cost of £26,607 4s.

A committee has been formed under the chairmanship of Lord Horder in order to launch an appeal for a memorial to Tudor Edwards. The members of the committee are Lord Dudley, Chairman, Board of Governors, Brompton Hospital, Lord Courtauld Thomson, Chairman, King Edward VII Sanatorium, Midhurst, Sir Max Page, Council, Royal College of Surgeons, Sir Stanford Cade, Westminster Hospital, Dr R A Young, Middlesex Hospital, Dr Geoffrey Marshall, Brompton Hospital, Dr T Jenner Hoskin, Royal Free Hospital, Dr Ivan Magill, Westminster Hospital, Dr Horace Evans, The London Hospital, Dr Geoffrey Todd, King Edward VII Sanatorium, Midhurst, Dr D T Davies, Royal Free Hospital, Hon Secretaries, Mr C Price Thomas Brompton Hospital, Mr F G Rouvray, House Governor, Brompton Hospital. The appeal will be made soon, when the details of its object will be fully stated.

EPIDEMIOLOGICAL NOTES

Smallpox

After nearly a fortnight's interval a further case of smallpox has been reported from Bilston (Staffs). The patient, an unvaccinated labourer aged 69, was taken ill on April 25. A rash developed on April 29 and he was removed to hospital on May 1, where he died the following day. Laboratory tests were positive for variola. This patient was not a contact of any known previous case.

No further cases have been reported from Scunthorpe, Lincs.

Discussion of Table

In *England and Wales* the only infectious disease with an increased incidence was whooping cough with a rise of 366. A fall in incidence was recorded for measles 1,291, diphtheria 31, and dysentery 31.

The rise in the notifications of whooping-cough was general throughout the country, the largest increase was Lancashire 86. Measles was less prevalent in most counties, the greatest decreases were Yorkshire West Riding 291, Leicestershire 173, Warwickshire 158, Middlesex 122, and Derbyshire 109. The only change of any size in the local trends of diphtheria was a decrease of 14 in Lincolnshire. No notable changes occurred in the local returns of scarlet fever. A further 13 cases of dysentery were notified in Surrey, where 25 cases were reported in the preceding week.

In *Scotland* there was an increase in the incidence of whooping cough 253 and measles 73 while a decrease was reported for scarlet fever 51 and cerebrospinal fever 17. The rise in cases of whooping cough and measles was contributed by Glasgow and Greenock. The decrease in the returns of scarlet fever and cerebrospinal fever was fairly general throughout the country.

In *Eire* the notifications of whooping-cough fell by 21, and of diarrhoea and enteritis by 10 in Dublin C.B. Small increases were recorded in the notifications of scarlet fever 8 and diphtheria 4.

In *Northern Ireland* the incidence of measles continued to decline. Only 18 cases were reported from Belfast C.B. during the week.

Week Ending April 26

The notifications of infectious diseases in England and Wales during the week included scarlet fever 892, whooping-cough 2,044, diphtheria 175, measles 7,962, acute pneumonia 647, cerebrospinal fever 64, dysentery 61, paratyphoid 1, typhoid 6.

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended April 19.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year for (a) England and Wales (London Included) (b) London (administrative county) (c) Scotland (d) Eire (e) Northern Ireland.

Figures of Births and Deaths and of Deaths recorded under 1 year in infectious disease are for (a) The 126 great towns in England and Wales (including London) (b) London (administrative county) (c) The 16 principal towns in Scotland (d) The 13 principal towns in Eire (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases. n blank space denotes disease not notifiable or no return available.

Disease	1947					1946 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever Deaths	81	53	19	1	—	64	11	29	2	1
Diphtheria Deaths	182	24	59	22	9	415	27	80	39	10
Dysentery Deaths	46	4	16	—	—	189	22	60	—	—
Encephalitis lethargica acute Deaths	2	—	1	—	—	1	—	1	—	—
Erysipelas Deaths	—	—	36	1	1	—	2	38	6	1
Infective enteritis or diarrhoea under 2 years Deaths	84	11	16	28	1	45	6	5	22	3
Measles* Deaths	9 035	490	296	44	18	2 392	935	459	39	1
Ophthalmia neonatorum Deaths	64	8	10	—	—	60	7	10	—	—
Paratyphoid fever Deaths	5	1	—	—	—	9	—	—	1 (B)	—
Pneumonia influenzal Deaths (from influenza)	728	39	4	16	2	652	50	4	6	4
Pneumonia primary Deaths	—	36	252	30	9	—	25	137	11	13
Polio encephalitis acute Deaths	1	—	—	—	—	—	—	—	—	—
Polio myelitis acute Deaths	9	—	2	6	—	5	1	3	1	1
Puerperal fever Deaths	—	—	10	—	—	—	3	5	—	—
Puerperal pyrexia† Deaths	139	6	12	3	3	107	8	5	—	—
Relapsing fever Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever Deaths	930	73	126	26	33	1 051	84	128	12	40
Smallpox Deaths	2	—	—	—	—	3	1	—	—	—
Typhoid fever Deaths	5	1	1	4	—	3	—	—	1	—
Typhus fever Deaths	—	—	—	—	—	—	—	—	—	—
Whooping cough* Deaths	2 117	255	399	88	13	1 607	176	91	25	12
Deaths (0-1 year) Infant mortality rate (per 1 000 live births)	528	76	82	34	20	382	51	47	39	1
Deaths (excluding still births) Annual death rate (per 1 000 persons living)	5 270	816	688	246	169	4 588	652	570	199	13
Live births Annual rate per 1 000 persons living	10 532	1662	1233	492	318	7 036	997	917	413	27
Stillbirths Rate per 1 000 total births (including stillborn)	276	41	31	—	—	247	30	28	—	—

* Measles and whooping-cough are not notifiable in Scotland and the return are therefore an approximation only.

† Includes primary form for England and Wales. London (administrative county) and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

Any Questions ?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Serum Phosphatase and Cancer of Prostate

Q—What is the significance of the blood phosphatase estimation in carcinoma of the prostate and is there any difference between the acid and the alkaline phosphatase estimations?

A—It has been found that the serum phosphatase which has a maximum activity at pH 5 (acid serum phosphatase) is noticeably increased in carcinoma of the prostate, more especially when bony metastases are present. Acid phosphatase is also increased in the cells of the primary prostatic lesion. After castration the serum acid phosphatase undergoes a sharp reduction towards the normal. The serum acid tests may therefore be helpful in diagnosis and when the patient is taking stilboestrol also of use in regulating treatment. The alkaline phosphatase is of little importance in this connexion. It is difficult to give a figure at which the rise in acid phosphatase becomes significant, as the normal level is different in different patients.

Tapping a Hydrocele

Q—A patient with a hydrocele is not in a fit condition to stand operation. Can you give the formula now in use for injection after tapping and the technique employed in the obliteration of the sac? Does much discomfort or pain accompany this procedure?

A—Authorities are not all agreed as to the advisability of treating hydroceles by aspiration and the injection of irritant fluid. This treatment is more likely to be successful when the hydrocele is thin walled and of only moderate size. Recurrences take place in about 10% of cases. The hydrocele is first tapped in the usual manner and when the last drops of fluid have been expressed a syringe containing the irritant fluid is applied to the cannula. The fluid is then injected and the sac manipulated. Part or all of the fluid is allowed to drain away and the cannula is withdrawn. The following solutions have been used: sodium morrhuate (5 ml of a 5% solution), carbolic acid (1 drachm (4 g) of crystalline carbolic acid kept liquid with the addition of 10% of glycerol), and tincture of iodine. The patient should be kept in bed for twenty-four hours and afterwards on a couch for several days. The reaction may be fairly severe and for this reason repeated tapping as an alternative to open operation is to be preferred.

Threadworms

Q—My children aged 5 and 2 have had threadworms for the last six months. I have treated them with quassia enemata, carbon tetrachloride and gentian violet and also taken the usual precautions against reinfection but there is no permanent improvement. Can anything further be done?

A—The question of a symptomless adult carrier in the family circle should be considered. In rare instances the appendix may be packed with threadworms and any suspicious symptom or sign of appendicular trouble should be considered as an indication for surgery. The use of a rhubarb and sodium bicarb mixture over a period is old fashioned but sometimes very effective in helping the bowel to "throw off" the infection.

Quinine and Otitis Media

Q—Is there any scientific justification for the view that quinine in the usual antimalarial dosage is contraindicated in those subject to otitis media, because of the risk of further impairment of hearing?

A—Otitis media in itself is not a contraindication to quinine in the usual antimalarial dosage. The unpleasant but transitory

aural effects of quinine may, however, be obviated by using one of the new synthetic antimalarial drugs, which at the same time are more satisfactory than quinine in malaria.

Amoebiasis and Appendicitis

Q—Does caecal amoebiasis ever relapse because the infection has been carried on in the appendix? I suggest that even the most thorough treatment with retention enemata and EBI is unlikely to clear a submucosal ulcer possibly protected by debris in the appendix. Would appendicectomy be the correct procedure after a flare-up has been dealt with in the absence of the usual signs of chronic appendicitis?

A—Amoebic infection is unlikely to be confined to the appendix and therefore cannot be considered as the sole source of relapsing infection in the caecum. There is evidence that emetine bismuth iodide is absorbed and does not owe its therapeutic effect solely to surface action, consequently submucosal ulcers respond to standard treatment. Where there is much secondary infection, courses of penicillin and sulphonamides associated with specific amoebicidal drugs may assist in cure. Appendicectomy is not indicated after the treatment of amoebiasis in the absence of evidence of appendicitis. Amoebic typhlitis often simulates chronic appendicitis, but the manifestations rapidly resolve under amoebicidal treatment.

Effect of Chromic Acid on Teeth

Q—Has chromic acid any deleterious effect on the enamel of the teeth?

A—Chromic acid used over a long period can cause staining of the necks of the teeth, followed by some degree of decalcification if the applications are continued long enough. Ulcers of the mucous membrane may also be initiated by careless or over-prolonged administration.

Treatment of Arthritis

Q—What are the indications for gold therapy in rheumatoid arthritis? Is short wave diathermy of value in the treatment of osteoarthritis of the hip?

A—To discuss the indications for gold therapy in rheumatoid arthritis would entail a lengthy article, a modern textbook of the rheumatic diseases should therefore be consulted. Practical experience both of the disease and of the remedy is, however, the only safe guide, and close observation of the effect of each dose including examinations of the urine and blood, is essential. An accelerated erythrocyte sedimentation rate and other evidences that the disease is active are the primary indications for gold therapy. The dose should not exceed 0.05 ml of sodium aurothiomalate, or its equivalent, at intervals of five to seven days. Modern practice is to continue along these lines for fifteen to twenty doses and then to give a small maintenance dose at a longer interval. 0.05 ml once a month would be appropriate, so long as there are no signs of toxicity—albuminuria, skin rashes, stomatitis, leucopenia, etc.

Short-wave diathermy often relieves the pain of osteoarthritis of the hip, but care should be taken to ensure that it is properly focused on the joint. Overdosage must be avoided.

Furunculosis

Q—Can furunculosis be prevented from spreading (a) in the axilla and (b) on the hairy forearm?

A—In the absence of any underlying general cause of lowered resistance, or any local source of infection such as oral sepsis, the spread of furunculosis is commonly due to external irritant factors for example friction, chemicals, including oil or tar and unsuitable and especially greasy or macerating local applications. The objective should be to keep the parts dry, to use dry heat or short-wave diathermy, and local antiseptics that are non-irritant. X-ray therapy is of value, especially in localized furunculosis. Sulphonamides may be given by mouth and penicillin parenterally, but they should not be employed locally.

In furunculosis of the axilla x-ray therapy (150 r unfiltered, at 80 kV, repeated every month for three treatments) may be

recommended in conjunction with treatment along the lines indicated above and with dyes or emamine lotion applied locally. On the hairy forearms the same principles apply. Autogenous vaccines have also been recommended. Non specific shock therapy is often of value as are whole blood injections (10 ml weekly).

Histamine sensitivity

Q—How should I test for histamine-sensitivity? How is desensitization effected particularly in relation to the treatment of Ménière's syndrome in histamine-sensitive patients?

A—To test for histamine sensitivity inject into the skin of the forearm 0.05 ml of a 1 in 10,000 solution of histamine calculated in terms of histamine base. Sensitive patients will react with an urticarial weal almost an inch (2.5 cm) in diameter, having one or more pseudopodia, 1 inch in length with a surrounding erythema of 2 inches (5 cm) or more. In the non sensitive patient the urticarial weal will be about 1/3 inch (0.8 cm) in diameter, will have either no pseudopodia or at the most very small buds, and the erythema will be about an inch in diameter. If in doubt test again with double the dose a few days later. If no pseudopodia appear, then the case is not histamine sensitive.

Histamine sensitive patients should be treated with gradually increasing doses of histamine given subcutaneously. The following is a suggested scheme of dosage: starting with a 1 in 10,000 solution 0.05 ml, 0.1 ml, 0.2 ml, 0.3 ml, and so on up to 0.8 ml, then with a 1 in 1,000 solution, 0.1 ml, 0.2 ml up to 0.8 ml, then with a 1 in 100 solution, 0.1 ml and so on up to a maximum dose of 1 mg, or until symptoms of overdose occur which is not infrequent at a dose of 0.4 to 0.5 mg. The injections are given twice a week until the maximum or the maximum without symptoms, is reached after which this dose is maintained weekly for two months (M Atkinson *J Amer med Ass* 1941, 116, 1753 *Proc roy Soc Med* 1946 39 807). The intravenous administration of histamine 1 mg of histamine base in 250 ml of saline, given over at least one and a half hours, is recommended by Horton for the relief of an acute attack of Ménière's syndrome, and is especially indicated for those who have acute loss of hearing (B T Horton *Surg Gynec Obstet* 1941 72, 417 C H Sheldon and B T Horton *Proc Mayo Clin* 1941 15 17).

INCOME TAX

All inquiries will receive an authoritative reply but only a selection can be published.

Living out Allowances

S E inquires whether payment at £100 per annum made as a living out allowance because there is no residential accommodation in the hospital is liable to income tax.

****** Yes—it is liable. The official who makes the payments is responsible for deducting tax under the Pay as you earn scheme. It is, of course, true that a medical officer living in is not liable on the value of that benefit, but when living out he falls into the general class of employees and as such must bear the cost of living out of his taxed income.

"Family Allowances" and "Wife's Earned Income"

'FATHER' writes—"Family allowance is considered by my Inspector of Taxes to be a part of the earned income of the husband. Should not the allowance legally be considered as a part of the earned income of the wife, and thus in many cases, be covered by the wife's earned income allowance?"

****** No. The point is covered by Sec 27 (2) of the Finance Act 1946 which provides that "payments of benefit under the National Insurance Act, other than maternity grant and death grant, shall be charged to income tax under Schedule E" and further that "no such payment shall be treated by virtue of this subsection as earned income for the purpose of Sec 18 (2) of the Finance Act, 1920 (which provides, in the case of married persons for an increased personal allowance by reference to the wife's earned income), unless it is payable by way of unemployment benefit, sickness benefit or maternity allowance."

This statutory rule is clearly one which was deliberately adopted by Parliament and an attempt to abrogate it would be very unlikely to succeed.

Letters and Notes

Car Sickness in Children

Dr A H MOSFLEY (Warrance New South Wales) writes: There was a question about car sickness in children (Nov 30 1946, p 842). The following simple treatment has been satisfactory with three small children. It was used by the old coach drivers to keep out the cold. A sheet of brown paper under the shirt and coming well up to the base of the neck, and over the abdomen.

Massive Doses of Penicillin

Dr J C JONES (London, SE 25) writes: With reference to the reply under Any Questions? on Nov 30, 1946 (p 842), during the recent measles epidemic I have given 250,000 units of penicillin (calc suspension), and even 375,000 units, to children who developed otitis—children mostly of 5 years or less—which completely cleared up the attacks within 24 hours. In two or three cases at the most has the injection had to be repeated. At the same time or immediately following the penicillin a four days course of "uleron" (crushed tablets in syr solu) to prevent recurrence of the otitis was given. Points of importance are: It is necessary to use a very wide bore needle, so that skin anaesthesia (ethyl chloride freezing) is advisable. It is necessary to cover the point of injection with elastoplast made more sticky by spraying with ethyl chloride. It is advisable to inject into the upper lateral sections of the buttocks, otherwise the only suspension of penicillin will leak out and the effect be lost. The only complication I had was with a child suffering not from otitis but from meningitis. This child was given uleron followed after 2 days with several large doses of penicillin. She cleared up in about a week but broke out into a universal vesicular skin rash in which the vesicles ran together into confluent patches. This looked terribly distressing but the patient did not worry much about it, and it cleared quite up without attention except for large doses of 'calfos'.

Lymphoedema of the Legs

Dr FREDERICK SUTTON (Clifton, Bristol) writes: Your contributor (March 22 p 402) makes no mention of chronic postural oedema in women, which is a common cause of this condition. So little is said about it in textbooks that one not infrequently sees girls or young women who have been sent by doctors to the out patient clinic as obscure oedema. In many there is an obvious peripheral circulatory anomaly such as erythrocyanosis, the lower part of the legs being cold and blue and even showing trophic ulcers at times, especially during the colder months of the year. Some patients, however, show only a rather hard lymphatic type of swelling, often affecting only one leg. In the majority of them there is no previous history of thrombophlebitis or other inflammatory reaction, and careful inquiry suggests that it has developed gradually over a period of time. Very rarely one meets with periodic streptococcal lymphangitis in such cases, which arises because of the circulatory dysfunction and which rapidly subsided with rest in bed and salicylates before the days of modern therapy. At the time of the attack the classical signs of inflammation appear and, in a few,ague like chills with fever occur for the time being. Treatment is very unsatisfactory, though the very severe cyanotic cases may be helped by lumbar sympathectomy. Thyroid, pituitary gland extracts, dienoestrol in large doses and mercurial diuretics have been tried with some temporary success. Physical treatment, such as the wearing of an elastic stocking or fine elastic woven bandages and such measures as massage, diathermy, and especially the daily use of the pulsator are helpful, and, moreover, unless they are employed the ankle region gradually becomes more swollen.

Correction

In the answer to a question about "faecal *B coli*" (May 3, p 625) the statement, "therefore many *B coli* occur which are not faecal, those which are not faecal are widely distributed as animal parasites," is incorrect. It should have read "therefore many *B coli* occur which are not faecal, those organisms which are faecal are widely distributed as animal parasites."

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OXYGEN POISONING IN MAN

BY

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PART I

The recent war greatly stimulated the study of human tolerance to various changes in environment. This article confines itself to tolerance to increased tensions of oxygen, though there are other important factors at increased pressures which are not considered here. At sea-level there is an oxygen tension of about 159 mm of mercury, and this is the maximum oxygen tension encountered in any natural environment. The oxygen tension in the tissue spaces of warm blooded animals is from 20 to 40 mm of mercury. In under-water work man, by means of various appliances, breathes gases at the pressure to which he is exposed, this being the first essential of prolonged under-water existence. The second essential is that his respiratory movements must continue within their normal range and with their normal frequency. The third is that the gases to which he is exposed must not be noxious, either at the time of exposure or on returning to normal atmosphere. Under most operational conditions it is preferable that the diver is self-dependent and carries his respiratory gases with him. If he carries air, then this must be expelled from his apparatus after each breath and there is great wastage and exposure to dangerous tensions of nitrogen. If he carries oxygen, this gas can be employed not only for metabolic purposes but for the essential rinsing of the lungs during respiratory movement. Thus no gas is wasted and maximum endurance for a minimum load is possible. It would appear therefore that oxygen is the ideal gas for this purpose, provided it is devoid of toxic effects. It is almost certain that the tissues of man, when breathing oxygen at increased tensions, are exposed to an internal environment which has been previously unknown to living matter, and it is therefore difficult to postulate what the reaction to such tensions would be. Whales, in deep dives, protect their general tissues by the complete collapse of their relatively small lungs and transfer of the gases to the inactive dead space.

The first important contribution to this subject was made by Paul Bert in 1878. His pioneer work has withstood the test of time in a most impressive manner. He showed that oxygen at increased pressures was highly poisonous and that no living matter was exempt. Larks exposed to 15-20 atmospheres of air convulsed and finally died. In a large series of experiments Bert showed that the oxygen tension was the decisive factor in the immediate effect of air or of

any mixture of nitrogen and oxygen. Lorrain Smith (1899) next demonstrated that animals breathing oxygen at moderately high tensions over prolonged periods suffered severe and finally fatal pulmonary damage. An enormous amount of animal experimentation followed, but "L'effet Paul Bert" (convulsant) and "L'effet Lorrain Smith" (pulmonary irritation) remained the cardinal features of oxygen poisoning.

With regard to human experiments, the first recorded were by Bornstein and Stroink (Bornstein, 1910, Bornstein and Stroink, 1912), who breathed oxygen for 45 minutes at 3 atmospheres absolute (ats abs) in the Elbe tunnel without ill effect. In 1912 Bornstein suffered from clonic spasm of the legs while riding an ergometer under similar conditions for 51 minutes. In 1930 the late Dr J S Haldane (Haldane and Priestley, 1935) reported confusion and amnesia in deep-sea air divers at 300 ft (91.4 m), and these symptoms were attributed to the raised tension of oxygen. These effects were proved by Behnke *et al* (1935) to be due to the intoxicant effect of nitrogen at high pressures. Yet as a result of this misconception diving on pure oxygen was limited in the Royal Navy to 2 ats abs (apart from submarine escape). In 1933 two Royal Naval officers, Damant and Phillips, breathed oxygen at 4 ats abs in compressed air. Convulsive symptoms occurred in 16 and 13 minutes respectively. Phillips suffered a major convulsion after being turned on to air but while still at 4 atmospheres pressure (Thomson, 1935). In 1934-6 Behnke and co-workers carried out a series of human experiments. Only two exposures were made at 4 atmospheres, where one subject suffered acute syncope after 43 minutes. The other subject convulsed after 44 minutes. At 3 atmospheres four subjects breathed oxygen for three hours with no demonstrable ill effect. In a second series at this pressure the experiment was continued into the fourth hour, when three subjects suffered abrupt onset of vertigo, nausea, and a sensation of impending collapse. Concentric contraction of the visual field was also demonstrated. These results were published and obtained widespread recognition and acceptance. Throughout the world it was assumed that men at comparative physiological rest, as in these experiments, were safe breathing oxygen for at least 30 minutes at 4 atmospheres, and for at least three hours at 3 atmospheres. In time even the proviso concerning rest was usually omitted. The British finding appeared to have

been unnoticed, or forgotten even in Great Britain. In 1941 J B S Haldane reported a convulsion after breathing oxygen for under five minutes, at a pressure of 7 ats abs, during experiments related to the *Thetis* disaster.

The investigations of oxygen poisoning described here were started in April, 1942 owing to the occurrence of several cases of unconsciousness in oxygen-breathing apparatus at depths and in times which were then considered to be safe. The Admiralty Experimental Diving

of these experiments was to gain a more comprehensive picture of oxygen poisoning in the human. Large groups of subjects were therefore employed, and over 2,000 experiments were carried out. Great care was taken to avoid an heroic or "Jules Verne" atmosphere.

The Marked Variation of Oxygen Tolerance in Man

The first series of experiments to be carried out was to determine the oxygen tolerance of a group of healthy male subjects at a fixed oxygen tension (3.7 ats abs). This series was carried out in a pressure chamber of 100 c ft (2.83 m³) capacity. The subject was seated opposite two observers who were in telephonic communication with those outside. All subjects breathed oxygen at pressure until acute symptoms occurred. Experiments in compressed air have a number of advantages. The subject's state can be easily observed and subjective end-points are less likely. Convulsions are a lesser risk. Oxygen was breathed from a Siebe Gorman "salvus" apparatus. Efficient rinsing out of the subject's lungs was carried out and repeated frequently. A series of analyses, however, showed that even with this regime it was difficult to maintain a concentration higher than 95% of oxygen. In most exposures the pulse and respiratory rates were noted every five minutes. Subjects varied from cooks to recently trained divers, experienced divers, submarine ratings, medical officers, special service operational personnel, and mine disposal officers and ratings. All were Grade A1 in fitness, and ages varied from 18 to 40 years. Experiments carried out in this manner are referred to hereafter as in the "dry," in contrast to those carried out under water and referred to as in the "wet." The results of these experiments are given in Table I and shown graphically in Fig. 4 (in the "dry").

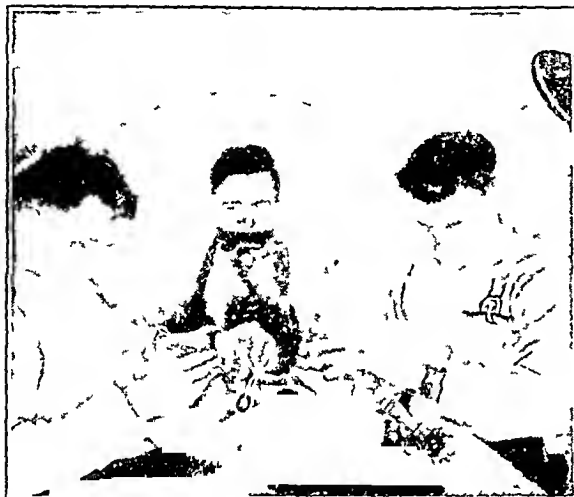


FIG 1—Subject breathing oxygen under pressure



FIG 2—Soft-helmeted counter lung oxygen-diver (Human torpedoes)

(Admiralty Photos)

Unit was created to investigate this and other urgent problems of high-pressure physiology. The main body of human experiments described in this article were carried out between June, 1942, and February, 1943. No experimental dives where men had breathed pure oxygen at toxic tensions under water had yet been reported. The object

TABLE I—Oxygen Poisoning at 90 ft (27.4 m) in the Dry in 36 Subjects in Order of Performance

Exposure (mins)	Symptoms	Exposure (mins)	Symptoms
96		18	Vertigo and severe lip twitching
67		18	Vertigo + + epigastric aura
62	ing	17	Lip twitching
62	Nausea and vertigo arm twitch	17	Lip twitching spasmodic respiration
54½	Severe lip twitching	17	Lip twitching spasmodic respiration
51	Dazzle and lip twitching	16½	Slight lip twitching
50½	Blubbery of lips fell asleep	16	Severe lip twitching spasmodic respiration
50½	Dazed and lip twitching	15½	Inspiratory predominance lip-twitching and syncope
34½	Nausea vertigo lip twitching	15	Nausea syncope and confusion
33	Convulsed	14	Lip twitching
32	Severe lip twitching	12½	
30	Convulsed	9	Dazed and lip-twitching paraesthesiae
26½		9	Lip twitching and vertigo
25½	Drowsiness and lip twitching	7½	Severe lip twitching
24½	Severe lip twitching	7	Diaphragmatic spasm
23	Lip twitching epigastric aura	6	Severe nausea
20½	Lip twitching twitch L. arm amnesia	6	Severe lip-twitching
19½	Convulsed		

Out of 36 subjects five convulsed, the rest recovered on being turned on to air. The most striking finding was the enormous variation in oxygen tolerance in a group of human beings. Exposures causing marked symptoms at this tension varied from 6 to 96 minutes. The tolerance of each subject was unpredictable. Many attempts to correlate tolerance with age, height, weight, physical fitness, athleticism, smoking, ingestion of alcohol, psychological health, or personality assessments all failed. Symptoms will be discussed in detail later.

The times of exposure causing acute symptoms show a skew type of distribution, notable examples of which are

the response of animals and insects to drugs and hormones. It is clear that the previously reported times of safety at this pressure were dangerously incorrect, in addition, no allowance had been made for individual variation, which is found to be over an enormous range.

Oxygen Tolerance under Water

It has already been emphasized that up to the beginning of these investigations all experiments regarding oxygen tolerance had been carried out by subjects in dry chambers. A series of dives was initiated to discover whether man's tolerance under water was similar to that so far determined in compressed air. The experimental arrangements can be seen in Fig 3, which is self-explanatory. The respiratory apparatus was a modification of the Davis submarine escape apparatus adapted for four hours' endurance. A light rubberized canvas suit with a soft helmet was worn. The diver was submerged in an open tank and tested for leaks, he then walked to the high-pressure tank and was lowered into the water. The upper hatch was closed and air pressure rapidly applied. The diver was thus exposed to the increased pressure but was under water. On the average, subjects were breathing oxygen, mostly at atmospheric pressure, for ten minutes before arriving at the appropriate experimental depth. Time of compression averaged 90 seconds. The temperature of the water was maintained at 65° F (18.3° C). As the depth reading was of the air pressure above the water, the oxygen was breathed at an additional 3 ft (0.91 m) of water pressure (see Fig 3).

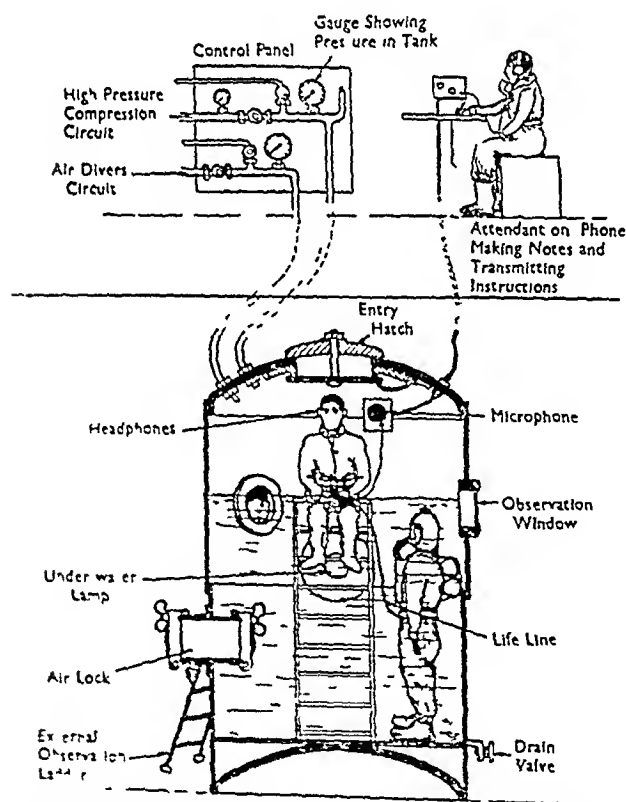


FIG 3.—Showing wet pressure chamber with diver under water breathing oxygen in self-contained set. Internal and external

The first series of dives was to 50 ft (15.2 m) (2.5 ats abs) and the time limit was 30 minutes. One hundred different subjects were employed. If the diver convulsed or had severe symptoms he was hauled out of the water and turned on to air. The mouthpiece acted as

an excellent gag during convulsions, and attendants were taught to maintain a good airway. Out of these 100 subjects 26 convulsed, 24 had symptoms, and 50 had no symptoms. Space does not allow details. According to previously accepted figures men were safe breathing oxygen at this depth for at least two hours. The great variability, already demonstrated, makes hard-and-fast rules impossible, but, even allowing for this variation, it was strongly suggested that there was a marked decrease of average tolerance compared with that obtaining in the experiments in compressed air.

A series of dives was therefore carried out to compare the tolerance of subjects in compressed air, and under water, at 60 ft (18.3 m) and 90 ft (27.4 m) pressure of sea-water. In the first series six subjects were employed. At 60 ft in the "dry" the subjects tolerated oxygen-breathing for 180, 120, 120, 158½, 101, and 51 minutes, in the first three cases without symptoms. At the same pressure under water the same subjects experienced acute poisoning in 76, 37½, 25, 61, 19, and 12½ minutes respectively. At 90 ft their performances in the "dry" were 51, 54½, 62, 34½, and 32 minutes, whereas under water they survived only 12, 11, 25½, 18½, and 9½ minutes respectively (one subject indisposed in this series). All these exposures at 90 ft were terminated by acute symptoms. A larger series of "wet" and "dry" experiments at 90 ft is shown in Fig 4. It will be seen from these results that oxygen

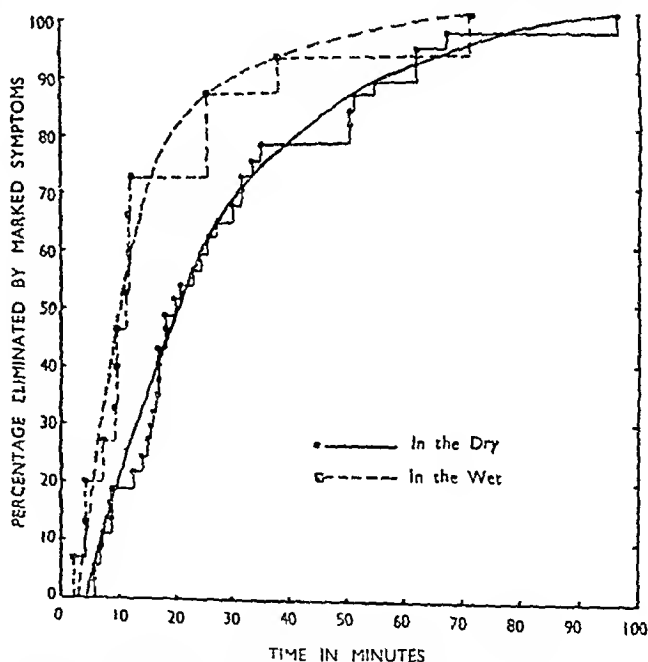


FIG 4.—Percentage of subjects eliminated by toxic symptoms at 90 ft (3.73 ats abs) breathing oxygen in compressed air and under water (65° F) in diving suit. No work performed.

tolerance is greatly decreased when the subject is under water. The enormous importance of this finding need hardly be pointed out. The causes of this impairment remain unknown. There is the added 3 ft (0.91 m) of pressure already mentioned, and the diver is breathing pure oxygen in contrast to 95% approximately in the "dry". These two factors are quite inadequate to explain the phenomenon completely. Carbon dioxide accumulation was suspected, as this is known to increase susceptibility to oxygen poisoning in animals (Hill, 1933). Numerous gas analyses negated this possibility. The lack of a rigid helmet, respiratory resistance, the bandaging effect of the suit, the diver's posture, and hydrostatic effects have all been investigated with negative results.

Time-Pressure Relationship for Men Breathing Oxygen Under Water

Next an attempt was made to plot individual curves expressing the relationship of time of survival to pressure. In view of the individual variation it was realized that each diver would have a different curve of tolerance. After a large number of experiments a new factor became increasingly manifest. The tolerance of individual subjects varied from day to day, and it was quite impossible to plot a curve for a single individual. Certain subjects showed this individual variation to a greater degree than others. As with the variation between individuals, no cause for this varying susceptibility to oxygen poisoning could be discovered. In view of these findings, a subject of apparently good resistance was chosen. He dived twice a week over a period of three months to a constant depth of 70 ft (21.3 m) in the "wet" (3.12 atm abs). He wore the same suit and apparatus on all occasions. All dives were carried out about 11 a.m., after an early and light breakfast. His end-points were usually very definite and his health excellent throughout. The results are given in Table II with end-points and

TABLE II—Tolerance of a Single Diver at 70 ft (21.3 m) in the Wet over a Period of 90 Days

Day in Series	Time (mins)	Symptoms
1	7	Lip-twitching +
7	12½	Nausea +
9	86	Auditory hallucinations lip twitching
15	27	Lip twitching +
17	23	+
20	21	+
30	28	+
34	61	+
37	149	Feeling cross eyed lip-twitching
42	37½	Lip-twitching coughing
44	96	Lip-twitching stertorous breathing
48	31½	Lip-twitching +
56	67½	Lip-twitching
70	62½	Lip-twitching tinnitus choking sensation grasping confusion
72	43	Lip-twitching +
76	41½	Lip-twitching vertigo dazzle
78	82	Lip-twitching dazzle dyspnoea
80	29½	Lip-twitching nausea
83	125	Dazzle amnesia
90	78	Nausea severe lip-twitching

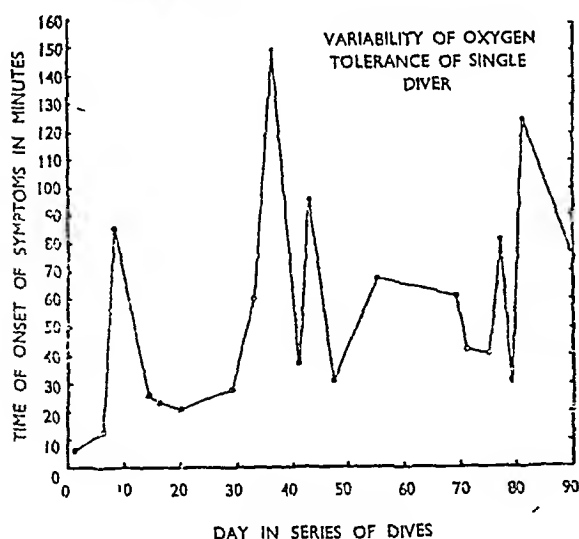


FIG 5—Time of exposure causing toxic symptoms in same diver as Table II under sea water at 70 ft (65° F) plotted over a period of 90 days. No work performed.

in Figs 5 and 6. The curve of distribution obtained was very similar to that showing variation of tolerance in a group. Statistical analysis showed that this subject had a

greater variance of toleration than the average. A larger series of experiments confirmed this individual variation. Good examples, in one series, were those divers who survived 100 minutes under water at 50 ft (15.2 m). The averages of all their other performances at this depth were 22, 19, and 15 minutes. One subject, who convulsed after 12 minutes at 50 ft, completed 100 minutes at 50 feet

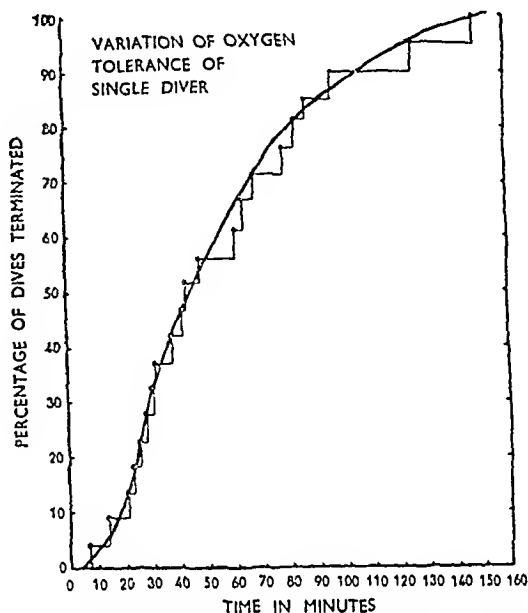


FIG 6—Percentage of dives terminated owing to toxic symptoms as a function of duration of exposure. Depth throughout, 70 ft of sea water (65° F). Dives over a period of 90 days. No work performed.

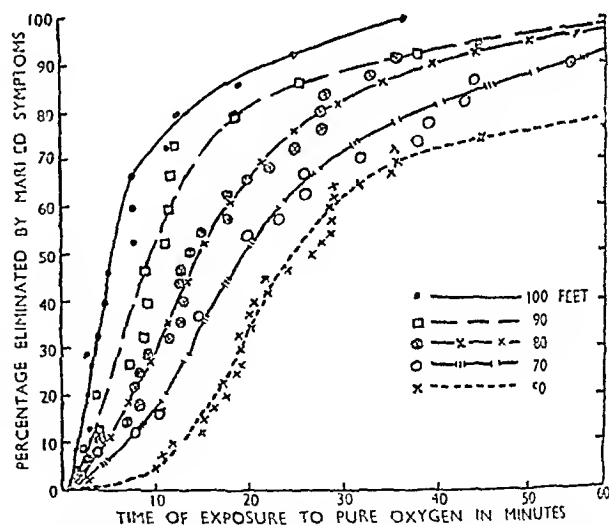


FIG 7—Percentage of divers on oxygen, under water, surviving at various times up to 1 hour at 50 ft, 70 ft, 80 ft, 90 ft, and 100 ft of sea water 65° F throughout. No work performed. Actual end points plotted.

without symptoms 16 days later. Six days after this he again convulsed at 50 ft in 32½ minutes. Such findings make it clear that to dive on oxygen to any toxic pressure involves a risk that it is impossible to assess, even if the diver's tolerance has been previously determined.

It now became apparent that the only satisfactory method of assessing oxygen tolerance at various pressures was to employ groups of men for each pressure. Dives were

carried out in the "wet" to a definite end-point by groups of subjects at 50, 60, 70, 80, 90, and 100 ft in an attempt to obtain a clear overall picture. The results are shown in Fig 7. The increased toxicity as the depth becomes greater is clearly shown. The highly skew distribution conforms satisfactorily with the Galton-MacAlister law, and it can be demonstrated that all curves in Fig 7 are the same curve. In other words, the variability of the group is independent of the depth. The coefficient of variation has the huge values of 76-109%, as compared with about 3-4% for such human characters as height, arm length, and alveolar carbon dioxide level. Even more remarkable is the fact that a single diver gave a graph (Fig 6) of the same type with a coefficient of variation of 67%. This means that a single man may be almost as variable as a group, though this is exceptional. Statistical analysis shows that only 40% of the total variation of oxygen divers is accounted for by day-to-day variation of each individual diver. The other 60% is due to variation between the averages of the different divers.

Maximum Non-toxic Depth under Water at Rest

Next an attempt was made to discover at what pressure, under water, oxygen ceases to cause toxic nervous symptoms that would make free diving dangerous. As work is generally known to impair tolerance the investigation was first carried out without exercise. A large number of dives for a maximum of two hours was performed, and toxic symptoms, and even convulsions, were encountered at 40 ft (12.2 m), 35 ft (10.7 m), and 30 ft (9.1 m). The results may be summarized as follows:

Depth (feet)	No of Subjects	No with Symptoms	No Convulsing
40	29	15	4
35	21	6	1
30	20	3	2
25	28	0	0

It is possible that longer exposures may have caused symptoms at 25 ft (7.6 m), but this period is longer than any practical dive on oxygen to this depth. It must be remembered that these divers were exposed to a pressure of oxygen that would occur with a sounding of 32 ft (9.7 m). It is a most surprising finding to obtain oxygen convulsions at as low a pressure as 33 ft (10.1 m) of sea-water (2.1 ats abs). At such a tension the oxygen dissolved in the blood plasma is inadequate for even basal metabolic requirements, and the haemoglobin is still being actively employed for oxygen transport. Gesell (1923) had suggested that the deactivation of the haemoglobin cycle rendered this substance unavailable for carbon dioxide transport from the tissues and that this caused a severe tissue acidosis. Campbell (1930), by his nitrogen injection technique, had confirmed that there was a remarkable rise of tissue carbon dioxide tension at the usual convulsant levels employed in animal work. However, at the minimal tension causing convulsions in these experiments the carbon dioxide tension was shown by Campbell to be hardly raised. It would appear, therefore, that accumulation of carbon dioxide in the tissues is not the essential cause of oxygen convulsions, and this is in accord with more modern research, which will be discussed later.

Effect of Work on Oxygen Tolerance

It has been generally accepted that work diminishes tolerance to oxygen at increased tensions. However, no reliable experimental data are available. *Il Polombaro* (United States Navy, 1938) gives tables showing a marked effect of work, but these figures appear to be merely anecdotal. A further programme of experimental

exposures was therefore carried out in the "wet" with hard work. Controls with the diver resting were also performed. Subjects worked vigorously by lifting a large bag of weights by pulley. Dives were carried out at 50, 40, 35, and 25 ft. These experiments showed conclusively that oxygen tolerance is markedly diminished by work. Figs

EFFECT OF WORK ON OXYGEN POISONING
IN THE WET AT 50 FEET OF SEA WATER
(2.52 ATS ABS)

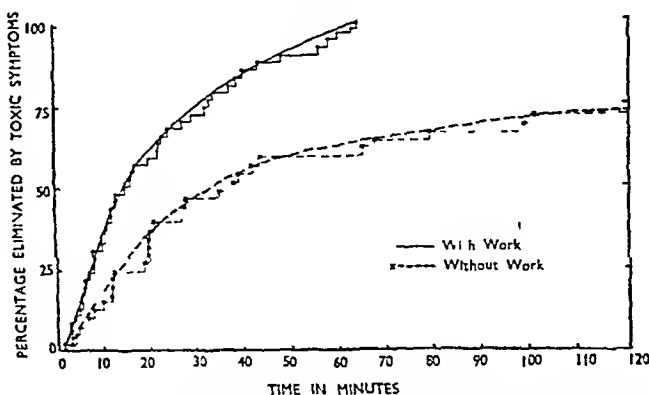


Fig 8—Percentage of divers eliminated by toxic symptoms at 50 ft in the wet (2.52 ats abs) during a period of 2 hours, with and without work. 46 divers working, 41 not working. Temperature throughout, 65° F.

EFFECT OF WORK ON OXYGEN POISONING
IN THE WET AT 40 FEET OF SEA-WATER
(2.21 ATS ABS)

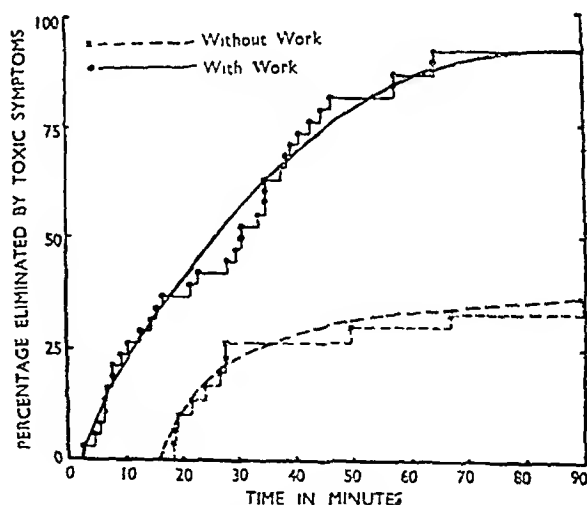


Fig 9—Percentage of divers eliminated by toxic symptoms at 40 ft in the wet (2.21 ats abs) during 90 minutes, with and without work. 39 working, 31 not working. Temperature throughout, 65° F.

8 and 9 show the results at 50 ft and 40 ft, with and without work. Even at 25 ft, toxic symptoms occurred in five out of 18 subjects, though no convulsions were recorded.

The physiological reasons why work reduces oxygen tolerance are not at present definitely known. A further increase of carbon dioxide in the tissues is an obvious possibility, though more reduced haemoglobin is available for carbon dioxide transport. The rise of alveolar carbon dioxide, which is probably very marked when exercising on pure oxygen (to be discussed in later publications), presumably causes cerebral vasodilatation, which may be another adverse factor.

Effect of Temperature on Oxygen Poisoning

Previous work had indicated that the lowering of the environmental temperature increased the oxygen tolerance of small experimental animals (de Almeida, 1934, Campbell, 1937). Three series at 50 ft were performed, at 87.5° F (30.8° C) (steam heated), at 45° F (7.2° C) (ice-cooled), and control exposures at 65° F (18.3° C). Divers were allowed to vary their underwear under the suit as the application of this work to operational problems was the first consideration. It is doubted if these exposures could have been tolerated without this variation in clothing. No exercise was carried out. This was advantageous at a higher temperature but disadvantageous to the diver in cold water. The divers complained bitterly of the cold and found the heated dives equally uncomfortable. These experiments showed that oxygen tolerance was equally affected by heat and cold. Although the performances below 30 minutes were only slightly impaired all outstanding performances were eliminated. It is possible that this delayed effect was due to changes in body temperature, as symptoms suggested that this occurred after about 20 minutes.

[To be concluded with a bibliography in next week's issue]

THE NICOTINAMIDE SATURATION TEST

BY

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Nicotinamide saturation tests have been carried out by numerous workers (Holt and Najjar, 1943, Ellinger and Coulson, 1944, Ruffin, Cayer, and Perlzweig, 1944, Roberts and Najjar, 1944, Coulson, Ellinger, and Smart, 1945, Ellinger, Benesch, and Hardwick, 1945), based on the daily urinary elimination of nicotinamide methochloride and the response to orally administered nicotinamide. These tests are believed to provide information about the nicotinamide state of the tested person, and, indeed, the findings by Holt and Najjar (1943), Roberts and Najjar (1944), Ellinger, Benesch, and Kay (1945), and Ellinger, Benesch, and Hardwick (1945) show a significantly lower nicotinamide methochloride elimination and response to ingested nicotinamide in pellagrins than in physically fit persons. This is remarkable, since the intake, consumption, and storage of nicotinamide, which determine the nicotinamide state of the body, are probably not the only factors responsible for the extent of the elimination of nicotinamide methochloride. Ellinger and Coulson (1944) mentioned the presence of "methyl-donators" and the efficiency of the methylating mechanism as influencing the extent of nicotinamide methochloride elimination. Malabsorption from the intestines was earlier considered as a possible aetiological factor in pellagra (Ellinger, Hassan, and Taha, 1937) and it was proved to affect the response to ingested nicotinamide in pellagrins but not in healthy persons (Ellinger, Benesch, and Kay, 1945). The recent knowledge of the importance of the intestinal flora for the nicotinamide intake (Ellinger, Coulson, and Benesch, 1944, Ellinger, Benesch, and Kay, 1945, Najjar, Holt, Johns, Medairy, and Fleischmann, 1946), the fact that some intestinal bacteria

consume nicotinamide, and the findings by Koser and Baird (1944) that, *in vitro* some strains of *Pseudomonas* and *Serratia*, and by Benesch (1945) that anaerobes from the intestines, also *in vitro* destroy nicotinamide, suggest other factors influencing the response to orally administered nicotinamide. It was desirable to study the influence of these various factors on the response to ingested nicotinamide. Unfortunately the number of cases of various liver diseases was so far not large enough for study of the effect of the methylating mechanism, and experiments on rats with induced liver diseases were not yet conclusive (Ellinger 1946)†. But the effect on the response to ingested nicotinamide of the presence of "methyl-donators" and of the route of ingestion could be studied, and this forms the subject of the present communication.

Experimental

Experiment 1—On 5 healthy persons (2 males, 3 females) and 1 diabetic male, balanced by diet and insulin, of known low methylating capacity (Nos 1-6). The daily nicotinamide methochloride elimination was measured in 24 hour samples of urine for 3 days without extradietary intake of nicotinamide and, on the 4th day, after the oral ingestion of 100 mg of nicotinamide at the beginning of the 4th day's urine collection. On the 5th, 6th, and 7th days no urine was collected. On the 7th to 11th days 1 g of methionine was ingested orally every 12 hours. Urinary nicotinamide methochloride elimination was investigated in 24-hour samples on the 8th to 11th days; no extradietary nicotinamide was administered on the 7th to 9th days and 100 mg of nicotinamide was taken by mouth on the 10th day. The experiment was spread over the second half of 1945. All persons continued with their usual work and had their usual food during the experiment.

Experiment 2—On 5 physically fit inmates of West Park Hospital—1 male and 4 females (Nos 7-11). The urinary elimination of nicotinamide methochloride was estimated for 14 days—the first 3 days without extradietary administration of nicotinamide, the remaining 11 days after daily ingestion of 100 mg of nicotinamide at the beginning of the collection period. In addition, 1 g of methionine was ingested by mouth every 12 hours on the 9th, 10th, and 11th days. The experiment was carried out between March 14 and 31, 1945. All persons in this and the following experiments received the usual hospital diet and were kept in bed or indoors during the experiment.

Experiment 3—On 8 inmates of West Park Hospital—1 male and 7 females (Nos 12-19). Four of these were physically fit; one was a physically fit woman who had suffered from pellagra in recent years, and three were pellagrins. The only differences from Experiment 2 were that every second subject was given the daily 100 mg nicotinamide subcutaneously instead of orally during the whole experiment, while the other half received it by mouth as all subjects in Experiment 2, and the nicotinamide methochloride estimation was continued for one (15th) day after the nicotinamide administration came to an end. The experiment was carried out from April 30 to May 23, 1945.

Experiment 4—On 5 physically fit and 3 pellagrous female inmates of West Park Hospital (Nos 20-27). The arrangements in this experiment differ from those of Experiments 2 and 3 in that nicotinamide was administered throughout the experiment to all persons subcutaneously instead of orally, and that 500 mg (250 mg twice daily) were given instead of 100 mg for all 11 days. Urinary nicotinamide methochloride elimination was measured for 15 days, as in Experiment 3. The experiment was carried out between July 10 and 25, 1945.

Experiment 5—On 9 inmates of West Park Hospital—3 males and 6 females (Nos 28-36). Six of these were physically fit

† Since this paper was submitted for publication experiments have been carried out showing that experimental liver poisoning in rats causes after a preliminary rise in nicotinamide methochloride output due to tissue disintegration, a diminished spontaneous nicotinamide methochloride elimination in urine and a diminished response to dosed nicotinamide. Evidence has been obtained also for the elimination of nicotinamide methochloride in the bile and the destruction of the compound by intestinal bacteria *in vitro* (Ellinger 1947).

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and three were mild acute or chronic pellagrins. The urinary nicotinamide methochloride eliminations were measured for 15 days. After three days without extradietary nicotinamide administration 100 mg of nicotinamide was given to each person at the beginning of the 4th, 7th, 10th, and 13th days of the collecting period alternatively subcutaneously, orally or rectally. Three people commenced with subcutaneous three with oral, and three with rectal administration and at the end of the course (13th day) ingestion by the first route was repeated, thus each person received ingestion by one route twice and by the other routes once. The experiment was carried out between Oct 28 and Dec 4 1945.

On some occasions the same person was used for more than one experiment, these were Nos 7, 12 (2), 8, 13 (4), 10, 14 (6), 9, 15, 22, 30 (5). Some of them had already been examined in the experiments reported by

administration of nicotinamide. The difference is multiplied as before by 100 and the molar weight of nicotinamide, and divided by the weight in mg of the administered nicotinamide and the molar weight of nicotinamide methochloride.

Discussion

Experiments 1 to 4 (Tables I to IV) should be discussed simultaneously. The pre-dosing nicotinamide elimination of those people who have been examined more than once is remarkably constant over a fairly long period, only the values for the January experiment (Ellinger, Benesch, and Hardwick, 1945) were considerably higher in three instances. In one case—(6) 10, 14—the output varied considerably and was lower in January than on the later occasions. The pre-dosing nicotinamide methochloride

TABLE I—Daily Urinary Elimination of Nicotinamide Methochloride (NM) and Response to Orally Dosed 100 mg Nicotinamide (NA) Before and During Daily Oral Ingestion of 2 g of Methionine

No	Date	Sex	Age	Condition of Health	Daily NM Elimination on Pre-dosing Days (mg)				Recovery* of NA in % of Ingested 100 mg NA	Daily NM Elimination during Methionine Dosing (mg)				Recovery* of NA (as NM) in % of 100 mg Ingested NA during Methionine Dosing
					1	2	3	Aver		1	2	3	Aver	
1	16-26/7	F	20	Fit	6.2	6.8	5.7	6.2	10.2	5.8	6.6	6.3	6.2	11.2
2	15-25/8	F	52	Fit	5.3	6.0	5.7	5.7	11.7	5.0	5.7	6.0	5.6	10.7
3	3-13/9	M	58	Diab	3.8	4.1	3.7	3.9	6.2	3.4	3.7	3.3	3.5	5.2
4	17-27/9	M	26	Fit	8.2	8.9	9.1	8.7	12.7	8.4	8.9	9.2	8.8	13.5
5	1-11/10	F	24	Fit	3.6	3.4	3.9	3.6	10.8	3.9	4.2	4.4	4.2	8.9
6	5-15/11	M	32	Fit	7.3	7.9	8.2	7.8	15.8	6.8	7.2	7.3	7.1	14.9
Average					5.7	6.2	6.1	6.0	11.2	5.6	6.1	6.1	5.9	10.7

$$\frac{\text{Urinary NM in mg} - \text{pre-dosing NM average in mg}}{\text{dosed NA in mg}} \times \frac{\text{mol W. of NA}}{\text{mol W. of NM}} \times 100$$

TABLE II—Response of Physically Fit Persons to Oral Application of 100 mg of NA Before During and After Daily Oral Dosage of 2 g of Methionine (March 14-31 1945)

No	Sex	Age	Weight		NM Elimination in mg on Pre-dosing Days				Recovery of NA (as NM) in % of Ingested NA*													
									On 100 mg NA Dosing Days						On 100 mg NA-2 g Methionine Dosing Days				On 100 mg NA Dosing Days			
			lb	kg	1	2	3	Aver	1	2	3	4	5	Aver	1	2	3	Aver	1	2	3	Aver
7	M	34	214	97.2	5.20	—	5.07	5.14	—	14.2	17.1	17.3	17.7	16.6	14.2	13.8	11.1	13.0	11.0	42.6	72.5	42.8
8	F	40	122	55.3	4.75	5.26	5.09	5.03	9.8	12.4	14.3	13.8	15.6	13.2	12.9	6.1	8.2	25.7	52.8	82.0	85.9	73.7
9	F	23	142½	64.8	5.14	—	3.18	4.16	6.7	14.9	14.6	8.3	7.3	10.2	9.8	8.6	77.6	32.0	73.0	28.5	38.2	46.6
10	F	54	136	61.8	3.95	4.56	4.58	4.36	11.5	16.4	17.5	28.5	12.5	17.3	12.0	12.8	76.8	33.9	119.0	32.9	71.0	74.4
11	F	34	85	38.6	—	4.28	—	4.28	7.3	12.8	7.3	11.4	11.3	10.0	1.9	7.2	4.7	4.6	0.9	39.7	25.2	21.9
Average					4.76	4.70	4.48	4.62	8.8	14.7	14.2	15.7	12.9	13.5	10.1	9.9	45.7	21.9	51.4	45.1	58.6	52.1

* See note under Table I

Ellinger, Benesch, and Hardwick (1945). The figures in brackets indicate their numbers in that paper. In all cases collection of urine was done in the same way as described by those authors. The daily urinary nicotinamide methochloride output was measured by the method of Coulson, Ellinger, and Holden (1944).

Results

The results of Experiments 1-5 are shown in Tables I-V respectively. In all tables the pre- and post-dosing elimination of nicotinamide methochloride is presented in mg per day, while the response to ingested nicotinamide—that is, the recovery of nicotinamide—is given as percentage of the ingested nicotinamide. This is calculated by deduction of the daily pre-dosing average elimination of nicotinamide methochloride in mg from the elimination in mg during 24 hours after dosing nicotinamide. This difference is multiplied by 100 and the molar weight of nicotinamide, and divided by the mg of nicotinamide dosed and the molar weight of nicotinamide methochloride. In Table V the recovery for 72 hours after dosing nicotinamide is found by deducting three times the daily pre-dosing average elimination in mg from the sum in mg of the daily elimination in mg for three days following the

elimination was in all instances considerably lower in the pellagrins than in physically fit persons.

The response to a five-day course of 100 mg of nicotinamide was less constant in the fit persons examined more than once, but always much above that of the pellagrins. The response to a daily intake of 500 mg of nicotinamide was not only absolutely but also relatively considerably above that to a daily intake of 100 mg. The relative response to 500 mg was even more increased in pellagrins than in fit persons, so that the difference between pellagrins and non-pellagrins was far less distinct than after the intake of 100 mg. A test with 100 mg of nicotinamide therefore provides a more significant result than one with 500 mg.

So far there has not been much evidence that the presence or absence of "methyl-donators" might influence the extent of nicotinamide methylation and consequently control the height of urinary nicotinamide methochloride elimination. Perlzweig, Bernheim, and Bernheim (1943) observed that in some cases the addition of methionine increased the formation by rat-liver slices of nicotinamide methochloride from nicotinamide. In confirming these results Ellinger (1946a) found that methionine increases the methylation of nicotinamide by slices of liver of those rats

TABLE III—Response of Physically Fit Persons and Mild Pellagrins to Oral or Subcutaneous Application of 100 mg of NA Before During and After Daily Dosage of 2 Methionine (April 30 to May 23 1945)

No	Sex	Age	Weight		Way of Admin	Clinical Diagnosis	Recovery of NA (as NM) in % of Ingested NA*										NM Elimination In mg on Post-dosing Day					
			lb	kg			NM Elimination in mg on Pre-dosing Days					Recovery of NA (as NM) in % of Ingested NA*						On 100 mg NA-2 g Methionine Dosing Days				
							1	2	3	Aver	On 100 mg NA Dosing Days											
							1	2	3	Aver	1	2	3	Aver	1	2	3	Aver				
12	M	34	214	97.2	Oral Sub cutaneous	Physically fit	5.56	6.65	4.96	5.72	5.0	8.8	9.0	10.7	6.9	15.5	13.6	12.0	11.8	10.6	8.9	
13	F	40	122	55.5			4.80	6.20	4.64	5.21	10.6	9.7	17.9	12.3	17.2	11.4	2.8	10.6	19.4	16.7	7.2	
14	F	54	134	60.9			7.28	6.95	7.60	7.21	3.8	23.5	11.1	13.8	16.0	18.7	19.6	23.1	20.5	17.1	29.6	
15	F	23	142.1	64.8			4.17	4.44	4.15	4.25	13.3	12.9	11.5	17.3	14.5	14.0	13.5	19.3	15.8	18.7	—	
Normal controls average							5.36	6.01	5.28	5.50	9.7	14.5	10.3	14.5	15.6	13.0	14.3	15.0	14.7	14.7	15.8	
16	F	55	144	65.5	Sub cutaneous Oral Sub cutaneous	Physically fit at the time pellagra in recent years Mild pellagra Chronic pellagra with recent relapses	2.26	3.14	2.81	2.74	11.0	5.7	8.5	10.9	12.1	9.6	10.1	13.6	20.0	14.5	11.6	
17	F	53	100	45.1			0.55	0.75	0.51	0.60	3.9	4.4	7.4	5.9	4.4	5.2	5.1	12.7	6.7	5.5	8.3	11.2
18	F	17	125	56.8			0.07	0.90	0.34	0.44	5.4	4.7	2.7	6.3	4.3	4.9	4.5	8.3	9.0	8.1	8.5	11.6
19	F	45	86	39.0			0.39	0.0	0.35	0.25	7.7	2.8	4.6	4.3	3.1	4.5	4.5	8.7	7.9	9.9	8.9	7.3
Pellagrins average							0.33	0.55	0.40	0.45	5.7	4.0	4.9	5.5	3.9	4.8	9.9	7.9	7.8	8.5	9.2	
							*Urinary NM in mg — pre dosing NM average in mg × mol W of NA × 100 divided NA in mg mol W of NM															

*Urinary NM in mg — pre-dosing NM average in mg × mol W of NA × 100
dosed NA in mg

TABLE IV—Response of Physically Fit Persons and Pellagrins to Subcutaneous Application of 500 mg of NA Before During and After Daily Oral Dosage of 2 g of Methionine (July 10 to 25 1945)

No	Sex	Age	Weight		Clinical Diagnosis	NM Elimination in mls on Pre dosing Days					Recovery of NA as (NM) in % of Ingested NA*										NM Elimination In mg on Post dosing Day
			lb	kg		On 500 mg NA Dosing Days					On 500 mg NA-2 g Methionine Dosing Days					On 500 mg NA Dosing Days					
						1	2	3	Aver	1	2	3	Aver	1	2	3	Aver				
20	F	44	158	71.8	Physically fit	4.74	4.36	3.83	4.31	13.5	15.4	22.2	26.4	20.7	23.1	21.5	—	26.0	23.8	16.2	
21	F	56	186	84.5		7.25	6.02	5.45	6.24	22.4	22.4	17.1	28.5	49.6	31.8	36.6	18.7	31.8	25.2		
22	F	23	139	62.6		4.60	4.48	4.16	4.41	21.4	18.4	18.4	32.8	26.0	20.4	26.4	29.8	30.4	21.7		
23	F	23	166	75.2		5.52	4.85	4.89	5.09	21.3	23.5	20.7	37.6	25.7	20.8	28.0	17.8	21.2	20.4		
24	F	31	89	40.3	Malnutrition	4.78	4.20	5.54	4.83	27.2	23.4	37.6	41.9	39.6	29.6	14.4	27.2	20.3	28.4		
Normal controls average						5.38	4.78	4.77	4.98	20.6	18.1	31.7	33.9	26.7	30.8	23.2	19.1	25.4	22.2		
25	F	67	85	38.6		Acute pellagra Chronic Recurrence of pellagra—mild	1.29	—	1.33	1.31	14.8	14.4	22.6	26.5	27.2	25.4	23.9	—	23.9	35.7	
26	F	44	67.4	30.7			2.12	1.66	1.67	1.82	20.3	15.0	30.8	19.1	12.3	20.1	11.0	16.0	16.7	23.4	
27	F	43	125.1	55.7	1.48		1.25	1.04	1.26	16.8	15.3	12.3	41.9	25.6	18.5	28.7	15.2	14.0	16.6		
Pellagrins average							1.63	1.46	1.35	1.47	16.8	14.1	31.8	23.1	19.3	24.7	16.7	15.0	21.9	16.7	

* See note under Table III

TABLE V—Recovery from Urine of NA (Eliminated as NM) after Dosing with 100 mg of NA by Various Routes (Oct 28 to Dec 4 1945)

TABLE V.—Recovery from Onset of NA (Eliminated as NM) after Dosing with 100 mg of 24-hr NM Elimination Pre-dosing Average in mg																
No	Sex	Age	Weight		Condition of Health	Recovered NA (as NM) in % of Dosed NA*										24 hrs NM Elimination Pre-dosing Average in mg
						During a 24-hr Period after Dosing					During a 72 hr Period after Dosing					
						Subcutaneous	Oral	Rectal	Subcutaneous	Oral	Rectal	Subcutaneous	Oral	Rectal		
28	F	32	128.4	58.4	Fit (Wassermann +) Fit	8.09	8.38	8.26	7.34*	8.38	8.26	8.26	7.67			
29	M	40	164	74.5		5.96	8.46	9.40	1.92†	8.46	(10.99	8.90)	8.95	5.67		
30	F	23	138	62.8		4.82	7.49	6.30	7.39	8.60	(8.93	8.55)	8.74	4.10		
31	M	31	153	70.0		3.50	7.68	7.83	7.49	16.94	(9.79	10.52)	10.16	3.74		
32	M	21	129	58.7	Mild pellagra Malnourished and mild pellagra	2.46	12.62	9.34	24.83	5.68	5.46	5.57	5.90			
33	F	23	161	74.5		2.34	19.58	7.30	4.27	5.82	(5.60	6.78)	6.19	2.37		
34	F	24	103	46.8		1.79	11.15	4.66	3.21	8.39	(5.60	6.78)	6.19	3.98		
35	F	34	84	38.2		1.31										
36	F	55	113	51.4	Mild recurrent pellagra Low food intake	0.62	7.14	(2.16	4.82)	3.49	2.44	(2.16	6.12)	4.14	1.28	

* See note under Table III
† The amount of NA recovered with 100 mg of NA revealed 1.40% recovery in 24 and 72 hours. The figure in brackets indicates the average of the amount of NA recovered in each of the two periods of 24 and 72 hours respectively.

which had had a low nicotinamide elimination *in vivo*, and had low methylating efficiency *in vitro*. No systematic investigation of the effect of methionine on the urinary nicotinamide elimination by man has so far been carried out.

The limited number of experiments on physically fit persons and one diabetic provide identical results (Table I). No significant change of the daily nicotinamide methochloride output could be observed during a four-day period of oral intake of 2 g of methionine. No significant quantitative alteration was seen in the response to 100 mg of nicotinamide, this in spite of the fact that the second nicotinamide ingestion was made on the fourth day of methionine feeding. This was done to avoid a nicotinamide test during the refractory period, which was observed after methionine intake in some of the other experiments. Unfortunately no pellagrins suited to the experiment were available. The results are, however, so homogeneous that one can conclude that in physically fit people methionine is not a limiting factor for the height of the daily urinary elimination of nicotinamide methochloride or for the response to single doses of 100 mg nicotinamide.

Experiments 2, 3, and 4, described in Tables II, III, and IV, were designed to exhaust, if possible, the body stores of "methyl-donators" by protracted ingestion of nicotinamide. The results vary individually and in the same person at different times to a considerable extent. In the March experiment (Table II) the ingestion of methionine depressed the response very considerably in No 11 and moderately in No 7 and for the first two days in Nos 8, 9, and 10. In the latter three a considerable rise of the response occurred on the third day of methionine intake, which continued for the rest of the nicotinamide intake after discontinuing methionine, on the first of these days the output of No 10 was even higher than the intake, which suggests the storage of nicotinamide. In Nos 7 and 11 an increase occurred only on the second day after the end of methionine feeding.

In the May experiment (Table III) the results on the physically fit people were similar: the extent of the increase was somewhat less high than in the March experiment. In 3 pellagrins (Nos 17, 18, and 19), however, a moderate rise of the response started immediately when methionine intake began and continued over the whole period of further nicotinamide intake. The response of the person who had had attacks of pellagra in recent years (No 16) was intermediate between the fit persons and the pellagrins. It could be expected that an exhaustion of the body from "methyl-donators" would be more pronounced after the daily intake over a longer period of 500 mg instead of 100 mg of nicotinamide.

In 5 physically fit persons (Table IV) the intake of methionine caused already on the first day a considerable increase of the response, which continued to a lesser degree after discontinuing the methionine. The pellagrins, particularly No 27, increased their response to nicotinamide considerably, and differences between pellagrins and non-pellagrins disappeared almost completely. This might be due to the pellagra-curing effect of a dosage 500 mg of nicotinamide for 5 days before the first methionine intake.

To summarize from Experiments 2, 3, and 4 (Tables II to IV) it is evident that methionine increases the response to ingested nicotinamide if relatively large doses of nicotinamide are ingested for a longer period. The effect is far more pronounced after the daily intake of 500 mg than after that of 100 mg. In a nicotinamide-saturation test such as that recommended by Ellinger, Benesch, and Hardwick (1945) with a daily intake for a period of 5 days of 100 mg of nicotinamide the height of the nicotinamide metho-

chloride output might already have been affected by an exhaustion of "methyl-donators".

The most surprising result was the observation of a latent period in the action of methionine of up to 4 days in Nos 7 and 11. An explanation of this phenomenon cannot be given. The oppression of the response to nicotinamide during the first days of methionine dosage suggests perhaps a blocking of the methylating mechanism of the liver.

The development of a nicotinamide deficiency is caused, apart from increased consumption effected by excessive exercise, etc., by insufficient nicotinamide intake from the diet or from the release of the intestinal flora. This can be due to malabsorption or to insufficient production or increased consumption or destruction of nicotinamide by the intestinal flora. Experiment 5 was designed to elucidate this point and to obtain more evidence about the response to nicotinamide when administered by various routes. From the investigation of Ellinger and Coulson (1944) it was known that orally ingested nicotinamide appeared in its methylated form in the urine of physically fit persons a few minutes after its ingestion, that after the intake of 100 mg the elimination peak was reached in about 2 hours, and that the elimination was practically finished after 15 hours. This showed that methylation and absorption were very quick processes and that probably a considerable proportion of the orally ingested nicotinamide had been absorbed from the stomach. Consequently it could be expected that orally and parenterally ingested nicotinamide should give a similar response. It was, however, known from the paper by Ellinger and Coulson (1944) that orally ingested nicotinamide methochloride could be recovered only to a small extent—12–16%—while 62% was recovered after parenteral administration, findings confirmed by Perlzweig and Huff (1946). It was further known that in pellagrins but not in healthy persons the response to nicotinamide is frequently lower after oral than after parenteral application (Ellinger, Benesch, and Kay, 1945). Nothing was known about the fate of nicotinamide given per rectum. Prescott (1945) even doubts, without any evidence, that nicotinamide can be absorbed from the colon. The results shown in Table V provide a great variety of facts which have to be discussed.

1 In most of the 9 cases considered the elimination of the ingested nicotinamide in its methylated form is not finished 24 hours after the ingestion. The difference between 24-hour and 72-hour recovery after parenteral dosage is insignificant or absent on 4, slight on 3, and considerable on 5 occasions, after oral intake the difference is insignificant or absent on 3, slight on 3, and considerable on 6 occasions, after rectal intake the difference is insignificant or absent on 3, slight on 6, and considerable on 3 occasions. Only the considerable differences will be taken into account. If, as is the case with Nos 32, 33, and 35 a considerable proportion of the recovered nicotinamide methochloride is eliminated later than 24 hours after ingestion independently of the route of application, one has to conclude that this is caused by a common factor other than the uptake from the intestines and either that the methylation or the elimination is slow or that part of the ingested nicotinamide is stored temporarily in the body. If, however, a large difference between the 24-hour and the 72-hour recovery is limited to the nicotinamide intake by one route, the mouth (cases Nos 30, 31, and particularly 34), one has to conclude an interference with the nicotinamide uptake from the intestines. There was no large isolated nicotinamide methochloride elimination after the first 24 hours following rectal application.

2 Total response to parenteral and oral application was almost identical in 4 fit persons (Nos 28, 29, 30 and 31) and in 1 pellagrin (No 34). In 2 fit persons (Nos 32 and 33) and 2 pellagrins (Nos 35 and 36) nicotinamide methochloride elimination was far higher after parenteral than after oral ingestion, this indicates an interference with the dosed nicotinamide during its passage through the intestines. It might

due to malabsorption this is however, improbable, since one of these cases showed a delayed elimination after oral ingestion alone. It is more probable that part of the ingested nicotinamide is either consumed or destroyed by the intestinal flora, this assumption is supported by the fact that in all these 4 cases the response to rectal is also much lower than to parenteral administration. In 2 cases (Nos 29 and 31) the response to oral was somewhat higher than to parenteral dosage. This might have been due either to individual fluctuation or to an effect of the previous dosage with nicotinamide during the experiment.

3 In order to find out whether the repeated intake of nicotinamide altered the nicotinamide state of the body and therefore the extent of the response at the end of each experiment a test was made with nicotinamide dosage by the route used at the beginning of the experiment. Considerable rises in response such as in Nos 32, 33 and 36, indicate an improved nicotinamide state in consequence of the repeated nicotinamide ingestions, this is confirmed by the considerably increased daily spontaneous elimination of nicotinamide methochloride in these 3 cases at the end compared with that at the beginning of the experiment. This factor has to be considered when the intermediate responses are valued.

4 In all cases a response was observed to rectally ingested nicotinamide. There can therefore be no doubt about the absorption of nicotinamide from the lower intestines. In most cases (Nos 28, 30, 34, and 35) the response was somewhat but not much lower than that to oral ingestion. In 2 cases (Nos 32 and 33) it was higher than that to oral dosage, and in both these cases there was a considerable rise of the nicotinamide state and response, and this explains the fact. In 3 cases (Nos 31, 36, and particularly 29) the response to rectally ingested was considerably lower than that to orally ingested nicotinamide. This indicates bacterial consumption or destruction, since the whole ingested dose comes in contact with the intestinal flora when rectally applied, while most of the orally ingested nicotinamide is probably absorbed before it reaches the lower intestine and its flora.

Unfortunately it was impossible to obtain for the test more than three cases of pellagra, and all three were very mild cases. Nevertheless they gave a considerably lower response to orally ingested nicotinamide after 24 hours—3.28 mg—as well as after 72 hours—5.35 mg—than the physically fit persons—8.18 and 9.96 mg respectively, and that is the only route which counts for the utilization of dietary and bacterial nicotinamide. From comparing the various values one can conclude that in Case 34, with very much delayed absorption and low response, the nicotinamide state is very low owing to malabsorption. In Case 35, with a delayed elimination after application by all three routes, the methylating mechanism might be faulty and the bacterial supply low on account of the low pre-dosing values and the considerable rise during the experiment. In Case 36, with its low oral response and small delay in elimination, pellagra might be caused mainly by insufficient bacterial supply. In Cases 32 and 33 the difference in response to parenteral and oral intake is considerable and the intestinal destruction of nicotinamide is great, the release of nicotinamide in the intestines must, however, be even higher than the destruction shown by the very high response to the parenteral application. Cases 28 to 31 show no peculiarities except perhaps for the low response of Case 29 to rectally applied nicotinamide. This, however, does not interfere with the normal nicotinamide uptake.

It is still impossible to obtain a complete balance of ingested nicotinamide in man. Small amounts are eliminated in the urine as such, more (between 2.87 and 24.83%) in our last experiment as nicotinamide methochloride. The rest cannot be accounted for. Of parenterally ingested nicotinamide methochloride only about 60% can be recovered. Perlzweig and Huff (1946) and Perlzweig, Huff, and Rosen (1946) believe that part of the nicotinamide methochloride is split up in the liver to unknown products,

and Najjar and Deal (1946) believe in a partial demethylation of nicotinamide methochloride in the liver. Both suggestions are improbable, since Ellinger (1947) could show that rat-liver slices do not destroy nicotinamide methochloride *in vitro*. It is more probable that a portion of the nicotinamide methochloride formed in the liver is eliminated with the bile into the intestine and there destroyed by the intestinal flora like the substance ingested by mouth.* This point cannot be elucidated by our method, but evidence can be obtained of a number of other factors concerned with state, uptake, and utilization of nicotinamide, and this might help to find the cause of a nicotinamide deficiency that might be different in each individual case.

The experiments show that the saturation test as described by Ellinger, Benesch, and Hardwick might be affected by an exhaustion of the "methyl-donators" of the body and therefore not provide a true picture of the nicotinamide state. It might be further affected by factors of the intestinal tract not connected with the nicotinamide state. Parenteral instead of oral application of the test doses would avoid the latter error.

A more satisfactory test, providing more detailed information about a variety of factors concerned with the state and utilization of nicotinamide, can be obtained by the following method. 24-hour urine samples are collected and the urinary nicotinamide methochloride is estimated for 18 days, immediately after the 3rd, 6th, 9th, and 12th collections 100 mg of nicotinamide is administered—subcutaneously on the first and last, orally on the second, and rectally on the third occasion. The recovery percentage of the ingested nicotinamide is calculated for a 24 hour and a 72-hour period and the values obtained are analysed as in these experiments.

Summary

Evidence has been provided that lack of 'methyl donors' may affect the results of a nicotinamide saturation test.

A new nicotinamide saturation test has been described which avoids this error and supplies separate information about the nicotinamide state and the various factors involved in uptake from the gut and utilization of nicotinamide.

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TUBERCULOSIS AS A COMPLICATION OF DIABETES MELLITUS

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During the nineteenth century, when the incidence of and the mortality from pulmonary tuberculosis were much greater than at present, a large percentage of sufferers from diabetes mellitus died of coma, and most of those who survived this died of pulmonary tuberculosis. Publications towards the end of that century indicate that 50% of diabetics succumbed to pulmonary tuberculosis. For example, Windle (1883) reported that of 333 diabetic cases coming to necropsy half had active tuberculous lesions. Naimyn (1906) found pulmonary tuberculosis in 264 out

patients suffering from diabetes over the period 1932-46. Among these were 60 deaths—11 from pulmonary tuberculosis after 1936, with eight such deaths during the war years. A review in 1945 showed that of 657 patients alive at that time 239 were males and 418 females, 12 were under 15 years and 236 between 15 and 45 years of age and 387 were under insulin treatment. The cases considered here are summarized in Table I.

In all cases the patients were definitely diabetic, and the diagnosis of tuberculosis was verified by isolation of the tubercle bacillus. In 11 cases the diabetes preceded the onset of tuberculosis by periods of up to 13 years, while in the other six cases the diagnoses were made simultaneously. Fourteen patients were males and three females. The diabetic condition was detected on an average at 40.18 years of age, and the tuberculosis at 44.23 years. In the greater percentage of cases the tuberculosis made its appearance in the fifth decade whereas the majority of cases of tuberculosis in the general population occur in the second or third decade. This suggests that tuberculosis

TABLE I

Case No.	Sex	D M Diag		Control of D M	Tb Diag		Stage of Tuberculosis /	Signs Sugg. stig. Tb	Remarks
		Age	Date		Age	Date			
1	F	33	1933	Fairly good	46	5/46	Fibro-caseous bilateral apical	Nil	Died of coronary thrombosis at 46
2	M	43	8/43	Poor	44	5/44	Infiltrative L apex	Yes	Died 7/45
3	M	17	11/32		26	5/41	Infiltrative with cavity R apex—extensive		Died 4/42
4	M	32	6/35	Fairly good	35	2/38	Tb meningitis		Died 15 days after diagnosis
5	M	39	7/43	Fair only	42	5/46	Extensive infiltration L		Condition improving Diabetes under control
6	M	12	1935	Repeated comas	20	12/43	Fibro-caseous with cavitation L apex In filtration R		Died 4/44 Bronchopneumonic spread
7	M	63	8/41	—	63	8/41	Fibro-caseous bilateral apical		Died 2/44 Bronchopneumonic spread
8	M	51	5/39	? Good	55	9/43	Fibro-caseous bilateral with cavitation		Died of pulmonary embolism from phlebotomy thrombosis L leg 9/43
9	M	48	1938	Fair only	55	2/45	Fibro-caseous bilateral with cavitation		Condition improving Diabetes under good control
10	M	29	7/33	Fairly good	41	1/45	Infiltration apical L with cavitation	Nil	Patient died 9/46 Coronary thrombosis
11	M	65	8/39	—	65	8/39	Fibro-caseous with cavitation—L	Yes	Chest condition improving
12	F	46	4/45	—	46	4/45	Infiltration apical R with cavity L		Died 12/40
13	M	40	12/37	Unknown	46	4/43	Fibro-caseous bilateral extensive with cavitation		Condition improving Diabetes under good control
14	F	41	10/36	—	41	10/36	Bilateral fibro caseous with bronchopneumonia		Condition improving Diabetes under good control
15	M	37	1928	Unknown	39	4/30	Bilateral infiltration		Died 11/36
16	M	48	1/33	—	48	1/33	Infiltration with cavitation R U and M lobes		Fairly well
17	M	39	10/36	Fair only	40	11/37	Tb bronchopneumonia R lung		Under good control
									Died 12/37 Skiagram of chest 10/36 showed no abnormality

of 622 diabetics at necropsy. Despite the passage of the years and even after the advent of insulin in the treatment of diabetes, the incidence of tuberculosis in cases of diabetes mellitus has remained significantly high. This was shown by Baner (1931), who concluded from the available literature that pulmonary tuberculosis was three times commoner in patients suffering from diabetes mellitus than in the general population. These observations were confirmed by Root (1934) when he investigated the incidence of tuberculosis in 1,651 cases of diabetes. The frequent combination of these two diseases is then an accepted fact.

Root (1934) maintains that, despite the decline in the mortality from pulmonary tuberculosis in the general population, the morbidity from tuberculosis among diabetic patients is steadily increasing. This would indicate that the longer the patient has diabetes the greater is the possibility that he will ultimately develop tuberculosis. In view of this and on account of an apparent increase in the incidence of pulmonary tuberculosis among patients attending a diabetic clinic, it was considered important to review the subject in more detail locally.

Review of a Series of Cases

This paper describes 17 cases of diabetes mellitus and tuberculosis encountered during the supervision of 717

developed on account of pre-existent diabetes mellitus. That tuberculosis is a complication of severe diabetes will be seen from Table II. These observations agree with those of Himsforth (1938). Only those cases in which the diabetes preceded the tuberculosis have been used in compiling these figures.

TABLE II

Mild requiring less than 20 units of insulin daily	Cases
Moderate requiring 20-40 units of insulin daily	2
Severe requiring over 40 units of insulin daily	1
	8

All except two patients had symptoms suggestive of tuberculosis some months before the verification of the presence of a tuberculous lesion. Most of those complained of productive cough with loss of weight. Many gave a history of recurrent colds, or perhaps of a head cold which was persistent. Physical signs of pulmonary tuberculosis were present in 14 of the cases at the time of diagnosis.

Table III shows an analysis of the extent of the tuberculous process when first diagnosed and the course of the disease in these cases. The most striking feature is the number of patients with the disease already far advanced at the time of diagnosis. There are several possible reasons for this. The patients were almost without exception under poor or uncertain control, accounting possibly for their greater susceptibility, and also perhaps for the rapid spread

the disease. The majority of the affected cases were most irregular attenders, and adequate checking was almost impossible. The early symptoms of tuberculosis simulate those of diabetes so that errors in diagnosis are easy. And, finally, of course, the physical signs of pulmonary tuber-

TABLE III—(Excluding the Patient who died from Tuberculous Meningitis)

	Unilateral		Bilateral		Total
	Without Cavitation	With Cavitation	Without Cavitation	With Cavitation	
Cases	2 5	3 (A P failed) 10 11, 16 17	7 15	1 6 8 9 12 (A P failed) 13 14 (A P— Tb empyema) 9 12 13	16
Stationary	5	10 16	15		7
Arrested	—	11 17	3	2 (A P failed) 6 7 14	7
Progressive	—				
Death	—	10 (died coronary thrombosis) 11 17	3	1 (died coronary thrombosis) 2, 6 7 8 14	10

eulosis are seldom more than minimal until the disease is well advanced. In six patients the pulmonary disease remains arrested. In point of fact, seven are shown as arrested in Table III, but of these one died of coronary thrombosis.

Discussion

The patient under poor diabetic control is more prone to the complication of tuberculosis. Root (1940) showed that patients who have suffered from coma are the most likely to develop pulmonary tuberculosis. Moreover, he has shown that patients on a free diet yield a far greater percentage of tuberculosis than those subject to careful dieting. It should be remembered, however, that the patients on free diet are on the whole less well-off economically. Consequently, this introduces an environmental element which renders direct comparison between the two groups an unjustifiable procedure. Conversely, Himsworth (1938) in a series of 300 diabetics under good control found that only two developed tuberculosis. These facts are largely borne out in the present series of cases. On the experimental side Steinbach and his colleagues (1935) have produced some evidence to show that dogs rendered diabetic by removal of the pancreas were less resistant to a known dose of tubercle bacilli than a control group of healthy animals. This suggests that the increased susceptibility of the diabetic dogs to the tubercle bacillus may be due to faulty carbohydrate metabolism.

This fact forms the basis of the most frequently accepted hypothesis, which is that hyperglycaemia favours the growth of the tubercle bacillus in the body. Joslin and others (1940) stated that this is due to the hyperglycaemia impairing the normal reparative tissue processes and the resistance to infection—statements which are not accorded universal agreement (Richardson, 1933, 1935). Long (1930) suggested that the primary cause was an upset in fat metabolism with an increased availability of glycerin, which, of course, is one of the best nutrients for acid-fast organisms.

The fact that diabetic coma often leads to the appearance of pulmonary tuberculosis or a flare-up of an already existing lesion is thought to be partly attributable to an over-supply of nitrogenous compounds which favour the growth of tubercle bacilli. In this connexion Keeton (1941) brought forward the suggestion that tissue resistance is lowered by acidosis, and Smithburn (1935) demonstrated experimentally that the virulence of the tubercle bacillus is increased by increasing the acidity of the culture. Furthermore, Root (1934) emphasized the possible importance of the reticulo-endothelial system. In poorly con-

trolled diabetics the cells of this system are often found to be distended with fat, and it is recognized that any interference with these cells causes a decrease in the defence and resistance of the body.

There is another possible factor which has found much favour in recent American literature. It is well known that deficiency of vitamin A leads to specific changes in the mucosa of the respiratory system characterized by atrophy of the epithelium with associated disappearance of the ciliary function, proliferation of the basal cells, and replacement of the original epithelium by stratified keratinizing epithelium. That vitamin A deficiency exists in diabetes has been reported by Brazer and Curtis (1940) and confirmed by Freston and Loughlin (1942). Kimble, Geremek, and Sevringhaus (1946), investigating the vitamin A and carotene metabolism in 116 unselected diabetics, found that 49% of the 59 males and 47% of the 57 females gave values for one or both substances outside the normal range. The predominant type of deviation in the series was low vitamin A and low carotene, and this was particularly noticeable among the older patients and those with infections. A control group of normals, however, also showed variations similar to the above, suggesting that hypovitaminosis A is not likely to be the sole factor, though it might easily be an accessory one. Vitamin A is normally stored in the liver, and its metabolism, as pointed out by Schneider and Widman (1944), is closely coupled with glycogen metabolism in the liver. With the disappearance of hepatic glycogen in uncontrolled diabetes it is obvious that the synthesis of vitamin A will break down with the appearance of hypovitaminosis A.

Prognosis of the Combined Lesions

Study of the mass of literature on the course of pulmonary tuberculosis in diabetic cases discloses a gloomy picture, and without doubt the prognosis is worse than in uncomplicated pulmonary tuberculosis. This may be attributed to (1) the lowered resistance, defence, and repair of the tissues of the poorly controlled diabetic relative to the tuberculous process and its spread, (2) the late stage at which the complication is usually discovered, and (3) complications such as arteriosclerosis, chronic nephritis, and coronary and myocardial degenerations. The prognosis depends on the extent of the tuberculosis when first detected. Since, in the past, the diagnosis has not been established until late it is not surprising that the mortality rate has been high. Lorenzen (1931), for example, reported 143 patients with the combined diseases, and of these only 16 lived more than three years after the tuberculosis was discovered. More recent papers give results which are less pessimistic, and Mark, Mosenthal, and Liu (1942) go so far as to state that it is their impression that with early diagnosis and adequate and careful control of the diabetes the prognosis of the tuberculosis approaches that in the non-diabetic. Certain other writers agree with this.

With regard to the present series 11 out of 17 patients are dead. Of these seven died within the first year, three within two years, and one within three years of the complication being recognized. In two cases the cause of death was coronary thrombosis, and in these cases the chest condition was stationary. In another, death was due to pulmonary embolism—a fortunate escape for a patient whose condition was irretrievable. Of those still alive three are in the critical phase of the first two years, which are well recognized as carrying the highest morbidity.

Treatment

Prophylactic—The earlier the diagnosis the better the prognosis, and therefore continual anticipation of the

possibility of tuberculosis is to be strongly advocated. A diabetic patient beginning to show unusual features, and particularly in our experience recurrent colds or persistent head colds, should be submitted to x-ray examination of the chest, a search for tubercle bacillus in sputum and fasting-stomach contents should be made, and the blood sedimentation rate ascertained. All patients suffering from poorly controlled diabetes, due either to social circumstances or to therapeutic difficulties, should be submitted to radiological examination of the chest every six months, and all other diabetic patients at yearly intervals. Failure to diagnose the combined lesions in the early stages is due to lack of diagnostic consciousness, improper interpretation of symptoms directly or indirectly referable to the chest, and incomplete diagnostic investigation.

Management of Cases—(a) Of the diabetes mellitus. This has evolved through the same changes which have characterized the general trend in the treatment of the disease. Fishberg (1932) stated that patients on low-calorie diet certainly lose their glycosuria, but at the same time there is a rapid progress in the pulmonary tuberculosis. As a result of this a high-calorie diet with moderately high carbohydrate intake is generally advocated. According to Root (1940) the standard diet should consist of carbohydrate, 150 g, protein, 80 g, and fat, 100 g, and a diet to increase weight should include carbohydrate, 250 g, protein, 87 g, and fat, 120 g. The advantages of high carbohydrate intake have been summarized by Keeton (1941) as follows: (1) the appetite is often capricious and carbohydrate is probably more appetizing, (2) fats are not well tolerated and resultant diarrhoea is prone to occur and (3) the ketosis which is so frequently associated with the infection is best counteracted by high carbohydrate intake. Adequate vitamin concentrates should be given if indicated. The indications for the use of insulin are the same as in uncomplicated diabetes. Some authorities (Mosenthal and Mark, 1941) state that the clinical course of the combined lesions is more favourable with protamine-zinc-insulin. On the criteria for control there has been much controversy, but essentially it does not differ from that of the uncomplicated case.

(b) Of the Tuberculosis.—The indications and contraindications for collapse therapy are the same for diabetics as for non-diabetics. Owing to the high percentage of cases showing exudative and fibro-caseous lesions, the accomplishment of an artificial pneumothorax is often unsuccessful and is frequently complicated by pleural effusion and empyema. On the other hand, patients who tolerate artificial pneumothorax well can be considered for ambulatory treatment as in uncomplicated tuberculosis.

Since most cases come under treatment late in the disease, it is not surprising that conservative treatment is the only possible form in many cases. Of this series only four cases were subjected to artificial pneumothorax. In three of these it had to be abandoned because of failure to collapse the affected area of the lung, and the fourth was complicated by tuberculous empyema.

Summary

Seventeen cases of diabetes mellitus complicated by tuberculosis are described.

Poorly controlled diabetes predisposes to tuberculosis and causes a rapid spread of the disease.

This may be due to a complexity of causes.

A high percentage of diabetic patients acquiring tuberculosis are not adequately treated until the disease is far advanced. This calls for a revision of the diagnostic approach to the problem by routine radiography and sputum examinations.

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A CASE OF VITAMIN C DEFICIENCY

BY

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The following case history presents certain unusual features of vitamin C deficiency and seems to be worthy of record.

Case Report

The patient, a spinster aged 38, employed as a housekeeper, was admitted on June 24, 1946, having vomited blood on three occasions during the previous two days. She volunteered a history of ulcer symptoms extending over six years. These included pain half an hour after meals, which was relieved by taking alkaline powders, and a fear of eating. The symptoms were periodic but had been present during the greater part of the preceding six years. She had adhered to a strict ulcer regime and had refrained from taking fruit and vegetables. A barium meal examination had been made in 1942, but had failed to reveal any abnormality in the gastro-intestinal tract. There was no history of melaena or previous haematemesis even on direct questioning. The bowels were regular and there was apparently no disordered function of the genito-urinary system, though a nephrectomy for tuberculous kidney had been performed in 1928.

The condition of the patient on admission was one of collapse and exsanguination (haemoglobin, 33%—4.6 g %) necessitating an immediate transfusion. After two bottles of blood had been given, her general condition was greatly improved, but the haemoglobin was still only 33%. A further slow transfusion was started, four and a half bottles of blood being given over 36 hours, after which the haemoglobin was only 39%. Twenty-four hours later another transfusion was started, three bottles being given, after which it was found that the haemoglobin had fallen to 28%. On July 1 the patient vomited 1½ oz (14 ml) of altered blood. In view of the dangerously low haemoglobin three more bottles of blood were given and the haemoglobin was raised to 37%.

The patient had now been in hospital for 10 days, and despite the transfusion of 13 pints (7.4 l) of blood, the haemoglobin remained virtually unchanged. There had been no reactions to any of the transfusions, no rigors, no haemoglobinuria, and no sign of jaundice developing to suggest that blood was being lost through haemolysis due to any incompatibility. The stools were black from melaena but were well formed—not loose as though there was severe bleeding from the supposed ulcer at any time. During the 10 days that the patient had been under

ul observation she had vomited only 1/2 oz (14 ml) of J and in view of the ulcer history it seemed probable that the anaemia (which persisted after the transfusion of a greater volume of blood than her own expected blood volume) was caused by a continual loss from a duodenal ulcer and that the amount lost at any one time was not sufficient to regurgitate into the stomach and cause vomiting. Accordingly, the advice of a surgeon was sought, and he thought that the risk of performing a partial gastrectomy on an anaemic patient was in this case justifiable.

At operation the stomach and duodenum were found to be normal there being no evidence of recent ulceration or scarring from a healed lesion. Melaena was present only in the large bowel. There was however slight oedema of the bile duct although the gall bladder appeared normal. The surgeon thought that a streptococcal infection of the gall bladder might be responsible for the oedema of the bile duct and for the bleeding from the intestinal tract. He therefore performed a cholecystectomy and ordered systemic penicillin. In favour of this theory was the intermittent temperature up to 101 F (38.8 C) which the patient had been running during the previous weeks and which in the absence of any physical signs had been thought to be due to the effects of blood in the bowel. The patient appeared to be progressing satisfactorily for the first 48 hours there was no post operative vomiting and the temperature seemed to be settling. On the third day after the operation the patient vomited 4 oz (114 ml) of blood and again on the following day. This time however the blood appeared to be coughed up it was bright and frothy the patient was not nauseated it followed a bout of coughing and the reaction to litmus was neutral. A specimen was sent to the laboratory for spectroscopic examination and was reported to be oxyhaemoglobin and therefore not due to a haematemesis. After a further two days the patient presented the clinical signs of an acute haemorrhage although blood was neither vomited nor expectorated. The haemoglobin fell to 25% (34.5 g %) and the patient became unconscious. Yet another transfusion was begun and three bottles of blood were given slowly before the vein thrombosed. The condition of the patient was somewhat improved although the primary cause of the anaemia was still unknown. It had been proved by laparotomy that there was no ulcer present from which the bleeding could occur, and the theory of a streptococcal focus in the gall bladder being responsible was clearly no longer tenable. Moreover, it had been shown that part of the bleeding was from the lungs. Accordingly other causes of continued blood loss were investigated notably the blood disorders.

The bleeding time was 65 mins and the clotting time 5 mins (capillary tube method). A blood count showed red cells 1,650,000 per cmm, haemoglobin, 35% (49 g %) colour index 1.06 white cells, 20,900 per cmm (segmented polymorphs, 72% non segmented polymorphs 9% eosinophils 1% basophils, 2% lymphocytes, 14% monocytes, 2%). Seven late normoblasts were seen in counting 100 leucocytes. Some Howell-Jolly bodies were present. The red cells showed mild anisocytosis and polychromasia. The platelets numbered 154,000 per cmm. This blood count in itself was not diagnostic and a sternal puncture was performed with the following result.

The bone marrow showed a marked normoblastic reaction. The case was reviewed completely, and on the evidence of (1) the history of restricted diet taken for several years, (2) the absence of any lesion in the gastro-intestinal tract at laparotomy (3) the combined haemoptysis and haematemesis and (4) the blood picture, including the sternal puncture it was thought possible that the patient was suffering from vitamin C deficiency even though the gums appeared healthy. On July 15 in the absence of any more rational line of therapy it was decided to give 1,000 mg of ascorbic acid intravenously. Within half an hour of this injection there was a dramatic improvement in the general condition of the patient. Instead of being weak, apathetic and apparently dying she became alert, bright and cheerful. It was clearly evident that the ascorbic acid had been responsible for effecting an improvement and it was continued by mouth in amounts of 100 mg hourly. From the following morning urine was collected into glacial acetic acid and at the end of a 24-hour period was tested for ascorbic

acid. None was found to be present by the colorimetric method. Hess's sign was positive up to 100 purpuric spots per square inch (15 per sq cm) being counted.

Sternal Tap		
		Limits of Normality
Segmented polymorphs	15.4	0 - 30
Non segmented polymorphs	15.0	20 - 40
Melamycocytes	11.2	2.5 - 12
Myelocytes	5.8	2 - 6
Premyelocytes	0.8	0.5 - 5
Myeloblasts	0.2	0 - 2
Eosinophils	0.0	0 - 5
Basophils	0.0	0 - 1
Lymphocytes	4.8	5 - 20
Prolymphocytes	3.0	
Monocytes	0.0	0 - 5
Plasma cells	0.6	0 - 1
Normoblasts	29.2	7 - 19
{ Late	10.0	
{ Intermediate	0.8	
{ Early	0.4	
Megakaryoblasts	0.0	0 - 4
{ Late	0.2	
{ Intermediate	0.2	
{ Early	0.2	
Pro-erythroblasts	1.2	
Haematocytoblasts	0.2	
Megakaryocytes	0.2	
Mitotic cells	1.0	
Myeloid/erythroblastic ratio	11.1	2.1 to 8.1

On July 18 the urine was again collected for ascorbic acid recovery, and although the patient had had 100 mg hourly for three days, in addition to an initial dose of 1,000 mg intravenously, only 11.25 mg was recovered for the 24-hour period. Even so, the tissues were sufficiently saturated to permit a sum excretion of vitamin C from the urine, but the patient again vomited several small amounts of blood during the day. The haemoglobin was still only 28% necessitating further transfusion, four bottles of blood being given. A blood count now taken showed red cells 2,290,000 per cmm haemoglobin 34% colour index 0.74. The blood film contained a large number of normoblasts not previously demonstrated and suggested a haemopoietic response to ascorbic acid, yet on July 20 the patient again vomited several small amounts of blood though the general clinical improvement which had marked the commencement of vitamin C therapy was still maintained. Next, the possibility of an associated vitamin P deficiency was considered and on empirical grounds 150 mg of hesperidin four-hourly by mouth was given in addition to ascorbic acid. No further vomiting of blood occurred the melaena stools gradually returned to normal and within a week Gregerson's benzidine reaction was given as weakly positive only. During this time the normoblasts disappeared from the blood and a reticulocytosis up to 23% occurred on July 24. An attempt was made to hasten the convalescence by the administration of iron. Ferrous sulphate and iron and ammonium citrate were both tried but were discontinued on account of the dyspepsia which they caused. Colloidal iron was then given and was tolerated very well.

By Aug 7 the patient had been receiving 200 mg of ascorbic acid daily for three weeks, and for the first time the laboratory report indicated that sufficient saturation had been achieved. On iron therapy the blood count improved steadily until Sept 1 when there was a slight deterioration due to a coincident urinary infection. The infection having been treated, the haemoglobin again rapidly increased until on Sept 20 it was 83% and the patient was discharged to convalescence. A month later it was 89%.

Summary

This is apparently a case in which haemorrhage occurred from the gastro intestinal tract and the lungs as a result of vitamin C deficiency and possibly also a deficiency of vitamin P. The patient had previously been treated for a number of years for peptic ulceration, and this together with a fairly typical ulcer history and an unusual presentation of vitamin C deficiency prevented the correct diagnosis from being made earlier in the disease.

I am indebted to the medical superintendent Col Owen Prichard, for permission to publish the case history, and to Dr Morton Gill the visiting physician in charge of this case. I am also very grateful to Dr Signy and the staff of the E.M.S. Pathological Laboratory at Ashford whose friendly help and advice were always readily forthcoming.

"GAMMEXANE" AND MOSQUITO CONTROL

BY

G DAVIDSON, BSc

(From the Ross Institute of Tropical Hygiene)

Field trials with the new insecticide "gammexane" have recently been carried out in Sierra Leone against the adult house-haunting mosquitoes, *A. gambiae*, *A. melas* and *A. funestus* with considerable success. Laboratory tests with gammexane have previously shown that it is not only lethal to mosquitoes in smaller concentrations than DDT but is quicker in its action.

Trials were made in small native villages, first using small smoke generators containing the insecticide, and later using residual sprays. Because of the inadequate retention of the smoke by the ordinary native house the smoke generators did not prove very successful in reducing the numbers of mosquitoes. Residual sprays containing gammexane, applied to the internal walls of the houses, reduced the numbers of mosquitoes in the houses very significantly for periods varying from one to six months, depending on the rate of application of the insecticide, the thoroughness of treatment of the houses, and the proportion of any one area treated. The optimum concentration appeared to be 10 mg of gammexane per sq ft (930 sq cm) of wall surface [4 pints (2.3 litres) of a 0.5% solution of gammexane to 1,000 sq ft (93 sq m)], and the effect produced compared in persistence very favourably with that claimed for DDT at 100–200 mg per sq ft.

Residual sprays made up of gammexane dissolved in kerosene, and water-miscible oil and water-dispersible powder mixtures containing the insecticide, all produced good results, although the latter mixture was slightly less persistent than the other two.

Throughout these trials it was repeatedly observed that the treatment of most of the houses in a village with sprays containing gammexane not only reduced the mosquitoes in the treated houses but also in the untreated ones. Similarly, the treatment of a group of adjacent villages, where a few of the villages were left untreated as "controls," appeared to reduce the density of the mosquito population in the untreated as well as in the treated ones. This would be expected if the result of treatment was to kill off large numbers of the mosquitoes and so reduce the intensity of breeding throughout the area.

It has been suggested recently that the use of residual insecticides in houses causes the normally house-haunting species of mosquitoes to change their habits and to enter houses only to feed, leaving immediately without coming in contact with the insecticide, or resting for such a short time on the treated surface that no lethal effect is produced. As a result of this change in habits no marked decrease in the malaria rate in the local population would be produced by the use of these residual insecticides. Such an argument has been put forward in the case of DDT. Laboratory evidence on the quicker action of gammexane and the evidence accumulated in these trials in West Africa would seem to indicate that this substance does actually kill off large numbers of the mosquitoes, and a consequent reduction in the malaria rate would be expected from its use.

Blood films were taken before and 12 to 22 weeks after treatment of several of the villages involved in these trials, but no significant reduction in the malaria rate was found. It is considered however, that this period is too short for any great change to be produced. It is hoped that further

trials extending over a longer period will be carried out in the near future.

A detailed account of the above trials and their results is to be published shortly.

Medical Memoranda

A Case of Congenital Fibrolipoma of Cornea

The following report of a rare condition is interesting enough to merit publication.

CASE REPORT

A male baby aged 3½ months was brought to the out-patient department of the Wolverhampton and Midland Eye Infirmary as the mother thought "skin was growing over the left eye since birth." There was no history of inflammation or injury. The appearance of the child is shown in the accompanying photograph. The right eye showed normal development. The left eyeball was replaced by a mobile pedunculated rounded swelling about 1½ in (3.2 cm) in diameter. The eyelids and the eyelashes were of normal development and completely covered the eyeball. The cornea and conjunctiva were covered over with a membrane which resembled the skin. A tentative diagnosis of corneal dermoid was made, and the child was kept under observation. Within three months the swelling was getting bigger, so it was decided to operate. Under general anaesthesia the whole mass was removed. The child made an uninterrupted recovery.

The specimen was sent to the Nuffield Laboratory at Oxford and Miss Mann kindly furnished the following report.

'Macroscopically'—The specimen measures 2.5 cm antero-posteriorly and 1.5 cm equatorially. The globe appears to be constricted in the middle, where the conjunctiva was attached. The globe is divided antero-posteriorly, the anterior half consisting of a dense white mass replacing the cornea, behind this is a small vitreous chamber with retina and choroid in position and an imperfectly formed anterior chamber, but no trace of lens. The condition is one of congenital fibrolipoma of cornea.

"Microscopically"—The cornea is replaced by a mass of fibro-fatty tissue, the surface showing squamous epithelium with skin structures (hair follicles and sweat glands). Beneath this is a layer of fibrous tissue, and beneath this again fat and blood vessels. There is a small malformed anterior chamber, lined with Descemet's membrane and endothelium, but no normal iris or lens, though some peculiar colloidal material in the anterior chamber is probably the remains of a malformed lens. Ciliary processes, retina, and choroid are present. There are many rosette formations (common in malformed eyes). The optic nerve is present, and appears almost normal.

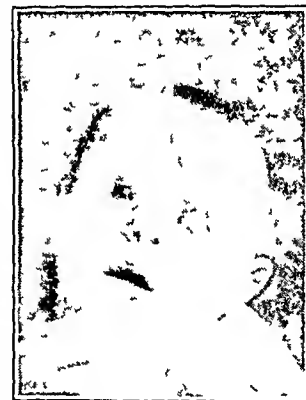
Diagnosis—Congenital fibrolipoma of cornea.

My thanks are due to Mr Wyn Green, assistant surgeon at Wolverhampton Eye Infirmary, for permission to publish this case.

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Senior Registrar Ophthalmic Department
Cardiff Royal Infirmary

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Mann Ida (1937) *Developmental Abnormalities of Eye* Cambridge



The National Institute for the Blind point out that the problem of blindness in British tropical Africa is a serious one. In Uganda, for example, the incidence was found by a joint mission of the Colonial Office and the N.I.B. to be 4,187 per 100,000 population (the comparable figure in the U.K. is 191). One of the chief causes of blindness is ocular *onchocerciasis*. Major H. Ridley, who investigated the disease on the Gold Coast, is quoted as saying that it is "not inconceivable" that the disease might spread to temperate lands.

Reviews

TEXTBOOK OF ANAESTHESIA

Anaesthetic Methods By Geoffrey Kaye, M.D., D.A. in collaboration with Robert H. Orion, M.B., B.S., and Douglas G. Renion, M.B., B.S., D.A. (Pp. 706, illustrated 50s) Melbourne Ramsay (Surgical) Pty. Ltd., 340, Swanston Street

This important work, the result of collaboration between three Melbourne anaesthetists, is intended to guide the graduate taking a house appointment, starting private practice in anaesthesia, or reading for the diploma in anaesthesia. The authors attain this object admirably and cover the whole subject with the exception of local analgesia. The advice given is sound throughout, with enough detail to enable techniques to be understood clearly and carried out. The difficulties inherent in multiple authorship have been overcome completely: the style is smooth and contradictions are non-existent. There are, however, two serious errors in the table of standard colours for British gas cylinders on page 276.

Various subjects related to anaesthesia but which most text books ignore are fully considered—for example, there are most useful chapters on blood transfusion and on oxygen therapy. The authors discuss spinal analgesia with a lucidity and moderation noticeably absent from some works. They describe the action of curare well. Unfortunately the dosage given apparently refers to an unnamed American preparation, and gross overdosage would occur if the British preparation 'tubarine' were injected in the amounts recommended. The 188 illustrations are well chosen, most are diagrams specially drawn to show the principles upon which various appliances work. These serve a more useful purpose than the usual photographs of apparatus which make so many books on anaesthesia resemble instrument-makers' catalogues. Mr P. M. Selby has contributed an excellent chapter on legal aspects of anaesthesia. Although this deals with Australian law most of the general principles apply to English common law.

C. LANGTON HEWER

DIET AND THE SKIN

Skin Diseases Nutrition and Metabolism By Erich Urbach, M.D., F.A.C.A. with the collaboration of Edward B. LeWinn, B.S., M.D., F.A.C.P. (Pp. 634, illustrated 50s) London William Heinemann Medical Books 1946

This work should be of value to the general practitioner, for he is often required by his patient to advise on diet in relation to skin diseases—a subject that has always obsessed the lay public and for which war and post-war restrictions have greatly increased their enthusiasm. The association in the mind of the layman is natural enough, for conditions such as urticaria, rosacea, and some cases of acne dramatically illustrate the possibilities; allergy is of topical interest and may suggest obscure relationships of cause and effect over a wide range of maladies. A touch of humbug sometimes colours the outlook of both medical men and laity. However there are certain essential relationships between nutritional and metabolic factors on the one hand and skin health and disease on the other, and it is important that the practitioner should be able to distinguish fact from fiction.

Dr Urbach, after an interesting survey of the historical background sets the main facts out clearly. He discusses the importance of vitamin deficiencies of carbohydrate metabolism of water balance of acid and alkali balance and the essentials of a balanced diet. The first and principal section of Dr Urbach's work is worth studying but the same cannot be said for the section which deals with particular skin diseases and the dietetic and metabolic factors concerned, for here the author has not been sufficiently discriminating. He has cast his net widely and recorded most of the work that has been done, but some of it is valueless and confusing. The enthusiastic research worker often elaborates minor coincidental findings into important causative connexions and Dr Urbach presents everything without sifting the wheat from the chaff. Exclusion of much of the material in this section would improve

the book. A large section on allergy follows the usual line but it does not, in our opinion, discuss the facts adequately.

The work is well produced and freely illustrated. Many dermatologists, however, will consider unduly optimistic the illustrations showing the effects of dietetic control in some common dermatoses such as psoriasis and neurodermatitis. This book is the first of its kind to appear. If used with judgment and in conjunction with other teaching it will prove helpful to the practitioner.

J. T. INGRAM

ALLERGY

Allergy in Practice By Samuel M. Feinberg, M.D., with the collaboration of O. C. Durham and Carl A. Dragstedt, Ph.D. M.D. Second edition (Pp. 838, illustrated \$10.50 or 58s) Chicago The Year Book Publishers Inc. London H. K. Lewis and Co.

This book excels in its account of air-borne allergens. Dr Feinberg was a pioneer and is still a leader in the study of moulds as a cause of asthma and allied disorders. His long chapter on 'Allergy to Fungi' should be most helpful to those specially interested in this field of research—for it is yet hardly more than that, especially in Britain, where very few mycological and clinical studies have been reported.

Mr O. C. Durham, in the chapter on pollens and pollen allergy, covers the published literature from all parts of the world, naturally only a small fraction is directly applicable to Great Britain. His generalizations on pollen dispersal may represent current opinion in America (though he does not quote any authority for them), but they seem to take too little account of modern theories of diffusivity and to emphasize unduly the influence, at a given place, of distant as opposed to local sources of pollen. The new edition includes three new chapters. In one of these Dr Carl A. Dragstedt describes briefly but clearly the role of histamine in anaphylaxis and allergy. The next chapter is devoted to the new antihistamine drugs and their uses in allergic illnesses. The third new chapter tells how Dr Feinberg prepares the extracts he himself uses in skin testing. The text of the rest of the book has been brought up to date though its subject matter in general remains unchanged. The book is a sound and well-presented account of the theory and practice of clinical allergy.

D. A. WILLIAMS

YEARBOOK OF MEDICINE

The 1946 Year Book of General Medicine August 1945–June, 1946. Edited by G. F. Dick, M.D., J. B. Amberson, M.D., G. R. Minot, M.D., W. B. Castle, M.D., W. D. Stroud, M.D., and G. B. Eusterman, M.D. (Pp. 772, illustrated \$3.75 or 21s) Chicago The Year Book Publishers, London H. K. Lewis and Co. 1946

This valuable review, which covers the period August, 1945, to June, 1946, is an excellent reference book and is useful for those who wish to keep abreast of current literature but lack time or easy access to the original articles. The editors' conservative comments are a firm corrective to those who may be too easily impressed by the conclusions of over-enthusiastic writers.

The largest sections of the book are those on diseases of the blood and chest diseases. The latter includes informative articles on the treatment of empyema by the instillation of penicillin combined with systemic administration. Although surgical intervention is often required, healing of the sinus and re-expansion of the lung are much more rapid. It is interesting to note that a substance inhibitory to the tubercle bacillus has been demonstrated in the gastric juice, the pooling of specimens in spite of increasing the amount of material for search decreases the chances of demonstrating the bacillus. The only abstract on streptomycin in pulmonary tuberculosis gives on the whole a discouraging account. In the section on blood diseases there are four articles on the Rh factor. Wiener states that Rh typing should be done when patients receive multiple transfusions and when transfusions are given to women of child-bearing age. Spies's work on folic acid in the treatment of pernicious anaemia and sprue is given due prominence and articles on this subject appear both in the section on blood diseases and in that on metabolism and nutrition. The latter section contains several interesting articles on protein require-

ments in health and disease. Helmut Sprinz emphasizes the importance of protein deficiency rather than vitamin deficiency as a primary factor in malnutrition.

The section on heart disease does not record any great advance in treatment or diagnosis, but there are useful reviews of current opinion on cardiac surgery and methods of digitalization. The use of strict bed rest in cardiac failure and in active tuberculosis is also discussed. The 1946 Year Book gives the impression that many workers, particularly in America, are pausing to evaluate a variety of tests and investigations in the hope of simplifying the diagnostician's task, and that the clinician, though more willing to subject his patient to major surgical procedures, is concentrating on early functional recovery.

M NEWHOUSE

CHEMICAL IDENTIFICATION

Characterisation of Organic Compounds By F Wild, Ph.D., F.R.I.C. (Pp 306 18s) Cambridge The University Press 1947

The amazing development of modern chemistry, especially in relation to biology and medicine, has necessitated a refinement of standards as well as of methods. Although new compounds or factors may be discovered by analogy and elucidated by circumstantial chemical evidence, it is not always realized as Dr Wild reminds us, that "in general the tests classify but do not identify the compound." Qualitative reactions, such as empirical colour tests may be of use in that they guide the bee of research to the flowers, but absolute identification, the only sure basis for chemical knowledge, demands the preparation of pure derivatives with measurable physical characteristics.

In this conscientious and lucid book the author has collected, summarized and described with full practical details the most convenient methods for the identification of individual members of the chief types of organic compounds. The extent of the area covered is shown by the index which contains over 2000 entries and the text is amply provided with tabulations and formulae. The book will be of great value as a work of reference and also a useful guide to the individual research student, for it contains much information that is often required and presents it clearly.

W R FEARON

JAUNDICE

The Differential Diagnosis of Jaundice By Leon Schiff, Ph.D., M.D. (Pp 313 illustrated \$5.50 or 30s) Chicago The Year Book Publishers Inc London H K Lewis and Co 1946

A book whose author discusses the differential diagnosis of a single symptom is liable to be a sketchy review of the disorders to which the particular symptom is common. Dr Schiff has not entirely overcome that defect. In most of his book he gives a conventional account of the morbid processes that cause jaundice: the descriptions are in the main adequate, but since their central theme is necessarily jaundice they sometimes lack proportion—for instance his account of Weil's disease suggests that jaundice occurs in every case. He neglects the pathology of jaundice and relegates his description of its general characteristics to only 13 pages. Details of laboratory methods are described in an appendix but we should have welcomed a fuller evaluation of their significance. The section on radiology contains some excellent diagrams particularly of ampullary and pancreatic carcinoma. Liver biopsy is well described and some illustrative photomicrographs are included.

While parts of the book are informative it is not sufficiently comprehensive for the physician particularly interested in hepatic disease and a monograph on a single symptom cannot appeal to the harassed student. The English is at times uncorrect—*as* for example, when the author writes of cirrhosis of the liver the disease is prone to occur in occupational groups in which there is contact with alcoholic beverages.

R BODLEY SCOTT

Year Book of Medicine is published by Harvey and Blithe 6 Hanover Square London W1 (6d monthly) and edited by Drs F Croxon D. and W R Bell. A few monthly issues have already appeared. As the title suggests, books are the chief interest of this enterprising venture. The Editors also hope to find scope for reporting learned lectures and Short Office Publications.

BOOKS RECEIVED

[Review is not precluded by notice here of books recently received]

Muscle Testing By L Daniels, M.A., M Williams, M.A., and C Worthingham, M.A. (Pp 189 12s 6d) Philadelphia and London W B Saunders 1947

An illustrated survey on manual muscle testing used to assess muscular weakness resulting from disease, injury, or disuse.

Week Ends for Henry By Hester Holland (Pp 192 9s 6d) London Hurst and Blackett 1947

An adventure story.

Appendicite et Urologie By L Strominger (Pp 165 240 francs) Paris Masson 1946

A clinical study of the relationship between appendicitis and urological affections.

L'Anesthésie Intra-Veineuse au Pentotal Sodium By Ernest Kern (Pp 92 100 francs) Paris Masson 1946

A short account of the uses, technique, and effects of thiopentone anaesthesia.

Blind Intubation and the Signs of Anaesthesia By J U Human, M.R.C.S., L.R.C.P., L.D.S., D.A. 3rd ed (Pp 230 10s 6d) London H K Lewis 1947

An account of the physiology and signs of anaesthesia, endotracheal technique, and principles of premedication, intended primarily for the newly qualified.

Surgical Note Taking By Charles F M Saint M.D. M.S., F.R.C.S. 4th ed (Pp 106 4s 6d) London H K Lewis 1947

A summarized account of surgical note taking for students and dressers.

Nursing and Diseases of Sick Children Ed by Alvin Moncreiff, M.D. F.R.C.P. 4th ed (Pp 744 30s) London H K Lewis 1947

Intended as a textbook for nurses, this edition includes new material on the sulphonamides, penicillin, and other topics.

Diagnóstico y Terapéutica Quirúrgicos de Urgencia By Dr F Domenech Alsina (Pp 912 No price) Barcelona and Buenos Aires Salvat 1947

Illustrated textbook of emergency surgery and surgical procedures.

The Dentists Register Published under the direction of the Dental Board of the United Kingdom (Pp 346 15s) London Constable 1947

Nutrition in Industry By the International Labour Office Montreal (Pp 177 6s) London Staples Press 1946

An account of wartime measures in Canada, the United States, and Britain to safeguard the nutrition of industrial workers.

Local Anaesthesia Brachial Plexus By R R Macintosh, M.A., M.D., F.R.C.S., D.A. and William W Mushin, M.B., B.S., D.A. 2nd ed (Pp 56 10s 6d) Oxford Blackwell Scientific Publications 1947

Local analgesia produced by injection of the brachial plexus, illustrated with many diagrams and photographs.

Atas do Segundo Congresso Medico Paulista Vols 1 and 2 By Prof Dr C Gama, Dr P A Netto, and Dr O C Gordinho (Pp 653 and 1,035 Cr.\$150,00 and Cr.\$200,00) Sao Paulo, Brazil Edigraf 1945

A collection of papers presented at the Second Congress of the Sao Paulo Medical and Surgical Association.

Psychological Disorders in Flying Personnel of the Royal Air Force (Investigated during the war 1939-45) Air Ministry Publication (Pp 344 7s 6d) London H.M. Stationery Office 1947

Experimental Embryology in the Netherlands, 1940-1945 By M W Woerdeman, M.D., and Chr P Raven, Ph.D. (Pp 132 Florins 650) New York and Amsterdam Elsevier Publishing Company 1946

Papers by various contributors on experiments on amphibious eggs.

The Mind and Death of a Genius By David Abrahamson, M.D. (Pp 228 16s 6d) London Geoffrey Cumberlege 1946

A biography of Otto Weininger by a psychiatrist.

BRITISH MEDICAL JOURNAL

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SATURDAY MAY 17 1947

NUTRITION IN GERMANY

The "hunger marches" in Hamburg and Hanover last week lend special interest to a recent survey of the state of nutrition of the urban population in the British, French, and United States Zones of occupation in Germany by a committee of experts,¹ which toured the three Zones in April. It is unfortunate that the committee was not able to see for itself the state of affairs in the Russian Zone. Russian members of the committee and routine surveys in that Zone would do much to dispel the notion that the Russian Zone flows with milk and honey. The committee found that body weight in the adult population had changed little since December, 1946. Children between 6 and 14, old people over 60, and persons consuming only the "normal consumer ration" of 1,500 calories per day were in the poorest state of health and nutrition. A "normal consumer ration" is not sufficient to prevent loss of weight, and the committee suggest that normal consumers have been able on the whole to obtain from extra-legal sources or from the pooling of rations from other members of the family in a higher ration category an additional amount which must provide at least 350 calories per day. It is obvious that most of these additional calories must come from local supplies, that is, from the country districts near to the cities and towns, and the most readily available foodstuffs from which they can be obtained are bread and potatoes. If all were obtained from bread, the extra-legal consumption of bread grain would be about 100 g per day, and, if potatoes, about 500 g per day. Assuming that 10 million people, a modest estimate, were consuming these foodstuffs, the drain on local supplies would be about 30,000 tons of bread grain per month or 150,000 tons per month of potatoes.

Prices vary considerably throughout the Zones. Potatoes in one small town have been quoted at 50 pfennig per kilogram and in others at 5 marks for off-the-ration supplies. In other areas barter transactions alone secure supplies, a sure sign of scarcity and lack of confidence in the currency. The inevitable result of this extra-legal traffic in foodstuffs has been to freeze supplies and to prevent the free transfer of food from the producing areas to the larger towns by the local German Food Administration. The British Zone, which is predominantly urban, is severely affected by this failure of distribution, and no fusion of the Zones will prevent its remaining so while supplies are gravely inadequate. The same hoarding and bartering of food by the producers has been observed in other European countries in times of scarcity. In the first three months of this year at least 130,000 tons of grain have been held back by farmers largely to enable them to

secure consumer goods such as clothing and household utensils in short supply. While this withholding of supplies has worsened the situation, local supplies, even if all were collected and distributed, would contribute only a very small proportion of the food necessary to honour the normal consumer ration. A dangerous situation has now developed. Since the committee rendered its report the bread ration has been halved and the normal consumer ration has in consequence fallen from the official 1,550 to around 1,000-1,100 calories. This reduction, however, is only an official recognition of the fact that the normal consumer ration has not been fully honoured in large areas of the three Zones for some months. Lack of grain shipments has been largely the cause of this deficiency, but supplies of other rationed foodstuff have been reduced also. Imports are necessary but difficult to secure. The problem of supplying Germany is not a Zonal responsibility but one involving the world-wide allocation of food supplies.

With such a background the findings of the committee are by no means surprising. Lack of calories and protein have resulted in loss of weight in normal consumers. Such weight losses, however, have not increased since the last survey in December. Sharing of family rations and extra legal supplies have not prevented a serious failure to gain weight in the children between 6 and 14 years. The need for more milk in this age group is clearly apparent, but it was not available. Old people fared badly. Unable to contribute to the family pool by collecting food in the country and mostly unable to earn enough to purchase supplies at high prices in the towns, they suffered much loss of weight, and in them oedema is widespread. The appearance of oedema in workers below the age of 50 can be attributed only to a serious deficiency in the calorie intake. In spite of the extra food given to these workers they are being called on to expend more energy than is available in their total ration, shared as it is within the family group. Where possible school-children have been given, five times a week at the most, school meals equivalent to about 300 calories. Those over 14 still at school are thus in a better nutritional state than their coevals in industry. The latter are thin and obviously poorly nourished. Babies on the other hand were well developed, but rickets is prevalent in them. Exact figures are not available, but some indication of the prevalence of rickets in Germany in 1939 was provided by a house to house investigation carried out in the months of June and July, 1939, in Frankfurt-on-Main (now in the American Zone). Nearly 800 children were found to have been born in February and March of that year. Of these it was possible to examine 76%—that is, about 600—aged between 2½ and 5 months.² It was then found that just over 80% of the infants examined showed evidence of healed or florid rickets, the principal manifestations being cranio tabies, rickety rosary, Harrison's sulcus, "pot-belly," and muscular hypotonia. E. Graser, who recorded the investigation, suggested that vitamin D should be distributed as a routine to all infants. Dr Graser wrote (*this was in the summer of 1939*) "Whether rich or poor, highborn or lowly, in our city every baby suffers from rickets unless special precautions are taken."

¹ Combined Nutrition Committee (Br/Fr/U.S.) Report of the Seventh Combined Nutrition Survey. April 26, 1947.

² Z. Kinderheilk. 1939, 61, 520. See Annotation. British Medical Journal, 1940, 1, 577.

There is apparently no lack of supplies of vitamin D in Germany at present, but they have not always been distributed or made readily available for infants and young children. The committee has drawn attention to the presence of clinical signs indicative of vitamin deficiencies. These were mainly deficiencies of vitamins A and C. They may be seasonal, but their presence is serious in young children and young adults. It is interesting to record that though the carotene intake and blood levels were normal or high, the body was not able to convert carotene into vitamin A in quantities sufficient for its needs. The nutritional status of heavy workers and underground miners is reasonably satisfactory. Their rations plus the extra food supplies which they can obtain by the points system enable them to maintain normal weights. But there is no doubt that they share the extra ration with their families, and this is reflected in the output of coal from the Ruhr and in unrest among the miners. Tuberculosis—both notifications and deaths—has continued to increase. Comparison with the returns for the corresponding periods of 1946 shows clearly that the rise is a real one and not due only to an unusually severe winter. Other infectious diseases apparently gave no cause for alarm.

It is impossible to predict what will happen during the next three months before the first harvests are available for distribution. There can be little doubt that the reduction in the basic or normal consumer ration which has now taken place will produce more serious effects than the one enforced a year ago. It is unlikely that the children will be seriously affected, because the Hoover Relief Programme for school children will ensure that the most needy will have a good midday meal on five days in each week. The old people and the younger workers in industry will probably suffer most physically. The ration reduction will have, however, a more serious consequence—less tangible but very real. The loss of confidence in the local food administration, which is largely in German hands, will undermine the Allied endeavour to inculcate a sense of responsibility in the local administrations. Widening the margin between the official ration and the amount needed for mere subsistence cannot fail to aggravate the danger—now a reality—of inequitable food distribution and will encourage black market transactions. It must endanger the policy of sharing local food supplies between the Zones and encourage farmers to hold their produce rather than hand it over to the local authorities. Only adequate grain shipments and a bountiful potato harvest in Germany will prevent the winter and spring of 1947-8 from bringing famine and unrest.

The political structures of the British and American Zones differ, and this difference renders effective combined action difficult. In the American Zone the *Länder* (States) have extensive powers of self-government, and the *Länder* Governments, according to *The Times* diplomatic correspondent (May 13), resent interference from the bi-zonal agencies which deal with such matters as transport and food. Those who conducted the Combined Nutrition Survey last month observed that "large supplies of food are obtained by the population from unofficial sources." There is a wide circulation of food by post from rural districts, and in all three Zones members of the Survey observed

people travelling by train with heavy bags of food. This large scale black-market operation ought to be brought to an end by the Germans in the interests of the Germans, but until the economic and political difficulties have been solved the farmers in the American Zone will keep their corn to themselves.

OCCUPATIONAL DISEASE IN REVIEW

The Minister of National Insurance has appointed a committee¹ to review the policy adopted in scheduling occupational diseases under the Workmen's Compensation Acts and to advise on the selection of diseases for insurance under the National Insurance (Industrial Injuries) Act. This Act came on the statute book in 1946 and will become operative during 1948, although the appointed day has not yet been announced. It will replace the present system of compensation under the Workmen's Compensation Acts, which will be repealed. The principle of listing, or scheduling, occupational diseases is to be retained, and under the new Act they will be known as "prescribed" diseases. "A disease may be prescribed if the Minister is satisfied that it ought to be treated, having regard to its causes and incidence as a risk of their (insured persons') occupations and not as a risk common to all persons, and it is such that, in the absence of special circumstances, the attribution of particular cases to the nature of the employment can be established or presumed with reasonable certainty." The Minister must decide at an early date which diseases are to be included within this definition, and so he has set up this committee to advise him.

The first Workmen's Compensation Act became law in 1898. Its importance in industrial legislation was soon evident, and its provisions were widened in the Act of 1906, particularly in regard to occupational diseases. The Third Schedule appended to this Act specified six conditions for which the worker could claim compensation: mercury, lead, phosphorus, and arsenic poisoning, anthrax, and ankylostomiasis in miners. It was realized almost immediately that there were other diseases which could be added to the Schedule, so in August, 1906, the Home Secretary set up a committee "to inquire and report what diseases and injuries, other than injuries by accident due to industrial occupation, were distinguishable as such, and could properly be added to the diseases for which compensation was paid under the Workmen's Compensation Acts." This committee had Mr Herbert Samuel, M.P., now Viscount Samuel, as chairman. The two medical members were the Regius Professor of Physic at Cambridge University and the Medical Inspector of Factories—at that time there was only one medical inspector. The committee took evidence at forty-one sittings in London, Birmingham, Manchester, Swansea, Glasgow, and other industrial cities, it visited many factories, and the medical members examined a number of workers. Before any disease was scheduled the committee applied three tests. Was it outside the category of accidents and diseases already covered by the Act? Did it incapacitate from work for more than one week (the

¹ Members of the committee are Judge E. T. Dale, chairman, with Sir R. R. Bannantine, Mr S. Chapman, Mr C. R. Dale, Dr J. Vaughan Jones, Prof R. E. Lane, Dr E. R. A. Merewether, Mr H. M. Piper, Mr F. Sulwell, Dr A. L. Winner, and Mr F. K. Forrester, secretary.

minimum period for which compensation was payable)? Was it so specific that the causation of the disease or injury by the employment could be established in individual cases? The result was that some sixteen diseases were added to the Schedule, thus enlarging the list to twenty-two in all. Conditions such as poisoning from carbon monoxide, sulphuretted hydrogen, sodium cyanide, and potassium chlorate, as well as "brass-founders' ague," mange, and bottle-makers' cataract, while fully investigated by the committee, were not included.

By 1946 the scheduled diseases² had gradually increased to forty-four, largely on the advice of the Factory Department,³ and included "cataract in glass-workers," Silicosis, asbestosis, and the condition of the lungs known as dust reticulation are not scheduled under the Act in the ordinary way, but power has in the past been given to the Minister to make special schemes for the compensation of workers employed in specified industries or processes who contract one of these diseases as a result of their employment. A number of schemes have been drawn up—for example, the Refractories Industries (Silicosis) Scheme, the Metal Grinding Industries (Silicosis) Scheme, the Various Industries (Silicosis) Scheme, and so on. Here, surely is an opportunity for the new committee to do some tidying up, particularly in linking diseases with industrial processes. In the new Act, as in the Workmen's Compensation Act, there is mention of the pneumoconioses. Dust reticulation, however, is mentioned for the first time.

The Industrial Injuries Act has other implications, some of which were discussed by Stewart⁴ when the Bill was being debated. In establishing a claim for compensation the present procedure is for the worker said to be suffering from a scheduled disease, say dermatitis, to be examined by the examining surgeon. He then receives a certificate stating that he is, or is not, suffering from the disease. Appeal from this decision, by the man or his union, or by the firm through its insurance company, is to a single medical referee, whose decision is final. Neither of these procedures is to be retained. Medical boards and appeal tribunals are to be set up instead. Wisely, the Act allows questions as to temporary disablement to be referred to a single medical practitioner appointed by the Minister, instead of to a medical board. But no one doctor can, as in the past, be both judge and jury. This is fairer to the worker and to the medical profession.

Another important change is that payments will be made by the Ministry of National Insurance from a fund contributed by workmen, employers, and the State. Private insurance in this respect will cease, as will much of the work done now by doctors on behalf of insurance companies. The fund will normally have an annual income of over £25 000 000, and the number of persons employed in industry and covered by the Act, but not necessarily at much risk, is over 18,000,000.⁵ Benefits are of two types: (a) an injury allowance payable for 26 weeks, (b) a disablement pension payable when the man continues to be incapable of work after this period. Future compensation will be based not on loss of earning power but on the character of the

injury, the loss of a finger may leave the earning power of one man unimpaired but seriously interfere with the earning power of another, yet both will receive the same allowance or pension.

An important issue is raised when the rates of benefit under this Act are compared with those under the new National Insurance Act. Persons suffering from injuries and diseases arising out of their employment will receive somewhat higher rates of benefit than individuals disabled by conditions which have not been "prescribed." The fact that there is a difference may give rise to abuse. The sick worker, comparing the two schemes, may try to obtain the more favourable return for his contributions by claiming that his disability was caused by his work, or he may try to prolong his absence beyond the 26-week period and thus qualify for a pension. This will no doubt exercise the minds of the new committee and particularly its medical members to whom the problems of certification are well known. When it appears that a man's disability may have been caused by his occupation, a feeling of resentment against his work and his employer is not infrequently created. This may retard cure and prolong incapacity periods. If a disability is regarded as not due to work (involving perhaps only 10s a week less in benefit) the man is often readier to return to his job, and psychological disturbances do not arise. This is one cogent reason for asking the committee to go carefully before it adds to the list "Aggravation clauses which the trade unions may press for should also be opposed, not necessarily for highly technical or legal reasons but in the direct interest of the workers."

On both sociological and economic grounds, however, the new Act is, on the face of it, a more satisfying document than the Workmen's Compensation Act. For one thing, it deals with prevention, hopefully perhaps, but the fact remains that it creates hope, and it appears to be constructive. Section 73 states that the Minister may promote research into the causes, incidence, and prevention of industrial accidents, injuries, and disease; he may himself employ persons to do this or help other workers financially. Judgment will be suspended until there is evidence of practical implementation of this part of the Act. For example, what is to be the link with the Medical Research Council? Clearly, however, the country cannot afford to pay out vast money benefits without the closest scrutiny of methods of preventing injury and disease. The worker, now a partner in the payment of contributions as well as a potential recipient of benefits, must become as eager a scrutineer as, no doubt, will be the officials of the new Ministry of National Insurance.

TREATMENT OF FILARIASIS

Filariasis due to *W. bancrofti* has long been an unsolved problem in therapy. The highly developed worms in the tissues and the easily demonstrable microfilariae in the blood seemed as if they ought to be vulnerable to suitable chemical compounds. But for many years all therapeutic trials ended in failure, and patients with recurring lymphangitis, elephantiasis and the other sequelae of this infection continued to lack any radical cure. Tests with different substances have been made by many observers ever since Manson fully described the condition. After

² Memorandum on the Workmen's Compensation Acts 1925-45 H.M.S.O. 1946
³ Annual Report of the Chief Inspector of Factories for 1932 p. 53 H.M.S.O. 1933

⁴ *British Medical Journal* 1946 1: 561

⁵ *Ministry of Labour Gazette* 1947 55: 77

PHYSICAL THERAPY OF MENTAL DISORDER*

BY

D W WENNICOTT, FRCP

The full title of this talk was 'Some Reasons for a Personal Prejudice against the So-called Physical Therapies of Mental Disorder'. By representing my ideas in this form I admit that I prejudge the situation. This may be an unscientific approach, but perhaps it is a suitable one in the case of such unscientific methods of treating the disordered mind. My objections are not to the brutality of the methods. Compared with psychiatric illness even a broken back is not much and a broken leg nothing. Moreover with good care these accidents can be so reduced as to be negligible. I of course assume the good faith of those who practise the arts against which I am prejudiced. I know of no case whatever in which I would ascribe the giving of physical therapy to any but the ordinary motives of the practising physician.

Science in Medical Practice

A doctor is consulted because someone suffers. Patients, and especially relatives, demand therapy but the doctor is trained in the scientific method and his job is to apply science. The doctor is asked to cure magically, but he applies science. By so doing he disappoints even if he gives relief to his patient. But he serves the community by being part of a bulwark against superstition. It is open to anyone to go to a quack for magical relief but it is the doctor who is expected to represent science, or objectivity, and to be not afraid to do nothing if science cannot help. Diagnosis is based on scientific knowledge, the basis of therapy should be the same.

Scientific Psychology

A scientific approach to mental phenomena follows on acceptance of the theory that mental disorder is a disorder of emotional development that the basis of mental health is laid down on what is inborn from birth by the course of development of the personality and development of the individual's emotional contacts with external reality. Through Freud's formulations and work especially his method for objective investigation of unconscious phenomena, there has been a steady development of psychological insight.

The development of scientific psychology could briefly be described in three stages: the first bringing understanding of neurotic ambivalence, the second bringing understanding of depression and hypochondria, and the third bringing understanding of the more primitive mental states which reappear in the insanities.

First came the elucidation of the disturbed relationships between people and the disturbances in people of their instinctual functions as a result of their unconscious conflicts. The work was done from the sorting out of love and hate as it emerged in the transference situation. Following this as it appears to me the patient's conscious and unconscious fantasy about himself began to become analysed, his depression and conscious sense of guilt became his sense of something wrong inside himself, and the psychology of hypochondria became the psychology of the results of loving and hating. The incorporation and discharge of objects came into the analytic interpretation. Melanie Klein's work made all this possible and mania as an alternative to depression was seen to be an extreme example of hypomania as a denial of depression.

The new work on depression naturally linked up with the examination of the integration of the personality itself and phenomena of integration and reality appreciation etc. began to be able to be dealt with in the transference developments and to be brought into relation to instincts. These developments have enabled psychology to encroach on the domain of the alienist the doctor who manages the insanity case.

Convulsion Therapy

Along with this steady progress of psychological science there has been a development of the practice of convulsion therapy.

My main objection to convulsion therapy is that it comes as an escape from the acceptance of the psychology of the unconscious and from the implications of the psychological developments of the past fifty years.

It is well known that there are several techniques but from my point of view the electric technique is worse than the others because of the ease with which it can be done. Moreover, electricity has special significance for the unconscious, and paranoid and schizoid persons are well known to mix up the idea of electricity with ideas of magical influence. Such considerations do not necessarily make ECT bad, but they certainly put us very much on guard when we interpret results and when we meet the prejudice in favour of ECT that is common among psychiatrists to day. Whatever the technique, convulsion therapy is empirical. No one has the slightest idea how it works when it does work. It is true that empiricism carries no final objection. However, scientists hate empiricism and regard it as a stimulus to research.

Our responsibility is great. What is done here in England tends to be done blindly in many parts of the world especially where there is no access to libraries or training in psychoanalytic method or free scientific discussion. The sociological ill effect of a therapy has to be considered as well as the immediate effect on individuals.

Theory of Mental Health

The march of psychology, because of psychoanalysis, is towards the completion of the theory of mental disorder as a disturbance of emotional development. The basis of mental health is being laid down in infancy, in the developing relationship between infant and mother, and even in a more primitive way between the infant and his subjective mother, and more primitively still in the infant's self-establishment. The result of this theory is the fruitful one that the prevention of mental disorder is a new task of paediatrics. In contrast, the result of the empirical therapy of mentally ill people by physical methods is a relatively unfruitful one, it is that more and more neurologists must be found who are qualified to give people fits. These are two sociological results that can be compared one with the other.

Many besides myself have deplored the fact that convulsion therapy inevitably leads away from the psychological approach to a biochemical and a neurological one. Convulsion therapy attracts to mental hospitals people with first-rate qualifications for dealing with the complexities of insulin shock and of all the biochemical changes that need study in this kind of work. The physical therapies in general draw to psychiatry physically minded young doctors, and it is always unlikely that men and women who have reached a high degree of postgraduate training on the physical side will be willing or able to start again and to go into psychology at its beginning. Leucotomy in an extreme degree attracts the wrong kind of doctor to psychiatry. To my mind the modern acceptance of leucotomy is the direct result of the acceptance of empirical shock therapy.

If the sociological results of convulsion therapy are bad the sociological results of leucotomy are deplorable. I think leucotomy is the worst honest error in the history of medical practice. In mental hospitals the result of leucotomy is a new accession of power to the neurosurgeon, an unqualified practitioner from the point of view of the psychologist. Let us not be deceived by his very high degree of skill as a neurosurgeon, this having nothing to do with the case. If one deplores leucotomy and its collaterals one must deplore the convulsion therapies that paved the way for it. The feeling against leucotomy is too great to find expression—the general public and doctors alike are too appalled by this application of empirical method to do anything about it. And they are afraid that if they raise objections the psychiatrists will cease to relieve them of the awful burden of insane relatives and patients.

Let me apply the formula I devised earlier on. Now instead of private suffering with demand for magical treatment being met by the doctor who applies science it has become true to say that society suffering (on account of its mentally ill members) leads to the use of the doctor (because of his being supposed to act according to scientific principles) to cover the application of magic. Leucotomy should be a quack remedy, available for those who ask for cures.

*Abridgment of a paper read before the British Psychological Society (Medical Section) on Nov 27, 1946.

From this subject of leucotomy with its irreversible brain changes I come back to convulsion therapy with a feeling of relief. At least here no damage is done (so we blandly assume). If it should turn out that the effects, good and bad, of ECT are, after all psychological effects, no one individual has been finally hurt, and the convulsion subject can still employ psychotherapy if it should come his way. He can even recover spontaneously in the course of time, with good management, if he is so disposed.

Objections to Convulsion Therapy

To condense my views so far expressed I would say I would not give convulsion therapy, because (1) I would not have it done to myself, (2) it draws to psychiatry the wrong kind of doctors, skilled in the wrong way, (3) it undermines the public's justification for relying on doctors to keep their scientific heads in face of the demand for magic, (4) this form of therapy done here in England leads to mass treatments by the same methods of treatment all over the world, (5) physical methods of treatment represent a tendency away from scientific psychology. Here I would like to add a new point—which is that the chief indication for ECT seems to be involuntional melancholia and the lesser depressions.

Now depression is the illness of valuable people. At the borderline depression is the breakdown of people who are overburdened with responsibility or loss. On this side of the line is the valuable person, often a good mother, who burdens herself with too much concern. On the other side is the same phenomenon but less conscious, and this is depression. In depression at least the patient suffers for her own illness. ECT is at present being applied to the valuable people and if this is recognized it no doubt makes the psychiatrist very concerned indeed as to his own suitability for his task. Few of us are innocent of depression and if we have escaped it we may have done so by a contra depressive defence which is more abnormal than the frank depression phase of a patient.

Psychological Effects of Convulsion Therapy

Having thus summarized my prejudice I would like to give my guess as to the future developments in the psychology of convulsion therapy. I think that psychoanalysts and those trained in that sort of way should work at present on the assumption that all the results of ECT—good, bad, and indifferent—are psychological results. The immense field of the psychological effects of the idea of ECT has been seriously neglected. To discuss this it is not necessary to have given ECT to a thousand patients, or indeed to have given any at all. What we need to do is to pool experiences of the feelings and ideas found during analysis of patients who have had convulsion therapy and of patients who are in touch with fellow patients who have undergone convulsion therapy.

Need for Research

I give two lines of approach. The subject that urgently needs research and discussion is that of the patient's conscious and unconscious reactions to (a) the idea of ECT, etc. (b) the experience of submission to convulsion therapy, and (c) the actual fit. Here are some suggestions.

(a) *Reaction to the Idea of being given a Fit*—I suppose a normal person hates the idea. It must be for this reason that psychiatrists do not have fits given to themselves whenever they feel a bit depressed. Anxious people are likely to be able to become frightened at the idea of the fits in the same way as they can become frightened at the idea of anything. In contrast they may be especially brave in relation to the actual experience. Obsessional patients' difficulties are greatly increased when the idea of convulsion therapy is put before them. The organized defence against spontaneity and uncontrol is liable to be strengthened. Obsessional doubt is liable to find a setting in the problem whether to give or to withhold permission. Guilt will be felt whichever line is taken. In organized paranoia the fits are easily felt to be part of the hostile attack that is expected. In one patient, a girl who had a delusion that someone was trying to destroy her brain this form of therapy was felt to be absolute confirmation of her delusion. In cases with thought transference delusions and the fantasies that so readily get mixed up with theories of electrical phenomena and malicious influence it can well be imagined that electrical shock therapy has a special significance.

(b) *Reaction to the Experience of being given Fits*—In cases with a tendency to conversion hysteria a partial knowledge of brain

functioning is easily used in rationalization of paralyses and paresthesiae following convulsion therapy. Depressive people equate the convulsion with dying, and easily feel absolved by having experienced what it is like to meet death. They hanker after convulsion therapy. In some cases each successive convulsion becomes more dreaded, and the last one is equated with death, and recovery from it gives a new lease of life because of the emotional experience. Suicidal impulses can be met by the convulsion. By this seeming experience of death a suicidal patient can use convulsion therapy as an alternative to suicide. This is comparable to the relief that a suicidal patient can get through a genuine suicidal attempt—one from which the patient recovers through successful intervention.

(c) *Reaction to the Fit Itself*—In what may be called *introversion neurosis* the patient has organized a secret inner world in which relationships are good, and this has been done at the expense of trust in the external world in which are placed the bad relationships. It is probable that in these cases the actual fit is felt as a threat to the artificially good inner-world, and in consequence a rearrangement has to take place with less complete secret hoarding of good relationships within.

This approach is tentative and admittedly incomplete, but I give it to indicate the way the results of shock therapy may be examined as psychological phenomena. It is just here that research is most urgently needed. Curiously enough, it is also just here that there is an unwillingness on the part of practitioners of convulsion therapy to investigate. Much of the objection to convulsion therapy would disappear if the mechanism by which results are obtained were understood. The main trouble is that false theories are built around the assumption that the mechanism by which change is brought about is a physical one, and these theories have already paved the way for the wide employment of leucotomy—and who knows what may follow?

Society's Unconscious Reactions to Insanity

I also want to put forward the idea that these physical therapies express society's unconscious reaction to insanity. This is by far the most difficult thing I have to say. I have reason to believe that the good results that can come from these physical therapies depend on this—that by them expression is given in an acceptable (because hidden) form to the unconscious distress society experiences in face of mental illness. By unconscious I really mean unconscious, and I mean repressed and unavailable to consciousness. Massive guilt feelings and fear and consequent hate are roused in people who are concerned with mentally ill persons, and I think this unconscious hate also underlay the cruelty to mental patients that notoriously coloured the management of the insane up to recent times.

Tail-piece

As a last word I would like to say why I have no hope that these arguments will make any sudden difference to the now established practice of psychiatry. Mental disorder can be maddening to nurse. Abolition of shock therapy to-morrow would place on the doctors and nurses of mental hospitals an emotional burden which they could not suddenly take and there will be those who claim that this alone justifies the method. I see this argument, and respect it. Nevertheless there seems to be a need for someone to register a strong objection to easy and seductive methods which tend to lead away from the difficult path that must be walked by those who try to understand human nature and to eschew magic.

The Psychoanalytic Clinic for Training and Research of the Department of Psychiatry, College of Physicians and Surgeons, Columbia University 630 West 168th Street New York offers a three-year graduate residency training programme in psychoanalytic medicine to qualified physicians. The programme is based on the student's analysis and on hospital and clinic material for psychoanalytic work and includes lectures on Freud's work, psychodynamics, psychosomatics, experimental analysis of animal behaviour, technique, growth and development, comparative analysis of cultures, methodology and theoretical and practical training in psychiatry. Upon fulfilment of the training requirements students will be awarded a certificate of training in psychoanalytic medicine. Those students who in addition undertake satisfactory research and pass a supplementary examination in the related basic sciences may also be awarded the degree of Doctor of Medical Science. Applications for training are accepted throughout the year.

BRITISH ASSOCIATION AT DUNDEE

The first annual meeting of the British Association for the Advancement of Science to be held since the outbreak of war cut short the Dundee meeting in 1939 is to take place again at Dundee, from Aug 27 to Sept 3. Sir Henry Dale the president has announced that in order to emphasize the positive contribution of science to human progress the programme would conform to the general theme of 'Swords into Ploughshares'. His own address under the title 'Science in War and Peace' and the other lectures and papers would be devoted to reviewing the wartime achievements of science and their application to peacetime purposes. Before the war the meeting of the British Association was the outstanding occasion for the publication of scientific achievement. Unlike specialist scientific societies it sought a public platform while still maintaining a high level of presentation and discussion. There have been occasions when important discoveries have been first announced at British Association meetings, though Sir Henry Dale did not know that that was likely to occur on this occasion but war, he said has given an artificial stimulus to scientific development, and the Association has an enhanced function in making people conscious of scientific advance and its possibilities for the community.

Thirteen sections have been arranged. Those of physiology, psychology and anthropology, are to be presided over respectively by Prof Winifred Cullis, Dr S. J. F. Philpott and Prof C. Daryll Forde. In the Section of Physiology there will be discussions on aviation physiology and on climate and health. The Sections of Physiology, Psychology and Education are to combine for a discussion on 'Men and Machines'. Insecticides is the subject of discussion in the Sections of Chemistry, Zoology and Agriculture, and the Sections of Chemistry, Physiology and Botany will unite for a discussion on penicillin and other antibiotics. The new physics will be explored in discussions on the peacetime applications of nuclear fission and on the use of tracer elements stable and radioactive in biology and chemistry. UNESCO is down as a subject for the Section of Education and there is to be a special meeting of all sections for a discussion on 'The Education of the Man of Science'. During the Dundee meeting the Division for the Social and International Relations of Science which arranged a number of important conferences in London during the war, will hold a session on a subject yet to be selected.

A number of scientists have been invited from foreign countries. Three thousand delegates attended the meeting in 1939, and it is hoped that this number will at least be equalled.

SEA AND AIR PORT HEALTH AUTHORITIES ANNUAL MEETING

The Association of Sea and Air Port Health Authorities of the British Isles held its forty-eighth annual meeting at Belfast on May 13, 14 and 15, under the presidency of Councillor S. K. Henry, chairman of the Belfast Port Health Committee. The delegates were welcomed by the Lord Mayor of Belfast, Alderman W. F. Neill.

Presidential Address

Councillor Henry said the association was originally formed in 1898 on the suggestion of Hull and Goole with the support of six other port sanitary authorities. The membership now included medical and lay representatives from all the principal sea and air port health authorities in the British Isles. Among the more important matters considered by the association in the past year had been the improvement of crews accommodation, control of imported foodstuffs, hydrogen cyanide regulations and the effect of the National Health Service Act on the work of port health authorities. The practice of consultation with the Ministries on impending legislation had been continued and Councillor Henry emphasized the importance of uniformity throughout the sea and air ports.

Port Administration in Glasgow

Sir Alexander MacGregor referred to the influence of the association in raising the status of port administration. Discussing the 'convention' diseases, he said that the risk of

spread of plague by shipping had been almost eliminated by the world wide attack on rats in ships, begun after the International Sanitary Convention of Paris (1926). But at Glasgow as at New York, there had been an increase during the war. Vigilance must be maintained, since plague might appear again as it did in 1896 and the following years.

Smallpox had frequently invaded this country in recent years but had never obtained a real foothold. Whether it had died out because of a rapid loss of capacity to infect or because of the precautions taken was an open question. Experience of the Glasgow outbreak of 1942 had led him to discard the one-stroke in favour of the three stroke vaccination, and to pay particular attention to the revaccination of those contacts in whom the first attempt at protection had been unsuccessful.

Recent advances in the construction of crews quarters were worthy of note. A big step forward had been taken by the Board of Trade in its instructions to surveyors in 1937 and 1944. Vessels were being built on the Clyde and elsewhere with high standards of design and equipment for the health and comfort of the crew. Good construction implied good housekeeping on board, in which the co-operation of the seamen was essential. He advocated for officers a short course of instruction in ship hygiene, food, first aid, and the treatment of venereal disease. Seamen of whatever nationality should be assured of prompt and convenient hospital or outdoor treatment at the major ports as part of a joint welfare and medical service.

International Health

Dr Melville Mackenzie outlined the work of the Pan American Sanitary Bureau, of the Office International d'Hygiene Publique, and of the Health Organization of the League of Nations. He described the creation and achievements of UNRRA, many of the functions of which had been taken over by the Interim Commission of the World Health Organization. The World Health Organization had also set up expert commissions on the nomenclature of the causes of morbidity and death, habit forming drugs, malaria, biological standardization, epidemiological work, post-vaccinal encephalitis, the immunity reaction in smallpox, venereal diseases, and other subjects.

Crews' Quarters and Food

Dr T. Lloyd Hughes said that for many years the standard of accommodation in British ships had often been much inferior to that found in vessels of some of the foreign countries, particularly the Scandinavian. Instructions issued by the Board of Trade in 1937 together with those published by the Ministry of War Transport in 1946, insisted upon a higher standard and had resulted in many improvements. Even so, there was need for further legislation. He suggested that the crews quarters should be as good as this allowed for a better lay out than was possible when the quarters were situated forward. Individual cabins were desirable but in any case no more than four members should share a cabin, and there ought to be separate accommodation for each watch. Bunks should be made of polished wood without cracks or crevices, to avoid bug infestation.

Dr Hughes condemned the use of coal stoves as being both dangerous and dirty and recommended hot water radiators. Ventilation of the quarters was important, and forced draught ventilation was the method of choice. The provision of cupboards, wardrobes and comfortable furniture would improve the living conditions of merchant seamen. There should be running hot and cold fresh water for officers and crew alike with ample provision of shower-baths. Laundry facilities and separate mess-rooms with specially appointed stewards were long overdue amenities.

Concluding, Dr Hughes drew attention to the fact that the inspection of ships' provisions was the responsibility of the Ministry of Transport. The services of the trained port health food inspectors had not been utilized. In his opinion this responsibility could, and should, be passed over to the port health authorities.

Sanitary Control of Foreshores

Dr S. Barron described the public health problems met with in the early years of the present century in connexion with the sanitary control of the foreshores of Belfast Lough. The

problems arose from the contamination by sewage of the waters of the Belfast port. In 1908 the Belfast Health Commission reported on the high incidence of typhoid fever which had prevailed for many years, and the nuisance of offensive smells from decomposing seaweed on the foreshores. The growth of the seaweed (*Ulva latissima*) in the polluted water was encouraged by the free ammonia content of the sewage effluent.

The high incidence of typhoid fever was attributed to the consumption of sewage polluted shellfish gathered from the foreshores. It was probable that the sewage derived its specific infection from the large number of carriers. These problems were ultimately solved by the provision of a proper system of sewage disposal.

Health Control at an Air Port

Dr W. G. Swann referred to the fact that the Public Health Aircraft Regulations, 1938, made under the Public Health Act 1936 were not applicable to Northern Ireland. These regulations had been designed to conform with the International Sanitary Convention for Aerial Navigation, 1933. There had since been a further convention, in 1944, and it was likely that the existing regulations would be modified at an early date to conform with the new recommendations.

Dr Swann summarized the methods of sanitary control of infected aircraft and aircraft from infected areas. The procedure included the medical inspection of passengers and crew, isolation of infectious cases, quarantine and surveillance of contacts, and the disinfection and disinfestation of articles and aircraft. He also listed the aerodromes recognized under the International Sanitary Convention.

There had been some changes in procedure in connexion with the arrival of aircraft from yellow fever areas in countries where the conditions might be favourable to its dissemination. These included the compulsory disinfection of the aircraft and for passengers failing the possession of a valid anti-yellow-fever international certificate, isolation in screened quarters over the incubation period. As a safeguard against smallpox the Convention permitted isolation for a period up to fourteen days where the medical officer indicated that there was a grave risk of infection.

In the course of the meeting members were entertained by the City Council of Belfast and by the Government for Northern Ireland, and they also visited many places of interest.

Reports of Societies

HOMOSEXUALITY

A joint meeting of the Medico-Legal Society and the Section of Psychiatry of the Royal Society of Medicine was held on April 8 for a discussion on the social problem of homosexuality. Prof. AUBREY LEWIS presided.

Dr E. A. BENNET said that among homosexuals there was every variety of character. The attitude of homosexuals towards their inversion varied; many of them regretted their exclusion from normal family life. Doctors and lawyers tended to think of homosexuals as unstable, but it was unwise to generalize and it was doubtful whether social instability was commoner among them than among others. The number of persons found guilty of homosexual crime was of course, only a small proportion of the homosexual population. The number of homosexuals in this country was not known. Havelock Ellis had mentioned 2%, similar to the proportion of inverts in other lands, and this would account for nearly a million. A fact-finding investigation was badly needed. The social problem of homosexuality was of such importance that a representative committee should be set up immediately to accumulate information concerning the number of homosexuals, the significance of constitutional and hereditary factors, the effect of environment and the results of psychiatric treatment. Those who had to form programmes of sex education would be helped by such a fact-finding survey. There was no accepted criterion of homosexuality; it had many forms and degrees. Nor was there any acknowledged standard of treatment. In women homosexuality was probably as common as among men, but

it was less prominent, received less attention, and was not affected by the social and legal strictures which compelled discretion in the other sex. He also referred to the loneliness of the homosexual, who was compelled to seek the society of others like himself or to live in emotional isolation.

Moral Indignation

Dr H. MANNHEIM said that society should treat as crime only such behaviour as was distinctly antisocial—that is to say harmful to the community at large. A strong feeling of indignation was not enough to justify judicial action. Many types of behaviour in political, religious, and other spheres aroused public indignation but were not treated as crimes. From Henry VIII until 1763 homosexuality came under ecclesiastical law, and was regarded as identical with heresy, which might explain much of the moral indignation and consequent stigma it occasioned. It had been suggested by medical psychologists that in certain cases a cure could not be effected without an element of public condemnation and repression. There might be cases of that kind, but the speaker doubted whether successful treatment was in itself a justification for a sentence of imprisonment, cure might be bought at too high a price. His conclusion was that homosexual activities should be punished as crimes only if they tended to corrupt young persons or were carried out for gain—as, for example, male prostitution. In his view the criminal law should not be extended beyond that. He also discussed the effect of prison or institutional life upon homosexual tendencies. It was a question whether it might not be possible to reduce the rigidity of sex segregation among young people in institutions and so reduce the incidence of homosexuality. Further research was needed, and the experience of other countries should be studied.

Classification

Mr D. STANLEY-JONES spoke of the need for revising the classification of the condition. Of the congenital or intrinsic type of homosexuality little was known, although certain theories had been advanced in tentative explanation. Physiological homosexuality indicated an individual predisposition, and was rarely amenable to successful psychological treatment. Continental workers had shifted from the view that homosexuality was a process towards degeneration, many now thought it to be a variation, a simple anomaly. The question of moral and legal responsibility could not be evaded by simple disclaimer. A distinction might be drawn between uncontrollable impulses and impulses which could be held in check. The only plea which was recognized as giving sanctuary was insanity and this could not be applied to the homosexual. But the problem of reconciling the terms of the law with the present rights of the abnormal but not vicious individual was not so difficult as it might appear. Leaving aside the private relations of homosexuals one with another, the only offence, other than blatant importuning, which could come within the law was the seduction of young persons, and this particular type of offence was rarely committed by the natural invert, whose affections almost invariably went out to an adult of his own sex. A fully developed homosexual who had reached psychological maturity would no more think of seducing a small boy than would a normal heterosexual. The seduction of children bore no direct relation to homosexuality as such, but was evidence of a departure from normality or a failure to reach maturity. The homosexual had a just claim to be treated in this respect on a parity with the heterosexual.

Acquired, functional, or psychological homosexuality, as it was variously described, fell into a different category. By far the greater number of wrongdoers were not natural inverts but immature heterosexuals or bisexuals, and the reasonable claim of bona-fide inverts to a just recognition of their rights as a social minority was prejudiced by the actions of others. In contradistinction to the intrinsic type, in the acquired type of homosexual psychotherapeutic measures usually met with success, leading often to complete cure.

Female Homosexuals

Dr W. NORWOOD EAST, president of the Medico-Legal Society, said that it was misleading to consider homosexuality as being similar in the two sexes. He could not

recall any woman homosexual who had committed murder or had been murdered because she was homosexual but cases of that kind had occurred among men. It was a further fallacy to suggest that because homosexuality in women was not penalized homosexual offences by men should escape penalty. Women lawyers and doctors coming in contact with female homosexuality were somewhat alarmed at its extent. In some cases there appeared to be a specific inherited tendency. It had been found in males that the most important environmental factor was early seduction by homosexual men, other environmental factors were difficulties in ordinary sexual life, venereal disease and severe emotional disturbance. There was no reason to believe that the homosexual urge was stronger than the normal sexual urge. Many confirmed homosexuals were perfectly potent in heterosexual relations.

The young male prostitute as a rule was not homosexual. He wanted an exciting life or money without the trouble of earning it. The young adolescent male gave up prostitution more easily than the young adolescent female, not because he was more moral, but because the female carried her fantasy further on into life. If the homosexual could be prevented from menacing public security and be relieved by medical or social aid he need not be sent to prison, but there were cases in which such a course was too risky and in these imprisonment might be advantageous. Favourable conditions were youth, a good personality, a first offence, no homosexual habit, a genuine anxiety to overcome the tendency co-operation with the psychiatrist, and good health. The time was far distant when penalties for homosexual offences could be abolished and if the homosexual debauched a young child, or offended against public decency, or carried out his activities for gain or accosted other persons, it was right that he should be penalized.

Prison Experience

Dr J C MACKWOOD said that some individuals who had broken off treatment outside prison had done well during a subsequent prison experience. The value of psychotherapy in prison was quite definite. Much of the machinery of prison life was out of date, but during the four years for which he had been doing this work he had seen a number of improvements take place inside prison. One of the greatest handicaps was lack of space in prison for the expression of healthy energy; another was the long hours of isolation for individuals whose main trouble was that they were already isolated personalities. Signs of improvement were alteration in individual bearing and demeanour, acceptance of ordinary prison regime, improvement in relationships between individuals and great liberation of energy. Follow up after prison was difficult, the more so because the prisoner wanted his prison life to be a closed book. Dr ALBERTINE WINNER said that it should be realized that the average lesbian did not regard her condition as abnormal at all or different from that of other people, only in a small proportion of cases was she promiscuous. Dr STAFFORD CLARKE said that the question of punishment depended on whether homosexual activity was criminal in the sense that it interfered with other individuals.

Dr CLIFFORD ALLEN said that the correct view to take of homosexuality was that it shaded off into heterosexuality, there was no clear cut division. In his experience homosexuality was mixed up with other perversions. Prison was the worst possible place in which to treat homosexuality. Segregation from the opposite sex encouraged the condition. Psychotherapy would produce good results in a patient who wanted to be cured. In Germany homosexuals were castrated. In America leptazol was used as a form of therapy; he had also seen a number of cases which had received electrical treatment, but they had been failures.

RHEUMATIC DISEASES

SAMUEL HYDE MEMORIAL LECTURE

The Samuel Hyde Memorial Lecture was delivered to the Section of Physical Medicine of the Royal Society of Medicine on April 9 by Prof HENRY COHEN.

Prof Cohen began by referring to recent surveys which showed that one-sixth of the total industrial invalidism in

England and Wales was ascribed to rheumatic diseases. From a United States survey it appeared that over 5% of the total population suffered from some form of rheumatism. These surveys furnished only a general impression of the prevalence of the disease but all of them suggested its great extent. In rheumatic diseases the greatest care was needed not only in interpreting the results but in planning large scale surveys and the closest co-operation between statistician and clinician was required.

Nomenclature

The question of nomenclature also must be clarified. "Rheumatism" and "gout" had sufficiently strong historical roots to survive outmoded pathology, but many names given to the group of rheumatic diseases failed to describe them properly. He suggested that the names should be associated with the anatomical sites of the disease, even though this might bring in conditions not usually associated with rheumatism. Rheumatic fever had a distinctive feature in cardiac involvement, even though the aetiology was obscure, but such terms as fibrositis, neuritis, strains, and adhesions were often the refuge of the diagnostically destitute.

The gap between the incidence of rheumatic diseases and facilities for treatment Prof Cohen continued would take years to bridge. The reason for the neglect of rheumatic diseases in the past had been, in the first place, that rheumatism was not a fatal disease. It ranked fourteenth in the causes of death, and it lacked the dramatic appeal of cancer, tuberculosis, and heart disease—an appeal which attracted the philanthropic. Yet the Government could view with unconcern one of the major causes of industrial invalidism. Again, the treatment was less spectacular and less overtly rewarding than in other diseases, even the best results often left the patients with fundamental disabilities and deformities. There had also been a lack of co-operation between physicians, orthopaedic surgeons, physiotherapists and others whose team work was necessary if maximum recovery was to be secured. Neglect by the competent had left the field too widely open to the incompetent. Sufferers had succumbed to the blandishments of the unorthodox, and the law had permitted the sale of nostrums, which maintained their reputation because the natural remissions obtaining in most rheumatic states were attributed to their use.

In the students' curriculum no adequate place had been given to the study of rheumatic disorders. The student might be able to diagnose many advanced types correctly, but his knowledge of early cases and of the various forms of arthritis, the possibilities of treatment, and the value of orthopaedic measures of occupational therapy, and of rehabilitation was apt to be far from adequate.

Four Directions for Action

These considerations called for (1) research, (2) planning of a comprehensive service, (3) greater interest on the part of the medical student and practitioner in the scope and diagnosis of rheumatic diseases and (4) opportunities for those who wish to specialize in this field. Research closely associated with medical schools and hospitals should cover all aspects of rheumatism—in the laboratory, the field, and the clinic. The incidence of rheumatism in miners, dockers, and postmen, for example, should be studied. In the case of the miner, what were the effects of humidity in mines, of posture of deprivation of sunlight, and of faulty housing? The influence of hours of work, of psychological factors, of rest periods in relation to prophylaxis should be investigated. Many fundamental problems needed elucidation, and new problems continually presented themselves with discoveries in other fields. More basic investigation into the mode of action and effects of the methods employed in physical medicine was called for.

Hospital beds in which patients could remain if need be for months and clinics where minor forms of rheumatism could be treated and ex-hospital patients continue to receive attention, were needed. Diagnostic and research centres should be set up in the teaching and the larger general hospitals each of them linked with out-patient clinics and providing short stay beds for investigation.

The challenge Prof Cohen concluded lay in the incidence of rheumatic disease, the present inadequate understanding of

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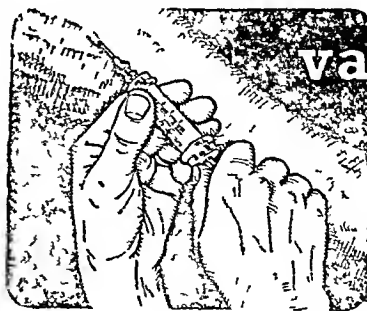
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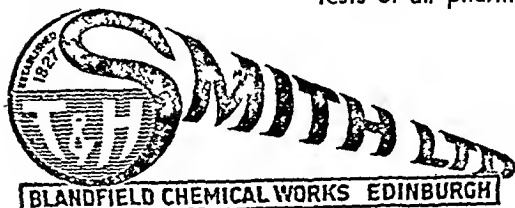


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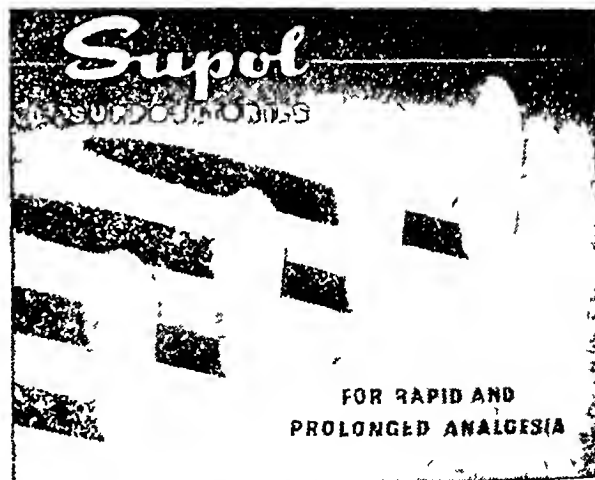
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it and the basic neglect. The opportunity which this challenge presented came with the introduction of the National Health Service, which promised to every citizen the treatment he needed, but the opportunity was also a heavy responsibility for medicine. Even with present knowledge, if there were sufficient hospital beds and adequate treatment facilities the invalidism resulting from rheumatism could be greatly lessened.

Correspondence

International System of Weights and Measures

SIR—In his letter (May 3, p. 613) Dr D. A. K. Black is presumably referring to the method of recording volume in results obtained from the haemocytometer. As the haemocytometer is calibrated in linear measurements the volume is derived from these measurements and should be expressed in terms of the cube of the unit of linear measure—in this case the cubic millimetre. I pointed out in my article that the cube of a linear measure is a valid mode of expressing volume when the volume has been determined from linear measurements.

Mr H. V. Stopes-Roe in his letter (p. 613) is correct in expressing volume as a cube of linear measurement if the volume has been actually determined from linear measurements, but it should be made quite clear that such is the case—that, for instance, the cubic centimetre which he uses is actually a cube centimetre and is not used as an alternative to the millilitre. Although the expression of volume as a cube of linear measure is a valid procedure when it has been determined from linear measurements it is not nearly so simple to determine the volume of a container from linear measurements as it is to determine the weight of water required to fill it. Consequently units of volume came into existence defined in terms of the space occupied by a definite mass of water under specified conditions. The litre is the space occupied by a kilogram of water at its maximum density. This definition has the additional advantage that the kilogram, litre and millilitre are interrelated whereas the cubic decimetre and cubic centimetre are not related to the kilogram.

There is some obscurity in the following sentences from Mr Stopes-Roe's letter: "It is a purely legal form (like the gallon) that the millilitre got started—scientists writing scientific articles should refer to the cm³ unless they are actually and significantly using the millilitre. If they be writing legal reports they should use throughout whatever odd units—yard, drachm, or litre—that may be legally required." If I understand Mr Stopes-Roe correctly I agree that scientists should use the term "millilitre" when they are "actually and significantly" using the millilitre, on the other hand, they should use the term "cubic centimetre" only when they mean volume derived from linear measurement. Both these modes of measurement have scientific validity when used strictly in accordance with their definitions; they are also both legal measures when used in their proper meaning.

As regards publication surely the description of units of measurement should depend upon the units actually used and not upon whether the publication wishes to be scientific or legal.—I am, etc.

London W. 14

J. M. HAMILL

Tuberculous Pericarditis

SIR—We read with interest Dr Harry Kopelman's article on tuberculous pericarditis (April 26, p. 559). Of over 1,400 consecutive cases admitted to the pleural effusion unit of this hospital since 1942 six were complicated by pericarditis—an incidence of less than 0.5%. The diagnosis of tuberculosis was proved bacteriologically in three cases, and was made on strong presumptive clinical grounds in the remaining three. Three patients were males and three females. There were three deaths and two recoveries; one patient still being in the acute stage of the disease. The following is a brief summary of the case histories.

Case 1—A man aged 24 years, of Irish descent, was transferred to this hospital convalescent from a left pleural effusion and suffer-

ing from a serous pericarditis, in May, 1942. Tubercle bacilli were grown from the pericardial fluid. He made an uninterrupted recovery, and was discharged in October of the same year. Two years later he was known to be alive and well.

Case 2—A man aged 22 years was transferred to this hospital from Bath in April, 1944, suffering a right pleural effusion complicated by a gross pericardial effusion. He had signs and symptoms of severe circulatory embarrassment. He was tapped repeatedly, with air replacement. Viable tubercle bacilli were repeatedly obtained from the pericardial fluid in spite of intrapericardial injections of "promamide." He was transferred to a sanatorium in August, 1944, and died there two months later.

Case 3—A man aged 22 years, of Italian descent, was transferred to this hospital in June, 1943, suffering from a sterile lymphocytic pleural effusion on the right side. He relapsed in January, 1944, developing a pericarditis with loud friction sounds and little alteration of the cardiac shadow. He made an uneventful recovery and was discharged in June, 1944. Six months later he was re-examined, and, apart from some slight pleural thickening on the right side, was found to be well.

Case 4—A girl aged 16 years was transferred to this hospital in April, 1943, with a sterile lymphocytic effusion on the right side. There was a strong family history of tuberculosis. Her effusion cleared, but in July, 1943, she developed an acute pericarditis with effusion. Paracentesis was twice performed to relieve distress, pale greenish fluid being obtained which was sterile on culture. She deteriorated rapidly and died on July 31, 1943. Permission for post mortem examination was not granted.

Case 5—A married woman aged 23 years developed a pleural effusion on the left side following the birth of her first baby in February, 1944. She was transferred here in March, 1944. On admission she was still febrile, and was acutely ill. In the middle of April she developed an acute pericardial effusion. A paracentesis showed a serous fluid, from which tubercle bacilli were grown. She deteriorated rapidly and died on May 12, 1944. Permission for necropsy was not granted.

Case 6—An unmarried woman of 25 years was admitted to this hospital in February, 1947, suffering from a right pleural effusion. She was still pyrexial on admission. Eight weeks after her admission she developed precordial pain and a sensation of constriction in the chest. A loud and definite pericardial friction rub then appeared and has persisted since. There is no evidence of a pericardial effusion of a significant size. She is still in the acute stage of the disease.

Tuberculous pericarditis is thus seen to be an uncommon but not rare complication of tuberculous pleural effusion, and to be a disease with a variable course and prognosis, though the latter is grave.

We would like to thank Dr Clifford Ellingworth, medical superintendent of Queen Mary's Hospital, Sidcup, for permission to publish these case reports.

—We are, etc.,

Queen Mary's Hospital
Sidcup, Kent

E. MONTUSCHI
T. L. REEVES

Tuberculosis and the NHS Act

SIR—I much appreciate the views expressed by Dr G. Lissant Cox (April 26, p. 577) regarding tuberculosis and the NHS Act. These are the opinions of a distinguished tuberculosis worker "in the field" who has recently earned a well deserved retirement.

As one who has had an experience of over thirty years in this centre, directing measures for the control and elimination of tuberculosis and who for the six war years assisted a powerful medical officer of health in his department, I foresee the grave danger of a cleavage between the hospital service, particularly as regards tuberculosis and mental welfare, and general infectious diseases, and the local authority—the domiciliary service. This cleavage might be obviated by building three bridges—at the centre, at the region, and at the hospital group levels.

At the centre by appointing three committees: (a) For tuberculosis, (b) for mental health, and (c) for infectious diseases. Similar committees at the regional and hospital group levels. Other committees to be formed at the three levels for maternity and child welfare and any other services requiring unification for their successful operation. Each committee to be composed of persons specially interested in that particular subject and guided and advised by "specialists" in that particular subject.

The health visitors of the local authority to act as investigators in the homes along with the sanitary inspectors, and specialized health visitors to be attached to the various medical nursing and clerical teams operating at the hospital group and local authority levels.

Taking the tuberculosis service as an example. The primary notification of tuberculosis would be visited by the health visitor who would report on the housing conditions and general sociological circumstances. The primary notification would by law be sent to the local medical officer of health as chief epidemiologist who would delegate the subsequent measures to the senior tuberculosis officer of the hospital team, the subsequent visits to be carried out by the 'specialized' health visitors who attend the various clinics and are kept informed of everything affecting the patient and his family, the senior medical officer of the team to work in close harmony with the medical officer of health, particularly as regards housing and other necessary conditions. So far as after care is concerned this should be in the hands of the committee at the hospital group-local authority level and advised not only by the senior medical officer but also by the medical officer of health.

The framework could be extended to meet the needs of all other services, but modified according to the special needs of this service. Once the framework is accepted, the details can easily be filled in provided there is good will and a wide understanding—I am, etc.,

Bradford

HAROLD VALLOW

SIR—There are two facts apposite to the impending changes in the tuberculosis service which have so far received scant recognition. The first is that the relationship of the patient to his domestic, social, and economic background, which is now receiving so much attention and which to general medicine is a relatively new conception, has in fact been the everyday concern of the tuberculosis officer for many years. Secondly, the anti tuberculosis organization as it has developed since 1914 has given us the nearest approach we have known to a public medical service providing hospital, clinic, and domiciliary treatment at a high clinical level for sick persons in large numbers. Despite certain inherent weaknesses and inequalities, and despite in some quarters official apathy and parsimony it has emerged with a record of which it may well be proud.

For these two reasons the views of tuberculosis workers claim the special attention of those who will formulate the new regional schemes. It is to be hoped that the well timed suggestions put forward by Dr Lissant Cox (April 26, p 577) will stimulate a lively discussion prior to the Minister of Health's address in July. Dr Lissant Cox rightly stresses the need for medical teamwork. This can only be obtained where all concerned are responsible to the same employer. If only one person—for instance the health visitor—owes allegiance to a different authority from that of the tuberculosis officer, almoner and clerk there is a sense of divided loyalties and the team spirit suffers accordingly.

Each tuberculosis area within a region will require a head quarters with office accommodation. It will be years before new establishments are available, and until then I suggest that in some areas the smaller institutions could with minor alterations or extensions, be adapted for this purpose. Beds would continue to be available as before and in those institutions where x-ray facilities are already provided out patient clinics could be held as in country districts, this would be an added convenience for patients. In this way the institution would become a strongly defined centre clinical and administrative for the area—I am, etc.

Chichester

J E WALLACE

Sanitary Control of Ice-cream

SIR—May I draw your attention to an inaccuracy in the epidemiological note (April 26, p 583) on the above subject? The maintenance of a sufficiently low temperature after freezing and until sale is required in the case of a cold mix product as in the case of a pasteurized mix. Circular 69/47, which was issued with the regulations points out in respect of the complete cold mix that after conversion of the reconstituted product into ice cream Regulation 4 shall apply.

This regulation forbids the sale or offer for sale unless of two conditions is met. One requiring further heat treatment should the temperature of the ice cream be found to be above 28 °F (−2.2 °C) cannot obviously apply to the complete cold mix product, the other stipulates that ice cream shall be sold unless it has been kept at a temperature not exceeding 28 °F since it was frozen.

I should be grateful if you would draw the attention of your readers to this rather important aspect of ice cream control. I am, etc.,

Birmingham

W R MARTINE

Massive Penicillin Doses

SIR—Dr D P Wheatley (April 19 p 530) has shown that the daily parenteral administration of penicillin can accelerate the resolution of localized septic foci if the doses are large enough. Thus, for the treatment of what he calls 'several cases of minor conditions commonly met with in general practice' he used 4,550,000 units of penicillin. The total period of convalescence from the commencement of treatment was at least 30 days.

From the few cases that I have treated I have been under the impression that a more rapid cure can be achieved by the combined use of local penicillin and free surgical drainage. The solution recommended for local use by Roxburgh contains between 500 and 1,000 units per ml of distilled water and gives satisfactory results. In one case a pyogenic abscess of the days' duration was opened by a 1-in (2.54 cm) incision, as a cavity 1/2 in (1.25 cm) in diameter was found. A drain was inserted and penicillin was instilled. Twelve hours later the discharge was slight, and the drain was removed. On the fourth day, after daily instillations of the penicillin solution, the cavity was obliterated and the skin incision was clean and dry and healing rapidly. (Total amount of penicillin used was 4,000 units.)

If as Dr Wheatley has noted, the systemic treatment with penicillin is commenced early enough, the inflammation will abort. But, in cases where there is some delay in starting treatment, the generalized symptoms of toxæmia and the signs of inflammation will subside leaving a localized collection of pus which requires surgical treatment. It is suggested that once it is decided that the inflammation is progressing to abscess formation but before localization is complete, the area should be incised to relieve the local tension and pain. The level of penicillin in the blood stream will prevent a spread of infection through the channels opened up by the incision. Then after the systemic penicillin may be discontinued as soon as the general condition of the patient merits it—usually three injections of 30,000 units each is the total amount of penicillin required. The local treatment is continued daily until the purulent discharge ceases, when the further treatment is the same as for a clean surgical wound. Such a procedure however, could only be justified if the organism is sensitive to penicillin. This can be assessed by the progressive localization of the inflammation under the systemic treatment.

In this way greater economy in the use of penicillin can be achieved, the discomfort of repeated intramuscular injection is reduced, and the patient's convalescence is shortened. In addition it is suggested that a stronger scar and a better cosmetic result is achieved because the tension of the abscess is relieved before the overlying skin has become stretched and atrophic—I am, etc.,

Ayr

C O KENNEDY

REFERENCE

Penicillin Its Practical Application (Dermatological Section). Edited by S Alexander Fleming. London: Butterworth and Co. 1946.

Rubella in Pregnancy and Congenital Defects

SIR—Because of the interest taken in this association this single case may be worth publishing. It was the mother's first pregnancy and resulted in a normal full term delivery, birth weight, 5 lb 9 oz (2.5 kg). The boy was born on Jan 14 1947 and was seen for the first time a month later at an infant welfare centre in South London, when his mother was having considerable difficulty in getting him to suck satisfactorily. He was found to have bilateral cataracts and a loud systolic murmur heard over the whole left chest, he was never cyanosed. He

reacts sluggishly and appears to be deaf. He has progressed slowly and is now, at the end of April, 8 lb 10 oz (3.88 kg).

The father is 29 and healthy. His sister had rheumatic carditis at the age of 14 and his father had a "displaced heart," which never made him ill. The mother is 22 and robust. On inquiring about her health during the pregnancy she said that she was very well except that she "caught German measles from her sister during the first month." The attack had apparently been mild and had not made her feel at all unwell. The Wassermann reaction, taken at the antenatal clinic, was negative. Her sister and the other members of her family, father and mother, are all well—I am, etc.,

London SE.21

G. D. PIRRIE

Treatment of Post-operative Pulmonary Atelectasis

SIR—In an effort to prove that his pen is mightier than the spear, Mr R. C. Brock in his letter (April 19, p. 543), out-Quixotes Quixote by tilting at illusory windmills. Indeed, all must agree with practically everything he says, but the tone of his letter requires that I should explain myself in rather more detail.

In saying that bronchoscopic aspiration is the ideal method of treating post-operative atelectasis I of course meant that it was the most effective (as Mr Brock himself admits), not that it had no imperfections, nor must he condemn me as ignorant of the well-known benefits of prophylaxis and of conservative methods of treatment simply because, in describing one particular manoeuvre (this word suggests less of charlatanism than "trick") these benefits were not stressed, nor, of course, is it material to that manoeuvre whether water be introduced into the trachea by injection through the windpipe or by instillation through the glottis, so long as coughing results. Incidentally, injection is not so unpleasant as it sounds, and there is little to choose between the two methods.

On all the above points Mr Brock and I are in agreement. Where we really differ is on his statement that the objections to bronchoscopic aspiration are, first, that it encourages laziness, which might more reasonably be used as an argument against penicillin or the sulphonamides; and, secondly, that bronchoscopy is dangerous in unskilled hands. This latter may be true, but it is no more an argument against bronchoscopy than it is against appendicectomy; on the contrary, it is an extremely good reason why anaesthetists should become, as I said in my last letter, experts in bronchoscopic aspiration and in thoracic disease—I am, etc.,

Newcastle-upon-Tyne

M. H. ARMSTRONG DAVISON

Treatment of Ingrowing Toenail

SIR—I was very interested to read the remarks by Dr S. J. D. Esser (Jan 4, p. 33) on the above subject, and entirely agree with him. I have performed a similar operation on over fifty patients, only one of which was temporarily unsatisfactory. The patient, a very conscientious engineer officer, would not remain in bed but got about immediately, with the result that convalescence was delayed. Some of my more athletic patients played football a month after the operation with no ill effects.

I first came across a description of the operation in question some years ago in a French medical journal; the writer was a French surgeon. Unfortunately at this date I cannot recall his name. In his description a diamond-shaped portion of the soft tissue is removed, the knife cutting down to the bone, three catgut sutures are inserted—the end ones being tied first, the middle one last—and there should be little or no tension. Performed in this way the final result is a linear scar, the overlying soft tissues being drawn well away from the lateral margin of the nail. He emphasized the importance of a thorough preparation of the foot prior to operation and insisted on complete rest afterwards until removal of the sutures. This, although rather irksome to the patient, is essential if a good result is to be obtained.

Following these instructions I have never had to perform a second operation for the relief of this condition. As Dr Esser says, there is no doubt about the operation being simple, logical and effective, and I congratulate him on bringing it to the notice of the profession—I am, etc.,

Reading, August 1946

W. E. ROBERTS
Surgeon-Commander R.A.N. (Retd.)

Safety in Electric Convulsion Therapy

SIR—I have read the letter by Dr R. A. Sandison (April 26, p. 579), and I am very gratified by such common-sense thought. His experience is entirely in accord with my own over seven years' experience of electric convulsion therapy. I have treated a large number of cases both as in- and out-patients by this method in the last two years without traumatic occurrence, and between 1940 and 1945 had only three cases which showed evidence of compression of one vertebra after x-ray examination. I came to the conclusion that this compression was more a radiological disease than a pathological one, and I have not seen any disability resulting from it.

I always use a firm surface with a pillow placed under the thoracic spine and no other mechanical restraint. It is, therefore, in my opinion quite unnecessary to use curare. As far as lessening the apprehension by means of thiopentone, as Dr Sandison says, patients are not afraid of the treatment but sometimes are upset by the amnesia and confusion, which as a rule are only transient, and again are very readily relieved by a chat with the patient following treatment, or by warning the patient before that such symptoms may arise for a short time. No advantage, therefore, in my opinion can be obtained by the use of curare or thiopentone apart from the very dangerous results which may follow its use.

Again let me congratulate Dr Sandison—I am, etc.,

Bromsgrove

J. P. MCGUINNESS

The Shortage of Nurses

SIR—The purpose of this letter is twofold: first, to bring to the notice of the medical profession a very real danger to the future supply of nurses; and, secondly, to ask whether the theoretical training of the modern nurse has not reached the stage when it is endangering the practice of nursing.

It seems to me that the following decision of the General Nursing Council has not received sufficient attention in the medical press—namely that as from May 31, 1937, no hospital with less than an average of 100 occupied beds per day will be recognized as a complete training school. By this decision the General Nursing Council would appear to be following the present-day trend of the pursuit of ideologies without regard to the practical issues involved. The law of economics is one of demand and supply; if the supply is inadequate and further demands are put upon it the result must be chaos.

The smaller hospitals throughout this country have for many years supplied a large number of trained nurses. They have instructed and individually spoon-fed girls who, from lack of primary education, would have failed to stay the course in the larger hospitals and have turned them into reliable nurses. In the future these smaller hospitals can never be staffed by senior nurses, and they will have great difficulty in attracting junior nurses who will prefer to enter the complete training schools.

It is generally acknowledged that the standard of education of the present-day nursing recruit is not as high as it was ten years ago. Yet with insufficient grounding the nurse of to-day is expected to have a knowledge of medicine, surgery, gynaecology, and many other subsidiary subjects that would not disgrace the average medical student. Of what practical use is the nurse full of theory who cannot make her patient comfortable, and, who, for example, though she can quote correctly the precise figures of the normal blood urea, yet is unable to see that her patient is in the early stages of renal failure by his drowsiness, his breath, his tongue, and his diminished output of urine? The nurse should have sufficient textbook knowledge to enable her to take an intelligent interest in her work. She should be trained not to the theory of medicine but to the art of nursing; the class room can never replace the ward. In my opinion it will be cold comfort for the patient when a graduate nurse does his dressing, a student nurse gives him an enema, an assistant nurse washes him, and an orderly looks after his meals with a complete change of personnel for every eight-hour shift. Not one of them will look upon him as her individual responsibility, and the faith of the patient will be correspondingly lessened.

It is admitted that the smaller hospital is no longer an economic unit, and that the larger one of 400 to 500 beds is the hospital of the future. At the present rate of building it may well be twenty years before the latter comes into existence.

With the new Health Act the demand for nurses is going to increase. Rightly the General Nursing Council has the ear of the Government. Does a similar liaison exist between the General Nursing Council and the medical staffs of hospitals who are interested in the supply of nurses—through for example the British Hospitals Association? Is this the opportune moment for the General Nursing Council to enforce its decision?—I am, etc.,

Ashford Kent

JOHN C HODGSON

Cement Dust

SIR—Under the heading "Any Questions?" (April 12 p 515) your correspondent in reply to an inquiry about cement dust being injurious to health or not, states that research into the matter has revealed no gross lesion of the lung tissues from the prolonged inhalation of cement dust among those engaged in its production. He says, however that it may cause irritation of the conjunctiva, skin, the nasal and upper air passages the latter including I suppose, the trachea and large bronchi, presumably resulting in conjunctivitis, dermatitis nasopharyngeal catarrh tracheitis and bronchial catarrh. Personally I have no doubt about its being able to give rise to those complaints. Such being the case one must conclude that, although not seriously injurious to health it does not contribute to the maintenance of health to the extent one would like to enjoy it if the air one is forced to breathe night and day were free of cement dust pollution.

It is a well known fact that in Germany no dust comes out of the factory chimneys. Obviously it is because methods of preventing the emission of dust are made use of. Could not such measures be employed in England for the same purpose, involving as they might highly technical and engineering questions? It is only a matter of expense and of enlisting the services of people who are capable of solving in a practical manner those questions, as it is done in Germany.

Your correspondent obviously does not have to live in districts where air pollution by cement dust prevails. Even if he happened to reside in these districts and were content to make the best of things in the belief that his health would not suffer seriously I feel sure he would very soon realize the very grievous nuisance a cement-laden air can be and would gladly join in the request that it may be removed.

The Minister of Health in reply to a letter of mine, once said that cement dust was not *seriously* injurious to health. Nothing that can be prevented should be allowed to exist even if its effects on health are comparatively slight. If on that account the matter does not come within the purview of the Ministry of Health it is certainly of such a nature as to call for intervention by the Ministry of Nuisances if such a Department exists in England, as it apparently does in Germany.—I am, etc.,

Greenhithe Kent

D W STANDLEY

Child Guidance

SIR,—It is interesting to note that Drs J A McCluskie (April 12, p 508) and S Sharman (April 26, p 580) both agree as to the desirability of the psychiatrist to a child guidance clinic having previous experience in general practice. The authorities seeking such psychiatrists however, almost without exception demand the D P M, or equivalent qualification which to all intents and purposes means experience of work in a mental hospital.

The latter experience is I should have thought almost totally irrelevant to child guidance work, since, as Dr McCluskie suggests the large majority of cases coming before a child psychiatrist do not involve any diagnosis or treatment of *mental disease*. They do however always present psychological problems—social educational and personal. This is an entirely different matter and demands not experience in the diagnosis and treatment of psychosis but profound knowledge of the dynamics of emotional development from infancy onwards and of the forces which may damage or arrest it and ability to apply this knowledge sympathetically and realistically.

It is the last word which points to the need for experience in general practice an experience unique in giving the doctor entrance to the homes in which children are born and grow up. The psychiatric social worker has this entrance but only in connexion with the immediate child guidance problem, and valuable as are her 'social histories', they will be responded

to far more usefully by the man or woman who is familiar with the types of home and situation presented than they can be by a specialist whose experience has been gained in institutions and/or consulting room—I am, etc.,

Peppard Oxon

LAURA HUTTON

Tobacco

SIR—If the increased cost of tobacco were really to result in a marked reduction in consumption over a number of years then the question whether we are really a nation of oral eroticists would be well on the way to a solution—or would it? The dentists don't seem to have any vital information to give us about the nation's teeth after 7½ years of enforced reduction in the consumption of sweets and sugar.

Of course there is more to smoking than just sucking. Perhaps the doing without might result in an increased national intelligence instead of the seemingly inescapable decline which may or may not have had some connexion with smoking. Or will some other mild vice happen along to take the place of tobacco? It is interesting to speculate what this might be save the obvious vices of sweet-sucking and tipping, both of which are at present out of the question. Perhaps potency will be stimulated and the gloomy portents of a shrinking population refuted?

Again—always provided there is a real reduction, and spread over a long enough time, which I doubt—apart from minor physical changes such as increased appetite with little to appease it and slight improvement in vision and wind my own view is that such a real abstinence with nothing to take its place would result in a very definite restlessness, increased energy, particularly mental energy intolerance (inability to bear fools gladly), and a dangerous boredom. How I wish it would happen!—I am, etc.,

Thame Oxon

E GRANGER

SIR—We pay lip service to preventive medicine. Vast sums of money are to be poured out on the altar of national health yet all we can do about the tobacco tax is to crave "relief" for invalids, pensioners, etc.

Look again, Sir, with open eyes at the grown man still sucking his pipe, at the yellow-fingered female inhaling between her paroxysms of cough great gouts of acrid smoke into the ramifications of her bronchial tree, peer through the billowing smoke of the theatre auditorium at the serried ranks of smouldering addicts squashing their stubs into carpet or tray fiddling with lighters, probing their pipes, and cough coughing. And then maintain if you can, that the tobacco habit as practised to day is anything better than a melancholy commentary on *Homo sapiens*—I am, etc.,

Uckfield Sussex

W R E HARRISON

Occupied Holland

SIR—The final paragraph of the article on occupied Holland by Dr Henriette A Lohr (April 19 p 540) is perhaps worthy of special consideration. Dr Lohr writes "We have learned some things during this hunger period. Even those who didn't get oedema have experienced a curious change in their outlook and behaviour which varied from complacency and apathy to irritability. Formerly we may have scoffed at the poor for not being able to grasp the many opportunities which life offers to better their conditions. We never realized the fundamental significance of food."

It has been observed in a number of experiments that shortage of a variety of food factors may give rise to subclinical deficiency states marked only by lassitude or irritability. Another mental effect of prolonged rationing may perhaps be illustrated by an example. In the Western Desert during the war water was often very strictly rationed and it was a common experience for men who had been some time in the desert to feel when they came out a strong inhibition against the free use of water. This attitude might last many months, even when water was unlimited. In this country with food short, the prolonged strain of war and need for self-control so that each might have his share have I think tended to produce an almost unconscious inhibition. A subclinical state of undernutrition through rationing may be widespread and marked only by

apathy or irritation. In such a state we scarcely realize what we need nor fully appreciate what we miss, a condition which is not conducive to the great effort required for national recovery.

MARTIN HERFORD

London W 1

Reshaping the Curriculum

SIR—I read with keen interest the special article and annotation on the subject of the curriculum (May 3, pp 606 and 608) and would like to make a few observations.

Might not a course of elementary pathology be given to all students in the London hospitals prior to their entry into the wards as is done at the older universities? To arrive in the wards with a rudimentary knowledge of disease processes must be very advantageous. Would it not be wiser to arrange for pharmacology to be taught alongside medicine, as it is essentially one of the clinician's handmaids? It does seem that to observe the effects of, e.g., adrenaline or digitalis on a cat in the preclinical sphere is rather to put the cart before the horse. Is it not yet time that dietetics had its rightful place in the academic side of medicine? Few students, one feels, leave hospital with a sound knowledge of dietetic requirements. I suggest that the official hospital dietitians be enlisted to give a simple course of instruction on food values and their subsequent clinical implications. Most patients will usually, somewhat nervously, ask their medical advisers, "Doctor, what can I eat?" In these austerity days of food rations the question has about it an added note of urgency.

Further, medicine as one of the three great learned professions should be expounded from the historical standpoint. If clergymen are required to study church history, and lawyers pursue courses in legal history, why not courses in the history of medicine? How many doctors know anything of the ancient origins and thrilling developments of their distinguished art? How many students could say who were Scarpa, Vesalius, Galen, or in more recent centuries Pott, Abernethy, Paget, and even Harvey and the Hunters? Singer's *Short History of Medicine* is a fascinating volume.

Finally, could not something be done to standardize the finals as there is scarcely a month in the year when some examining body is not conducting one of its finals? One feels that there is a good deal of latent friction existing between students taking Oxford and Cambridge degrees, London degrees, and the diplomas of the Royal Colleges and Apothecaries. This straggling of the finals all over the year appears to be very disturbing from the point of view of didactic continuity. Could there not be one final examination, e.g., an M.B., B.S. (England) conducted both in London and the provinces and held twice or at most three times a year? It would be worth giving such an academic experiment a trial—I am, etc.,

Barnstead Surrey

J B GURNEY SMITH

Medical Exchange

SIR—The World Friendship Association, of 29 Portman Square London W 1 is anxious to hear from medical practitioners who are interested in the following plan: (1) To receive as a guest for fourteen days during August a medical practitioner from Denmark or Holland; (2) to visit during the month of September a medical practitioner in Denmark or Holland and stay with him as his guest for fourteen days.

The cost for Denmark from port of embarkation to destination and return to port of embarkation will be 15 guineas. For Holland the cost will be £9 10s. An additional fee of 12s 6d for membership of the World Friendship Association is payable.

The visits will normally be direct exchanges and are contingent upon hospitalists being afforded here. The World Friendship Association is an organization which exists to foster mutual understanding by arranging mutual visits. Hitherto its visits have been available only to school-children and members of various organizations but now it is possible to extend the facilities to medical practitioners who are interested should write to G A Talbot Esq, World Friendship Association, 29 Portman Square W 1 and should mark the envelope "Medical Exchange". I am, etc.,

RICHARD W DURAND

POINTS FROM LETTERS

The Pemmican Journal

Dr J P S JAMIESON (Nelson, N.Z.) writes: I cannot forbear from writing to congratulate you and the Secretary of the B.M.A. on the issue of the *Journal* of Feb 22, 1947, which I consider the finest *B.M.J.* in my experience of nearly fifty years. It is reassuring to know that you had the permission of the Ministry of Fuel and Power and the C.O.I. to use candles and turn the handle of the duplicator. In other than a truly democratic country that might have been refused.

Marriage Guidance

Dr DAVID R MACE (London, W 1) writes: Dr Philip M Bloom (April 19, p 552) urges that more attention be given to marriage preparation as the most effective means of tackling marital disharmony by preventing it altogether. In the Marriage Guidance Council we have never been in any doubt concerning the importance of this. In season and out of season we have reiterated this theme. I hope we may claim some credit for the recent change in public opinion from definite antipathy to mild interest. But the heart of the matter lies with the medical profession. We are continually hearing from young people who have gone to their doctors for marriage preparation and been dismissed with the implied suggestion that they were wasting the time of a busy man. Until this attitude is corrected we shall make little headway towards effective preparation for marriage.

A New Outlook Needed

Dr ALBERT E NICHOLS (Shrewsbury Shropshire) writes: The medical system of this nation is in the melting-pot and the resulting conditions will decide the future of doctor and patient for many years. Those of us who are older and know the endless slavery of our past and present lives had hoped that those following us would, in common with all men, have a better life. "The patient comes first" is a noble ideal, but it is responsible for most of our troubles. Our fellow men do not care in the least if the doctor works himself to death. They can get another doctor. We have a duty to our patients and our generation, but let us not forget we have an equal duty to ourselves, our wives, children, sweet hearts, and friends. Let us revolt against this life of continuous penance and seek to secure more of the joy of living, with more time for leisure and pleasure, for it is a man's elementary right. Those of us—the majority—engaged in N.H.I. work have in addition a heavy burden quite outside the heavy responsibility of the care of human life. As a colleague put it to me, "We have always to be on guard." The slightest complaint against a doctor is most zealously investigated, while it is quite useless and a waste of valuable time to complain of a patient, who can break with impunity any rule he or she likes. We have now in power a Labour Government, put in by the workers and maintained by the Trades Union Congress. If they are consistent they will give the doctor the same consideration they would give any other worker—an eight hour day, a living wage, and a right of appeal to the law courts. It is a horrible thing that in these days of so-called human progress men should follow their profession under constant fear of fine or loss of livelihood under the regulations of a Government Department and have no protection from our law courts.

Textbooks for D.P. Doctors

Dr P J SMITH (Area Team 1069, 390 UNRRA, B.A.O.R.) writes: Excellent work is being done by our D.P. doctors in our hospitals, but they are greatly handicapped by shortage of textbooks describing the recent advances in the many branches and specialties of our profession. In Servatius Stiff Hospital, Augsburg, of which I was medical director in the latter half of 1946 are 600 beds, five x-ray plants a chemical and a pathological laboratory and all branches of medical and surgical work are encountered. The majority of the doctors can read English and would welcome used textbooks or last editions but one. I am sure many of my colleagues have on their library shelves books which though outdated by a couple of years, would nevertheless be welcomed by our doctors out here. All medical books are needed, but those on medicine and general surgery are most urgently required. However, literature on all specialties would be of service. I will gratefully acknowledge receipt of each book.

"Doctrine"

Dr A DESMOND STOKER (Winster, Derbyshire) writes: I received the following note this morning from one of my patients: "Am I practising the wrong profession?" "Dear Dr I received this bill from you and would like to know what it is about as my family and myself are all covered to receive Doctrine."

Obituary

E T WITHINGTON, M B

A few weeks ago at his residence at Oxford and in his 88th year there died on April 20 as quietly as he had lived, the best medical scholar that this country has seen since the great days of Francis Adams and W A Greenhill.

Edward Theodore Withington was born in 1860 at Culcheth Hall, Warrington, Lancs, the younger son of a country squire. As a child he seemed very frail and so remained throughout life but he was singularly free from physical disabilities. He suffered however, from a very severe stutter which made any sort of public life impossible and prevented him from being known personally beyond a small circle. Nevertheless he acquitted himself well in classics at Harrow and in science at Balliol, where he obtained the Burdett Coutts scholarship. He then spent some time at Berlin University, improving his Greek and in 1888 entered on a clinical course at St. George's Hospital, qualifying in 1891. After a short time in practice he decided to devote himself to scholarship and began a brilliant series of historical articles in the now defunct *Medical Magazine* of which he became assistant editor.

Withington early developed an admirable literary style, at once clear and allusive, always warmed by the glow of a gentle happy wit which made all that he wrote most agreeable to read. His extremely thorough work thus became much more palatable than is common with such material. He adhered scrupulously to a rule of going to his sources, in whatever language they might be, and it is thus always safe to rely on his statements. Almost everything that he wrote has some element in it of permanent value and has stood well the test of time. He married in 1897 but was early left a widower and lived for many years with his only daughter. About 1914, on the instance of Sir William Osler, he settled at Oxford, where he lived as a secluded but far from inaccessible scholar until his death. Though his intimates were few they included Sir William Osler, Dr A L Smith, Master of Balliol, Prof Stuart Jones, Prof Ramsay Wright, and Dr A G Little. The author of this notice is proud to have been admitted to this choice circle.

Withington made many admirable contributions to the history of medicine. Five of them are outstanding. First in time was his beautiful *Medical History from Earliest Times* published in 1894. Scholarship is of its nature a tree the choicest fruit of which matures late, thus such a book is a noteworthy achievement for a man of thirty-four. Nevertheless in the judgment of the writer of this notice it is within the limits of its length and the period that it treats easily the best summary of the subject in English, and he is inclined to think that it is the best in any language. Advances in knowledge in the fifty-three years that have since gone by have outdated some of its statements and generalizations but in its combination of lightness of touch, comprehensive and penetrating learning, and sane perspective the book certainly takes its place among a very select few.

Another of Withington's major contributions is his well-known essay of 1919 *The History of Greek Therapeutics and the Malaria Theory*. This careful and original account involved much research and is a model of graceful condensation of a mass of critical learning. It is, in some respects, his most characteristic work. In 1914 he edited with the late Dr A G Little an account of the works of Roger Bacon that bear on medicine. It was in the course of preparation of this publication that the author of this notice first entered Withington's circle. In 1927 Withington edited for the Loeb Library a volume of the *Surgical Treatises of the Hippocratic Collection*. There he stands out clearly as an authentic member of the great line of interpreters of medical antiquity which includes such names as Koraes, Littre, Francis Adams and Petrequin. As a scholar he is their peer; as a writer he excels them all.

Withington's most serious undertaking and that by which, in a juster world he should be longest and best remembered is his great work on Greek medical terms. On this he laboured selflessly and without thought of reward or recognition for nigh

forty years. The winnowed results of all this patient toil have been incorporated in the new edition (1940) of the great Greek lexicon known by the name of Liddell and Scott. It is the simple truth that any work of Greek medical scholarship that may appear in the future must be influenced by this modest self-effacing single minded student.

It may be that there are among the readers of this notice some who would refresh themselves with characteristic examples of the wisdom of this remarkable man. They may be recommended to the following: "John Locke as a Medical Practitioner" in *Janus* 1909, p 491; Galen, Plato and Immortality' in *Contributions to Medical and Biological Research dedicated to Sir William Osler* 1919, vol I, p 200; 'Philosophy of Galen' in the *Medical Magazine* 1904, p 8; 'Vampires in the Medical Magazine' 1896 p 1196; 'Medicine in Mediaeval Monasteries' in the *Medical Magazine* 1896 p 508 and 'The Asclepiadae and the Priests of Asclepius in volume II of Charles Singer's *Studies in the History and Method of Science* 1920 p 206. Lastly, "John Weyer and the Witch Mania" in volume I of the same work reveals that fierce hatred of cruelty and injustice that only a few of his friends knew lay behind those thoughtful gentle eyes.—C S

P R WRIGLEY, FRCS

Philip Roscoe Wrigley, honorary consulting surgeon to the Manchester Royal Infirmary, died at his home in Swettenham, near Congleton on May 2. After winning the Sam Bradley Memorial Scholarship in clinical surgery as a student of Owens College, he qualified in 1900. He was a house surgeon at the Manchester Royal Infirmary, and for two years a resident at the Pendlebury Children's Hospital. Other resident appointments he held were at Salford and at Ancoats. In 1905 he took the F.R.C.S. and returned to the Royal Infirmary as its resident surgical officer. Two years later he started in consulting practice, and was soon appointed to the surgical staff of the Infirmary, continuing in active work there until he reached the age limit of 60. During this time he lectured on operative and pathological surgery at the University and was also honorary surgeon for children at the Manchester Northern Hospital. He was at one time president of the Manchester Surgical Society and vice president of the Manchester Medical Society. In the first world war he went with other Manchester men in the 33rd General Hospital, organized by Mr A H Burgess, to Mesopotamia. He held the rank of captain, R.A.M.C., and later finished his war service under Col Westmacott at Wimereux in France.

Under average height, Philip Wrigley was an unassuming self-possessed and self-confident man doing good surgery in hospital and private practice without adding any special variations of technique of his own devising. He wrote several papers on his clinical experience of acute surgical conditions. He will be greatly missed by his former colleagues and by the many students with whom he had such friendly and cordial relations.

A colleague writes: "The death, after only a few days of illness of Philip Wrigley came as a severe blow to his Manchester colleagues. He was elected honorary assistant surgeon to the Manchester Royal Infirmary in 1910, honorary surgeon with charge of a surgical unit in 1921, and honorary consulting surgeon in 1942. For many years he was also consulting surgeon to the Buxton Cottage Hospital. He was a Fellow of the Association of Surgeons of Great Britain and Ireland and he took a great interest in the local medical societies. Wrigley made several communications to surgical literature chiefly in connexion with abdominal surgery. Small in stature "Pip" Wrigley, as he was familiarly known to his colleagues was a thoroughly efficient general surgeon, possessed of a very kindly modest and retiring disposition. He was extremely popular alike with his colleagues and his patients. Indeed, he inspired such complete confidence as to be chosen by so many of his colleagues to operate upon themselves when necessity arose that he became known as the 'surgeons surgeon'."

T N V POTTS MD

Dr Thomas Norman Vickers Potts died at Louth County Infirmary at the age of 50 on April 23 after two days illness. He was a student at Durham University and qualified M.B.B.S. in 1919. Shortly afterwards he proceeded M.D. and took the B.Hy. and D.P.H. After holding the usual residen

posts at his hospital, he was appointed medical officer of the City Infectious Diseases Hospital, Newcastle, where he remained for five years. He then became deputy medical officer of health for Birmingham. Then followed his appointment as county medical officer to the West Riding of Yorkshire in 1929 at the early age of 32. He held this office with great distinction and contributed much to the welfare of the county.

Dr Potts was always an enthusiastic member of the British Medical Association joining immediately after qualification in 1920 accepting office on the executive committee of the Wakefield Division from the commencement of his term of office as MOH to the West Riding and retaining his interest throughout. He was a most useful and business-like member, contributing fully to any matter under discussion. He was representative to the Representative Meeting in 1933 at Dublin and was chairman of the Wakefield Pontefract, and Castleford Division 1936 to 1938. He was a member of the Council of the Association from 1942 to 1944 and served on several central committees. At the 1938 annual meeting he was vice president of the section of public health and hygiene. While in Yorkshire he acted as president of the Yorkshire Branch of the Society of Medical Officers of Health, and he was a Fellow of the Royal Sanitary Institute. He had a pleasant personality and was a reliable counsellor. He leaves a widow and one daughter.

R I writes Dr T N V Potts was appointed at a very early age to one of the most envied posts in the public health service. The West Riding appointment, gained in competition against older men who were to be his subordinates, offered potential difficulties to the new CMO, but Dr Potts by a certain self-effacement and a generous attribution of merited praise to his assistants gained their unwavering loyalty and co-operation. At the time of his appointment there were many changes impending in the rearrangement of county districts, the transfer of poor law hospitals to the public health committee and the formation of a salaried midwifery service. The latter was one of the first, if not the first, in the North of England to be formally approved by the Ministry of Health. The transfer of hospitals involved extensive changes and in view of the reorganization necessary the county council sent a deputation of members and officials to certain newly built hospitals in Europe. Dr Potts brought back from this tour valuable information, which was presented in a detailed report. The outbreak of war in 1939 stopped all plans for hospital widening and building and Dr Potts turned his attention to the urgent needs of the ambulance and fire fighting services and to the provision of emergency hospitals and maternity homes in relatively safe parts of the county. Towards the end of the war failing health caused him to send in his resignation. The extensive staff and in particular, the health visitors regarded his resignation with dismay and learned of his death with unfeigned sorrow.

SIR ALMROTH WRIGHT

Dr Leonard Colebrook writes. For those of us who were privileged to work with Wright there will always remain the memory of his extraordinary intellectual vigour and his immense capacity for work. We see him quietly preoccupied during all the years of his life with one problem after another—often toiling away at his laboratory bench long after everyone else had gone home quite regardless of the meal that had been prepared for him hours before and of his own bodily weariness. He could not rest while any question was unresolved in his mind or an experiment unfinished. Quoting Emerson he used to say "God has given every man the choice between truth and repose." Wright had two chief aims: first, to bring the science in to the practice of medicine and secondly, to bring clear thinking to bear upon the big fundamental questions which concern us all—man's relation to his fellows, the principles of morality (especially intellectual morality), the concept of truth, etc.

For those of later generations who have not been familiar with his work it may be useful to have a list of the chief ideas on which he applied his fertile mind—and wrote about them. We can piece each of his many contributions may have in the end a body of knowledge it is safe to say that none of us could do better in presenting original ideas. Most of them contain a certain amount of detail and all are presented in his characteristic lucid, if not always easy style. The following list

is far from complete. I have compiled it chiefly from memory have given in some cases paraphrased titles, and sometimes have added brief comments (in brackets). Incomplete references are sometimes given, the rest can be found, for the most part, at the end of his book on "Technique," or I shall be happy to supply them. The order is roughly chronological.

- 1 "On the Physiological Element in Emotion" *Brain* 1895
- 2 "On Colour Shadows in Nature" *Nineteenth Century* 1895 (This paper has opened a fascinating new world to many lay people)
- 3 "On Citrating Cow's Milk for Infant Feeding" *Lancet* 1893 (Wright always regarded this as one of his most useful contributions to medicine)
- 4 "On the Principles of Microscopy" Constable, 1906 (A book recording his experimental examination of the optical principles involved in the microscope)
- 5 "On Anti Typhoid Inoculation and the Measurement of the Bactericidal Power of Human Blood" (A series of five papers in the *Lancet* and the *British Medical Journal* 1897-1901, which include the description of the first of his many micro methods of blood examination. These papers make a landmark in the history of medicine)
- 6 "On the Part played by Serum in Phagocytosis and on Measurement of the Opsonic Index" *Proc Roy Soc* 1903, 1904, and 1906
- 7 "On the Vaccine Treatment of Tuberculous, Staphylococcal, Streptococcal and other Infections" (An important series of papers chiefly in the *Lancet* and *British Medical Journal* 1904-1912, which develop Wright's conception of the physician as an immunizer)
- 8 "On Prophylactic Inoculation of Rand Miners against Pneumonia" Constable 1914 (This book describes Wright's work in South Africa and deals also with the logical methods which ought to be employed in evaluating therapeutic agents)
- 9 "On Woman Suffrage" A letter to *The Times* of March 27, 1912, and a book entitled, *The Unexpurgated Case against Woman Suffrage* Constable, 1913 (The letter to *The Times* is a remarkable statement in Wright's best prose of the anti-feminist position, which exerted a considerable influence at the time of the Adult Franchise Bill. The book is a further development of this theme)
- 10 "On the Physiology and Treatment of War Wounds," including (a) Studies on the factors which permit microbes to develop in such profusion in war wounds (b) Studies on the bactericidal activity of leucocytes (c) The treatment of wounds by hypertonic salt solution (d) A polemic on the treatment of war wounds by antiseptics in reply to Sir Watson Cheyne *Lancet* 1916, 2 (c) "On the Pathology and Treatment of Gas Gangrene" (This series of papers, in my view, comprise some of the best of Wright's medical work although much of it has never yet got into textbooks)
- 11 "On the Technique of the Teat and Capillary Glass Tube" Constable, 1912, revised in 1921 (A handbook of unique character for the medical research laboratory and the research ward embodying all the technical laboratory procedures developed by Wright and his co-workers up to the date of publication)
- 12 "On Intertraction" *Proc Roy Soc Series A*, 1921, 92 and 1926, 112 (These, and other papers, deal with what Wright regarded as a previously undescribed physical process governing the mixture of fluids of different densities, including some body fluids. Wright's interpretation of the phenomena observed was not accepted by some physicists, but he himself was never convinced that his interpretation was at fault)
- 13 "On the Growth of the Tubercle Bacillus in Human Blood and the Employment of this Procedure for the Study of Tuberculosis and Chemotherapeutic Remedies" *Lancet* 1924, 1 218
- 14 "On the Immunization of Blood *in vitro*, and its Use for Immuno transfusion" *Lancet*, 1923, 1
- 15 "On the Need to Abandon Much of the Immunological Doctrine Previously Regarded as Well Founded" *Proc Roy Soc Med* 1942, 35 161 (The doctrine abandoned includes much of Wright's own earlier teaching)
- 16 "On Induction and the Conduct of Experiments dealing with Causation" (This philosophical essay is included in the series of Studies on Immunization published by Heinemann (Vol 4) in 1943)
- 17 *Prolegomena to the Logic which Searches for Truth* (This book, published by Heinemann in 1941, is the prologue to a much larger book on philosophical questions which Wright was working on until the last month of his life and which is now almost ready for publication. At one time it took the form of a 'Dictionary of Principles' but in recent years he attempted in it to formulate a system of logic more applicable to the problems of the modern world than are the older systems of formal logic)

The preface gives a synopsis of the matters to be dealt with in the larger book, a glossary, and two or three preliminary chapters.)

Few men of any age can have left such a record of constructive intellectual effort and few medical men can have exerted so great an influence upon contemporary thought. When Wright was a young man physicians were still chiefly concerned with the relief of symptoms, treatment was still largely empirical, the bottle of mixture which had come down to us from the past was predominant. Even Pasteur's brilliant results with immunization had been obtained for the most part by hit and miss methods. Wright taught us to look beneath the surface at the 'sub perceptible' changes in the body—to trace the effect of drugs, vaccines, etc., upon the constituents of the blood rather than upon the whole man—and to measure the response to treatment. To day when we give penicillin or the sulphonamides we ask ourselves as a matter of course, what concentration in the blood our dosage will maintain and whether the infecting microbe is sensitive to the drug and we take trouble to ascertain these things. That changed attitude is due more, I think to Wright's influence than to that of any other man.

Although much of his teaching has not been widely accepted—and the trend of medicine in the last few years has been towards chemo rather than immuno therapy—the future may yet prove that the broad path of progress is along the lines Wright's vision and his unsparing labour have indicated to us. Before we reject his teaching we should do well to recall that some of the antityphoid vaccine he prepared for soldiers going to South Africa 50 years ago was dumped overboard by those who thought 'The Old Man' crazy.

Dr WILLIAM BYRON MILBANKE died at his home in Sunderland on April 11 at the age of 79. He had been at work in his surgery up to the day before his death. A student of Durham University, Dr Milbanke qualified in 1898 and had been in general practice for 48 years.

Dr A. A. McIntosh Nicol writes: On the death of Dr W. Milbanke the medical profession in Sunderland lost one of its oldest practitioners and the town one of its most respected citizens. He belonged to a past generation, and to the end he maintained that dignity of carriage and charming manner which so characterized him. Before the 1914–18 war he was a keen Territorial and was attached to the Durham Light Infantry but on account of his age he was not allowed to proceed overseas with that regiment. He did so later, however, with the Royal Artillery, and served in France and was mentioned in dispatches. He joined the British Medical Association in 1900, was chairman of the Sunderland Division in 1926–7, represented his constituency at the Annual Representative Meeting in 1928, and took a very keen interest in the affairs of the Division to the end of his life. He was much sought after for advice as his candour and fearlessness in debate were highly esteemed. He was not a man of many words, but when he did speak he spoke with sincerity and conviction. Dr Milbanke had intended to retire in 1939, but decided to carry on in view of the fact that so many of the younger men would be leaving for the Services. During the war he was medical officer at a first-aid post and was unfailing in his duty, attending at his post regularly in the midst of all the blitzes in this badly scarred northern town. To the end he was active and mentally alert and on the day before his death was seeing patients as usual. He died the death he would have wished, in harness to the end. We are all the poorer for his passing.

Dr JAMES KENNEDY MANSON died suddenly on April 13 at the comparatively early age of 57 years. Graduating from Glasgow University in 1914, Manson had a varied and interesting career. He saw much service as a captain, R.A.M.C., during the 1914–18 war. While in East Africa he became greatly interested in tropical medicine and, in collaboration with L. D. H. Thornton, prepared a report on relapsing fever which was later published in the *Journal of the R.A.M.C.* After demobilization he was in general practice in this country until, in 1923, he proceeded to India to join the medical service of the then South Indian Railway Company. He retired from that service in 1935 to take up general practice again in Peebles, Scotland. In 1940 he was posted back to the South Indian Railway as its chief medical officer. With the rank of major he served continuously until the end of 1945. During this period he was admitted as a Serving Brother of the Order of St John of Jerusalem. His health had been impaired during those latter strenuous years, but in August, 1946, he was appointed a deputy commissioner of medical services with the

Ministry of Pensions at their headquarters at Norcross, Lancs., which appointment he held at the time of his death. Of a kindly and unobtrusive disposition, James Kennedy Manson never spared himself in the interests of his profession. Music and literature were his hobbies. His memory will long be cherished by his many friends and former patients.—J.M.

Dr JOHN DEWAR ROBSON died at his home in Dumfries at the age of 79, on April 26. He qualified M.B. Ch.B. at Edinburgh in 1890, and soon afterwards acted as assistant to a practice in Wensleydale, where he did his round on horse back. Fifty years ago he settled in Dumfries and became honorary radiologist to the Dumfries and Galloway Royal Infirmary. He had to resign this post because his hands were affected by the X-rays, later the malignant areas were excised. He had been an active member of the British Medical Association for over fifty years and was chairman of the local Division in 1928–9. He was interested in shooting, fishing, football, billiards, skating, and bowling, at which last he was Scottish champion in 1907. He suffered fools badly, but was always ready to help youth and the poor. He was the doyen of the medical profession in Dumfries and remained in harness to within two months of the end. He was married twice, and his second wife, a son and a daughter survive him.

DR S. A. MONCKTON COPEMAN, F.R.S.

A memorial service for Dr S. A. Monckton Copeman, F.R.S., was held on May 7 at the Church of the Order of St John of Jerusalem. Major General R. J. Blackham gave the address and among those present were Sir Weldon Dalrymple Champneys, representing the Ministry of Health, Sir George Elliston M.P., the Society of Medical Officers of Health, Major General J. E. T. Younger, the Order of St John of Jerusalem, Dr Andrew Shinnie, the Westminster City Council, Dr A. L. Crockford, representing St Thomas's Hospital, Dr A. E. Hindle, the Zoological Society, Mr A. E. Roche, the Hunterian Society, Mr W. C. Hornby Steer, the Hampstead Borough Council, Sir Allen Daley, the L.C.C., Mr H. I. Gerrans, the Royal Institute of Public Health, Mr A. E. Porritt, the Provincial Grand Lodge.

Medico-Legal

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[FROM OUR MEDICO-LEGAL CORRESPONDENT]

A covenant in restraint of subsequent practice in the neighbourhood is a necessary part of every agreement between doctors to associate in practice. A retiring partner, the seller of a practice, or an ex assistant having gained an intimate knowledge of the practice would obviously be very dangerous competitors if they remained in the neighbourhood. Such covenants, however, need to be carefully drawn, for if the court considers that a covenant is unreasonable in one respect which is not severable from the rest the whole becomes invalid and the outgoing practitioner is not restrained from competition. The reports contain few cases which could guide draftsmen who consequently have had to devise forms which would correspond as nearly as possible with the spirit of the available decisions. The judgment of Mr Justice Evershed in *Routh v Jones* (1947, 1 All E.R. 179), which was confirmed by the Court of Appeal on April 18, has caused widespread interest by invalidating the form of restrictive covenant which has been commonly used by the British Medical Bureau in agreement between doctors, and is embodied in a very considerable number of existing contracts.

Two partners in a general practice in Okehampton, Devon, engaged an assistant in March, 1943. At the end of December he signed a covenant binding himself not to practise or cause or assist any other person to practise, in any department of medicine, surgery or midwifery, nor accept or fulfil any professional appointment, whether paid or whether honorary, within a radius of ten miles from the partnership address for five years after his assistantship ended. In March 1946, he left the service of the partners and bought a house in Okehampton intending to set up in practice. The partners moved the



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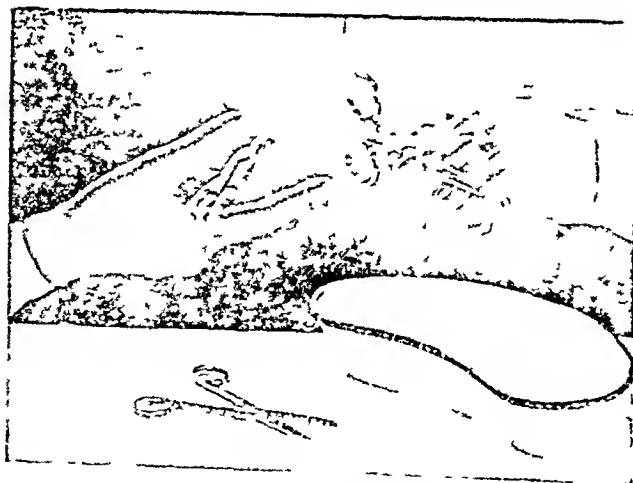
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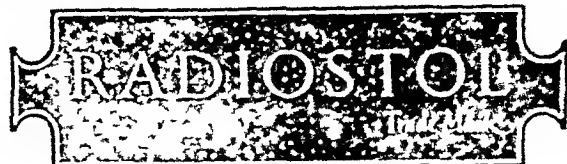
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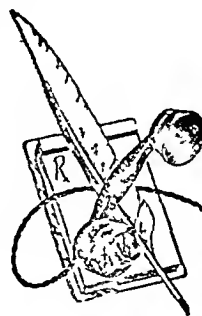


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Licences

Licences to practise were conferred upon the following 136 candidates (including 26 women) who had passed the Final Examination in Medicine, Surgery, and Midwifery of the Conjoint Board, and who have complied with the necessary by laws

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H J G Bloom J F Bolton Carter P H Brasher Jean F C Brown J H S
Buchanan N G P Butler Pamela H Canham M T F Carpendale D L
Chadwick K B Chambers D J Chapman A Chopra Jill C Clark J G W
Clarke M H F Coyle P D Collingwood M B Conran H G W Cooke J B
Cowie J T Crean E G W Cross M E S Cuits O W Davies K R H Deane
J E R Dixon N H Dray J B Eades R L Edwards Angela I Emerson
L Evans L J Evered Sheila Fitchough Margaret L Fallon K M Fergusson
J J Fingard H Forman R M Forrester A L Forster M J Forth H J B
Galbraith D J Gardner B A Gavourin Wilhelmina N Gaye T W A
Glenister N G O Gourlay J C Graves J M Hall D A Hanson J G
Harrison R A Harrison H H Hayes Daphne M Haynes D G H Hollis
Mary C Holt J Hope P J Horsey Frances S Huxley R N Jackson H Jarvis
E Jones R K Jones H B Juby H M Kershaw, R C King C D Korn
J B Lyn Jones A M McCall J M S McCoy Janet L McKenzie Jocelyn P
Mandelstam C A Martin J Q Matthias B W Meade P H Merory I F
Nichie Rhannon Morris J P Mostyn R J Moylan Jones Josephine C
Mulcahy D H Musswhite J Nagington H J N M Ormerod A Paton
F A Pearson M H Pettigrew T A J Frankerd R M Mck Pratt J S Prior
R R L Pryor Sonia A Purdie Mary M Rayner P Read R T Rennie A
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Stoddard Bennett H Stewart A R Swanton C Taylor J T L Unsworth
H Ulrich Helen B Walker N A Walker J R Watson Mary B Watson
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Williams T A Williamson N E Winstone J R R Wray

Diplomas

Diplomas in Ophthalmic Medicine and Surgery and in Physical Medicine were granted, jointly with the Royal College of Surgeons of England to the successful candidates whose names were printed in the report of the meeting of the Royal College of Surgeons of England in the *Journal* of March 29 (p 434)

Diplomas in Child Health were granted, jointly with the Royal College of Surgeons of England, to V D Arora and to the successful candidates whose names were printed in the report of the meeting of the Royal College of Surgeons of England in the *Journal* of May 3 (p 619) as were the names of the recipients of the Diploma in Tropical Medicine and Hygiene

A Diploma in Laryngology and Otology was granted, jointly with the Royal College of Surgeons of England, to R T Raymond Jones

ROYAL COLLEGE OF SURGEONS OF ENGLAND

The following lectures in ophthalmology will be delivered at the College (Lincoln's Inn Fields, WC) June 2, 5 p.m., Mr J W Tudor Thomas, Corneal Transplantation, June 3, 5 p.m., Mrs A Pirie, Experimental Aspects of Nutrition and Eye Disease, June 6, 5 p.m., Mr H Ridley, Nutrition and Eye Disease, June 9, 5 p.m., Mr T Keith Lyle Squint Surgery, June 10, 5 p.m., Dr Alice Carleton, Skin Disease in Relation to Ophthalmology, June 11, 5 p.m., Mr F A Williamson-Noble, Glaucoma Surgery, June 13, 5 p.m., Prof W J B Riddell, Hereditary Eye Disease, June 16, 5 p.m., Mr Brodie Hughes, Interpretation of Visual Field Defects, June 17 and 18, 5 p.m., Mr Geoffrey Knight, Neurosurgery in Relation to Ophthalmology, June 20, 3 p.m., Dr W R Brain, Exophthalmos Apart from Endocrine Disease, 4.30 p.m., Dr Brain Exophthalmos of Endocrine Origin. The fee for the whole course is £5 5s. Fellows and Members of the College and Licentiates in Dental Surgery will be admitted for £3 3s. Applications, accompanied by a cheque for £5 5s or £3 3s, should be sent to the assistant secretary, Royal College of Surgeons of England, Lincoln's Inn Fields, London, WC2

ROYAL COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS

The following candidates have satisfied the examiners at the examination indicated

DIPLOMA IN OBSTETRICS—J R Ballantyne A C Barthels D C A Bevis G R Bourne Kathleen A C Bowen J A Bowen Jones L Boyars Elizabeth C M Brunyate Joyce B Burke H C Burnell J P Bush W E Chapman F J Cockersole D P Cocks E Cope G H R Curnack Alice Davies Margaret E Davies J E Drabble Patricia M Elliott Geraldine W Everett S C J Falkman M R Fell H J Fisher B J Frankenberg Jean M Frazer G B Gibson L S Gliss C J Griffin G N Grote Elizabeth M Harper D Hay J A Henderson G S Hopkins Jean A Horne B G Isaacs A G Jones G D Kelly Janet F Kennedy N A King D V Latham C Lewthwaite G I Lounson C Mackie A T McNeil Bettie E A Magill D Mander Edith M Metcalfe R T Michael C E Miller A Milton Doreen Mitchell Annapurna Mukherji M R Neely G F Newbold D Nixon Helen M Noble Margaret B Noble Barbara D Oakley A D Parsons S D Perchard F C R Picton E D Pond K I Price S W Price Margaret Randall E N Roes Rachel Richards L F Richards J G Rountree W S Russell Ruth Sabel T J Scannell Charlotte Sommer Hirsch Kathleen H Stewart B S Suri C W Sweetnam Sheila R Tange Mary E Tische St J M A Tolhurst E F Twiss M J Twomey W A Walker Winifred I Watson Constance M Watt C T H Whiteside Roberta Williams J K Wilson S H Wong Elizabeth Younger

Medical Notes in Parliament

Food Situation

Lord WOOLTON in the House of Lords on May 7, called attention to the growing danger of a serious shortage of food in this country. He said the housewife was weary and alarmed and he doubted whether the heavy workers of the country were getting enough of the right sort of food, and particularly of fats to enable them to give increased production. The previous day he had read in the medical Press a special article by a Dr Frank Bicknell which began, "England is dying of starvation." In the Coalition Government the one foundation of the nation's food supplies had been the securing of an adequate amount of fats. Experience convinced him that this job of providing adequate food for the people of the country was not being done. The meat position was very serious. The scheme of bread rationing had broken down and the system of couponing did not work. That was what the bakers told him. The country would continue to have a fuel shortage, but if it also had a food shortage the Government would deserve the censure of the people. The time had come to make an end of this low standard of living.

Lord HENDERSON replying for the Government said fresh calamities might be in store as unforeseen as the blizzards and floods of last winter, but the prospects of a fair harvest in the United Kingdom were better than anyone a month ago thought possible. The country could count on a good supply of wheat from Argentina's new crop, and the United States promised to send a large quantity during the three months July-September. The Government expected to provide a balanced and increasing ration for an expanding livestock population. So far as bacon, eggs, butter, margarine, cooking fats, milk, and cheese were concerned there was every reason to expect that the supply would continue during the remainder of this year at least as good as it was now. Although oils and fats were still subject to world shortage the Government expected to maintain the fats and soap rations through 1947 at their present level. The supply and consumption of milk continued to mount and the sale of liquid milk to the public steadily increased. The supply of eggs this year should be maintained at its present level and an increasing proportion of it consisted of eggs in shells. With sugar the country would do at least as well this year as last. Meat was the foodstuff of which the supply was most difficult. The Government was buying every ton of imported meat which it could afford, but it was by no means certain to make good the deficiency in home output and the rations might have to be reduced to the level ruling in May, 1946. The Government looked forward to a large increase in supplies of fish, and the quantities of potatoes available for consumption before the end of the season were likely to be adequate. By mid-June there should again be a reasonably plentiful supply of vegetables. The lateness of the spring increased the chances of a good fruit crop and imports of fruit were likely to exceed those of last year by not far short of 50%. The Government, to the utmost of its powers, would see that the food supplies of the people were maintained, and where possible raised.

Lord BEVERIDGE said the Government was too apt to be content with rationing. They ought not to aim at rationing indefinitely. Rationing was unjust to the individual and checked production.

Lord HARLECH said the bread ration in Britain was much better than in most European countries and Britain was better off than most countries for potatoes, but worse off for vegetables. The meat supplies of this country were quite inadequate for the heavy workers. It was essential that the protein constituent of the ration should go up.

Lord RUSHOLME said there could be no foundation for a statement that food supplies available to the British people were down to the level of those of the German people. So far as meat, jam, cheese, sugar, and eggs were concerned, consumption per head at present was larger than in 1945, and so far as jam, cheese and milk were concerned consumption was larger per head than in pre-war days. There was a world wide shortage of fats and all importing countries were suffering.

Agricultural Difficulties

The debate was resumed on May 8 by Earl DE LA WARR. He said the losses of winter corn on the Continent were a great deal more serious than in Britain.

The Earl of HUNTINGDON said that in the last few months the British agricultural industry had suffered a major disaster which would affect the diet of the people. There was a serious reduction in the acreage of wheat, the acreage in sugar beet

was likely to fall, 75,000 tons of last year's crops and potatoes had been destroyed and some reduction must be expected in this year's supplies of potatoes. Until July many vegetables were likely to be in very short supply.

Lord LAMBERT said that in Devonshire the agricultural workers were all underfed and the manual worker was also underfed. They had colds and chills because they had not a sufficient diet.

Lord LLEWELLIN said that when people asserted the nation was getting more nutritional value in the form of milk the House must look at the fact that there were not many more cows, and that the nation was not getting the butter and cheese. Things had got worse since a consumption level inquiry had been held in 1943. It would be better to take the really bad meat off the ration. He was delighted to see that fish was now coming in, but fish was of no avail without fats in which to fry it. Bacon unfortunately was also down.

Lord ADDISON agreed with Lord Woolton that the housewife was weary and tired. Nobody would rejoice more than the Government if the diet could be made more interesting and varied, but the fact was that the world was short of food. The assertion which Lord Woolton had quoted from Dr Bicknell that England was dying of starvation was a monstrous falsehood. How did Dr Bicknell know how the unemployed were fed before the war? The figures of Sir John Boyd Orr and Mr Rowntree, and those which Lord Beveridge used in drawing up his own scheme showed that before the war 77% of the population were so poor that they could not buy enough food. That was not the case to-day. Dr Bicknell had said that the average person in Britain got 2,100 calories a day. The figure had been checked at the Ministry of Food and it actually was 2,900 calories. Dr Bicknell said that the unrationed food including potatoes, gave only 400 calories. Lord Addison understood that they probably gave a good deal more.

Lord WOOLTON said Lord Addison had found it necessary to use violent language about a statement made by a distinguished member of a profession to which Lord Addison used to belong. If that statement was wrong then the Government had ample means of correcting it. He himself wondered whether he had not minimized the danger of food shortages during the next three months. He begged the Government to take all the steps in its power so that the people did not have to suffer hunger during the coming months.

The debate concluded.

National Service and Doctors

During the all night sitting on the National Service Bill on May 7, Clause 9 was ordered to stand part of the Bill.

Col STODDART-SCOTT said that since the number of doctors who qualified each year had been just over 3,000 there would be far more doctors than were required for the Services. There would be 1,500 doctors fit to serve, and a force of 1,500,000 would be required to occupy them. The thing to be avoided was having Service doctors unemployed or partially employed while there were overworked doctors in general practice. There would also be in the Services more specialists than were required.

Mr ISAACS said the Government did not wish to denude the country of doctors by taking them into the Forces. The Medical Priority Committee would be consulted on the best use of the available medical services. It might be best in some areas for the doctors to serve a shorter period or to be exempt. It might be best to say, 'There are 1,000 doctors, but we want only 500.' The Government would do the same with the specialists. It did not want to take a man into the Forces because he was a specialist. It would want to take the kind of specialist for which the Forces were looking.

Fowl Pest—Up to May 2 the number of outbreaks of fowl pest confirmed by the Ministry of Agriculture was 147. In addition 160 suspected cases had on investigation proved to be negative. About 16,000 birds had been slaughtered at an approximate cost in compensation of £12,000. Since the most likely source of infection was uncooked poultry waste, Mr Tom Williams has made it obligatory for all poultry keepers to boil such materials before allowing their birds to have access to them. The importation of live birds and hatching eggs from countries in which fowl pest is prevalent is not being permitted. Officers of his Department and of the Ministry of Food are examining the possibilities of minimizing the risk arising through the importation of dead poultry.

Medical Students—Asked on May 8 what additional facilities were being provided for training medical students in view of the shortage of women doctors Mr BEVAN replied that all provincial medical schools admitted women students up to between 20% and 30% of the annual intake. The London schools had all now agreed to take a proportion of women as soon as accommodation could be provided. This should be ready for the 1947-8 session.

Condemned Prisoners—Asked on May 8 by whom application had been made for an examination of the mental condition of Thomas John Ley, Mr EDE said the consideration of the question whether a medical inquiry should be held into the mental condition of a prisoner under sentence of death did not depend on the receipt of an application. It was his duty in every capital case to consider whether any question arose as to the prisoner's state of mind and to order a medical examination when he had reason to think further inquiry desirable.

Mr LANG pointed out that the defence of insanity had not been raised at the trial nor in the Court of Appeal. He asked Mr EDE to assure the House that this was not a trial by doctors to supersede a trial by jury. Mr EDE said he was not bound by what had been submitted to the Courts. If he had any doubt of the mental stability of a person sentenced to death his duty was to order a medical inquiry. If that inquiry took a certain course the matter was then completely out of the hands of the Home Secretary.

Sick Soldiers—The current instruction regarding men waiting to report sick as ill soldiers will not parade for this purpose but will inform the orderly NCO and proceed independently to the M.I. room at a specified hour. Arrangements for transport are made if the M.I. room is at some distance from the unit lines.

Medical News

The jubilee dinner of the Chelsea Clinical Society will be held at South Kensington Hotel, Queensgate Terrace, S.W. on Tuesday, May 20, at 7.30 p.m. for 8 p.m.

A discussion on the training of contact lens practitioners which was opened by Mr Williamson Noble, F.R.C.S., was held on April 21 at a meeting of the Contact Lens Society. Prof Ida Mann presided.

A general meeting of the Middlesex County Medical Society will be held at Harefield County Hospital on Friday, May 23, at 3 p.m., when there will be demonstrations of cardiopneumocentesis for pulmonary tuberculosis and massive doses of penicillin in the treatment of suppurative pneumonitis. At 4.15 p.m. three short papers on 'Blood Changes in Tuberculous Meningitis', by Dr L. F. Houghton, 'Some Observations on Bronchial Carcinoma', by Dr J. C. Roberts and 'Protein and Tuberculosis', by Dr I. Nassau, will be read.

The Manchester and District Medical Golfers Association will hold its annual competition at Hale Barns, Cheshire, on June 3. Particulars may be obtained from the Hon. Secretaries, Manchester and District Medical Golfers Association, c/o British Medical Bureau, 33, Cross Street, Manchester, 2.

The annual meeting of the members of the Royal Medical Benevolent Fund will be held at the Medical Society of London, 11 Chandos Street, Cavendish Square, London, W., on Thursday, June 5, at 4 p.m., when the financial statement for the year ended Dec. 31, 1946, will be presented and the officers committee and honorary auditors elected for the current year.

A congress will be held in Prague from June 11 to 15 to celebrate the fiftieth anniversary of the Czechoslovak Stomatological Society. On June 11 and 13 the tenth annual congress of the A.R.P.A. Internationale will also be held in Prague. The official languages of the Czechoslovak Stomatologic Congress will be Czech and Slovak. Lectures announced in advance may be spoken in English or French. Those wishing to attend should apply to Spolek českých zubních lékařů, Praha II, Sokolská 31, Lékarský dům.

Mr Bernard W. Williams has been appointed Medical Adviser and Dean of the Medical School of the University of the West Indies from Jan. 1, 1947. Mr Williams was born in Jamaica in 1895 and was educated at Exeter College, Oxford and St Thomas's Hospital. He won the Radcliffe Prize for Medical Research in 1926 and was Hunterian Professor in 1927. He was examiner in pathology to the R.C.S. and in surgery to Oxford University and Sub Dean of the Medical School at St Thomas's.

The Chinese Medical Journal founded in 1909 and suspended during the war, reappeared on May 1 with a monthly issue of 5,000 copies. Printed in Chinese, it is published in Shanghai.

The following members of the medical profession were recently elected Fellows of the Royal Society of Edinburgh: Hamilton Bailey, F.R.C.S.; George Howard Bell, M.D.; Group Capt. Gerald Strain Marshall, O.B.E., R.A.F. (ret.), and George Ranken Tudhope, M.D.

Dr John Dale, Chief Health Officer to the Melbourne City Council, has been granted six months' leave of absence to study public health administration in Britain.

At the Socialist Medical Association's annual general meeting on May 11 a resolution was passed advocating the setting up of permanent day nurseries and nursery schools. Dr Somerville Hastings referring in his presidential address to the NHS Act, said that the Minister of Health's views were sound but that he was less happy about some of his advisers. The Association considered that large buildings in all areas should be adapted as temporary health centres and that the building of new centres in selected areas should be started immediately.

Dr A. P. Cawadinas, OBE, has been awarded the rank of Knight Commander of the Royal Hellenic Order of the Phoenix by the King of the Hellenes.

EPIDEMIOLOGICAL NOTES

Smallpox

In the original reports of the outbreak at Bilston, Staffs., it was suggested that the disease imported from India was variola minor (April 19 p. 549). This has proved to be incorrect and most of the cases have been variola major of moderate severity. An unvaccinated labourer, not included in the list of contacts, died in hospital on May 2. The onset in this case was on April 25 and the rash appeared on April 29 (May 10 p. 664). Now his wife vaccinated in infancy 64 years ago, and his son-in-law aged 30 and unvaccinated have developed the disease while under surveillance. Both were vaccinated on May 2 after their recent exposure to infection.

In Cosely U.D., which is near Bilston, a woman aged 78, in poor health and confined to her house with bronchitis for several weeks developed high fever about May 1 and pneumonia was diagnosed. A rash, first noticed on May 7, was thought to be associated with chemotherapy but by May 9 had become semiconfluent. On this day the patient, now very ill, was removed to a smallpox hospital. It is reported that the original case in the Bilston series had visited this patient's residence about a month ago. Details are not yet available, but this information may lead to a satisfactory explanation of the occurrence at Bilston of cases apparently outside the direct line of contact.

A case of smallpox in Sheffield cannot at present be associated with a known source. An unvaccinated schoolboy aged 11 and living in a tenement house sickened on May 1 and developed a rash on May 4. The diagnosis of smallpox was confirmed and the patient removed on May 10. Fortunately he had been confined to his bed since the onset.

Discussion of Table

In England and Wales infectious diseases were less prevalent and decreases were recorded in the notifications of measles 1,073, acute pneumonia 81, whooping cough 73, scarlet fever 38 and cerebrospinal fever 17. An increase of 15 in the cases of dysentery provided the only exception to the downward trend.

A fall was recorded in the incidence of measles throughout the country, and the largest declines were Lancashire 243, Staffordshire 240 and Gloucestershire 104. A small fall in the notifications of whooping cough was general and the only exception was an increase of 59 in Essex. The only changes of any size in the local returns of scarlet fever were a decrease in Middlesex 30 and a rise in Glamorganshire 23.

The decrease of 7 in the notifications of diphtheria reduced the total to one below the record low level of twelve weeks ago. The only significant change in the local incidence of dysentery was a rise of 12 in Lancashire. In the outbreak in Surrey 15 more cases of dysentery were recorded, bringing the total for the past three weeks to 53.

In Scotland decreases in the notifications were reported for whooping-cough 77, measles 61, and acute primary pneumonia 21. There were small rises in the incidence of scarlet fever 24 and cerebrospinal fever 12. The increase in cases of scarlet fever occurred in the western area, while the increase in cerebrospinal fever was contributed by the eastern area.

In Eire a fall was recorded in the incidence of most infectious diseases—whooping cough 14, diarrhoea and enteritis 9, primary pneumonia 5 and scarlet fever 4.

In Northern Ireland increases were recorded in the notifications of measles 18, scarlet fever 9, and whooping cough 7.

Week Ending May 3

The notifications of infectious diseases in England and Wales during the week included scarlet fever 873, whooping-cough 2,033, diphtheria 186, measles 8,442, acute pneumonia 516, cerebrospinal fever 52, dysentery 122, smallpox 1, paratyphoid 1, typhoid 1.

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended April 26.

Figure of Principal Notifiable Diseases for the week and those for the corresponding week last year for: (a) England and Wales (London included), (b) London (administrative county), (c) Scotland, (d) Eire, (e) Northern Ireland.

Figures of Births and Deaths and of Deaths recorded under each infectious disease are for: (a) The 126 great towns in England and Wales (in italics, London), (b) London (administrative county), (c) The 16 principal towns in Scotland, (d) The 13 principal towns in Eire, (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1947					1946 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever Deaths	64	8	31	3	—	48	6	32	—	—
Diphtheria Deaths	175	22	50	25	9	389	27	104	42	1
Dysentery Deaths	61	4	19	—	—	163	25	63	—	—
Encephalitis lethargica acute Deaths	—	—	1	—	—	—	—	1	—	—
Erysipelas Deaths	—	—	33	16	1	—	—	40	8	—
Infective enteritis or diarrhoea under 2 years Deaths	72	9	14	19	5	56	6	2	42	14
Measles* Deaths	7,962	408	235	46	36	2,793	1054	354	29	—
Ophthalmia neonatorum Deaths	75	8	24	—	—	50	5	24	—	—
Paratyphoid fever Deaths	1	—	—	1(A)	—	5	—	—	—	—
Pneumonia influenzal Deaths (from influenza)†	647	43	5	9	5	654	39	11	21	—
Pneumonia primary Deaths	21	5	3	—	—	18	2	1	3	—
Polio encephalitis acute Deaths	—	—	231	25	12	—	28	188	28	14
Polio myelitis acute Deaths	1	—	—	—	—	—	1	—	—	—
Polio myelitis acute Deaths	6	2	—	5	—	5	1	—	1	—
Puerperal fever Deaths	—	1	10	—	1	—	—	23	—	—
Puerperal pyrexia‡ Deaths	136	8	11	—	2	148	12	17	—	—
Relapsing fever Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever Deaths	892	76	150	22	42	1,054	104	147	29	—
Smallpox Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid fever Deaths	6	1	—	3	1	4	—	—	2	—
Typhus fever Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough* Deaths	2,044	256	322	74	26	1,669	139	76	36	—
Deaths (0-1 year) Infant mortality rate (per 1,000 live births)	472	71	65	21	17	354	50	53	34	—
Deaths (excluding still births) Annual death rate (per 1,000 persons living)	4,788	755	574	212	132	4,553	662	578	197	1
Live births Annual rate per 1,000 persons living	10,155	1626	1317	444	351	8,303	1202	1067	454	2
Stillbirths Rate per 1,000 total births (including stillborn)	266	33	30	22	—	235	32	40	36	—

* Measles and whooping-cough are not notifiable in Scotland and the rate are therefore an approximation only.

† Includes primary form for England and Wales (London (administrative county) and Northern Ireland).

‡ Includes puerperal fever for England and Wales and Eire.

Any Questions ?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

"Hereditary" and "Familial"

Q—What are the differences between the terms hereditary disease and familial disease ?

A—The characteristic features of human pedigrees associated with the different types of hereditary transmission were known empirically long before the rediscovery of Mendel's work. The use of the terms 'hereditary' and 'familial' is a survival from those pre-Mendelian days. A regularly expressed dominant gene is handed on by its bearer necessarily to an affected person, to half his children on the average. Normal persons cannot carry the gene and so cannot transmit it. Simply inherited abnormalities are rare, hence affected persons almost invariably marry normals. So we observe the typical dominant pedigree in which every affected person has one affected parent, and affected persons have on the average affected and normal children in equal proportions. The most striking feature is the evident direct transmission from generation to generation. Hence the use of the word 'hereditary' to describe the pedigrees of such conditions as multiple telangiectasia, piebalding, or brachydactyly.

In contrast a recessive gene manifests itself only when present in a double dose, that is to say, the abnormal gene must be received from both parents. Such a gene may be transmitted through many generations of outwardly normal carriers. Occasionally a man and woman marry who both happen to carry the same recessive gene, then, on the average, one-quarter of their children will manifest the abnormality. The outwardly normal offspring, and the abnormal ones also (if the condition is compatible with life and reproduction) will rarely happen to marry partners who also carry that gene. So the defect seems to vanish again, not to reappear for perhaps many more generations. Therefore the typical finding is a large number of normal ancestors and collaterals, then the sudden appearance of a sibship containing one, two, or more affected children, then normal descendants and collaterals. This is what is observed in such conditions as amaurotic idiocy, albinism, or xeroderma pigmentosum, to which the word 'familial' was applied.

To-day, the mechanism being fully understood, it seems better to use the words 'dominant' and 'recessive'. There is perhaps no harm in using the older terms if it is desired to convey to those unfamiliar with genetics the salient features of the two types of transmission, but, of course, a condition described as 'familial' is 100% inherited, just as is a condition described as 'hereditary'.

Leuconychia

Q—What are the aetiology and treatment of transverse linear chalky white markings on the nails? The marks start at the base of the nail and enlarge as they grow towards the tip.

A—Leuconychia is due to periodic interference with the growth of the nail at the nail matrix as the result of trauma or toxic, circulatory or nervous influences. Treatment should be directed to the cause. The trauma of manicuring the nails should be considered.

Arsenicals in Congenital Syphilis

Q—What are the dosages of neoarsphenamine, sulpharsphenamine and bismuth for the treatment of congenital syphilis at different stages ?

A—In the treatment of late congenital syphilis the dosages of neoarsphenamine, sulpharsphenamine and bismuth are essentially the same as those used in acquired syphilis, in early congenital syphilis the individual dose of each drug is usually calculated in mg per kilo of body weight of the patient. In the case of sulpharsphenamine Earle Moore recommends 5 to

10 mg per kilo for the first dose, rapidly increasing to the desired maximum of 25 mg per kilo, Lees recommends 10 mg per kilo during the first year of life, while McLachlin says this latter amount should not be exceeded. The dosage of neoarsphenamine is much the same though this drug is seldom used in very young infants. The usual dose of bismuth is 2 to 5 mg per kilo, starting with the lower dose. A course may last about sixty days and the arsenic and bismuth may be administered concurrently in weekly doses. Four such courses should be the minimum for early congenital syphilis more are often required, particularly if the serum reactions are slow in reversing.

Ps. procyanea and Penicillin

Q—The *Pseudomonas procyanea* is said to be insensitive to penicillin. What is the best method of eradicating it from an infected urinary bladder ?

A—This organism is one of the most resistant to penicillin of all bacteria, it forms penicillinase and thus destroys the drug. It is therefore useless to give penicillin even in large doses, for a urinary-tract infection so caused. The sensitivity of *Ps. procyanea* to sulphonamides is variable. This should be tested with the patient's own organism if possible. If not sulphathiazole, 1 g four times a day might be tried. If this treatment does not succeed within a few days it should be discontinued. Streptomycin, if available is the most effective drug although in a minority of cases it fails owing to the acquisition of resistance to it by the infecting organism.

Dental Extraction in Hyperpletic

Q—A married woman of 64 has a mouth full of rotter stumps two of which ooze pus. Her blood pressure is 230/140 mg Hg and the heart sounds are strong regular and slow, her urine is clear. Is there any sound reason for the advice she has been given not to have nitrous oxide? If so what anesthetic or other procedure would you suggest?

A—In the hands of a competent anaesthetist nitrous oxide with oxygen administered through a nasal inhaler should be sufficient provided that the patient's general cardiovascular condition apart from the hyperplepsia, is sound. Should she be unwilling to have nitrous oxide, a local analgesic could probably be used, though it would be advisable to omit the usual adrenaline in the solution. In deciding which method is preferable much depends on the position and firmness of the teeth and the degree of surrounding sepsis.

Treatment of Seborrhoea

Q—In a case of seborrhoea soap spirit, salicylic acid and sulphur ointment and lotion have given only partial relief. The scalp is still thick with scales and the rash in the axillae and genito-crural regions persists. Is there a newer method of treatment?

A—Acute seborrhoeic dermatitis of the type described is symptomatic of general ill health and each case is an individual problem. There may be underlying foci of infection or metabolic or nutritional imbalance. Psychogenic factors are commonly of major importance, hormonal deficiencies are also often important. In a general way a high intake of protein and of vitamin B with restriction of carbohydrates, fluids, and salt a mineral alkaline mixture, phenobarbitone in small doses, and possibly oestrogen therapy may help.

Secondary Effects of Vaccines

Q—Does antityphoid inoculation boost resistance to other infections? Does it ever activate a latent gonococcal infection? On theoretical grounds are such secondary effects likely to be significant?

A—There is no known antigenic relationship between organisms of the enteric group and others quite unrelated which would suggest that any specific immunity to other diseases is likely to be produced by TAB vaccine. Whether the administration of bacterial vaccines of almost any composition has some non specific effect on resistance to infection generally is uncertain, to assume that this is so seems the only way to explain the effects claimed for various vaccines for

many years past. A large dose of a vaccine may cause a transient exacerbation of any chronic infection, including gonorrhoea.

Thorium X for Nacvi

Q—*Thorium X has been used effectively in babies afflicted with capillary nacvi. May I have details of its use and indications?*

A—Thorium X suspended in a varnish, ointment, or in alcohol may be applied at monthly intervals. The strength commonly used is 1,000 electrostatic units per ml. Reference should also be made to another answer given in the *Journal* of April 12, p. 516.

Definition of "Psychopath"

Q—*What is a psychopath?*

A—The best definition of a psychopath is that of Kurt Schneider: an abnormal (that is unusual) personality who by reason of his abnormality either himself suffers or causes society to suffer. In Anglo-American psychiatry the two parts of this definition tend to be separated. The individual who himself suffers under his abnormality is called neurotic, while he who causes society to suffer is called a psychopath. It is, however, important that the same man at different times in his life-history may show both of these two aspects of abnormality, and that the question whether society has or has not suffered may be very differently answered by his contemporaries and by posterity. Any useful definition must have a quality of arbitrariness. Schneider pointed out that abnormal and psychopathic personalities came within the range of normal human variation, and the distinction between normality and abnormality is quantitative and not qualitative.

Tinnitus

Q—*A woman of 53 has thyrotoxicosis and tinnitus referred to the right ear which is slightly deaf. Her blood pressure is 170/90 mm. The thyrotoxicosis has responded to methyl thionuracil and she is well again except for the tinnitus which she describes as burning and thumping. What treatment do you advise?*

A—The description of the tinnitus suggests an arterial origin, therefore treatment should first be directed to reducing the slight hypertension. If such drugs as sodium nitrite or nitroglycerin prove unavailing, nicotinic acid or nicotinamide in large doses should be tried. Histamine diphosphate injections are sometimes helpful. But in many cases there is no prospect of cure, and the changes must be rung on the various sedatives, of which phenobarbitone and the bromides are the most useful.

Raven's Intelligence Test

Q—*Is Raven's test—the 'progressive matrices'—satisfactory for estimating general intelligence, or is it complicated by a special factor?*

A—A valuable summary of extensive experience in the Forces of the use of the Raven progressive matrices has been given by P. E. Vernon in a recent paper (*Occup. Psychol.* 1947, 21, 53). Numerous factorial analyses have shown that the scale is an almost pure *g* test, but that the visuo-spatial or *k* factor is also involved to a small extent. It is stated, however, that the test proved somewhat disappointing in practice. Only when the *k* factor was specially concerned, as it is in certain mechanical duties, did the Raven matrices add appreciably to the information given by other intelligence tests. Its reliability is rather low, and it is especially susceptible to non-intellectual influences such as age and temporary emotional stress. Furthermore it appears to function unequally at different parts of the range of intelligence. Among the bright it correlates highly with the more lengthy scales and probably represents for many purposes a useful twenty minutes of testing time. Among the below average however its reliability is low, hence it appears to be of little use for sorting out backwardness, dullness and high grade mental deficiency. Among the very dull of all it seems to become more efficient once again, but it is doubtful whether at this part of the range it is contributing anything that could not be better measured by other means.

Letters and Notes

Continental Holidays for Invalids

Dr A. PINEY (London, W1) writes: I have always regarded myself as a careful reader of the *Journal*, but I have not seen (and cannot trace) any reference to medical certificates for invalids who in their doctor's opinion, would benefit from a holiday on the Continent but for whose stay £75 would be insufficient. The national newspapers mention that in some cases the Treasury may allow a greater expenditure in order that the holiday may be of sufficient length. The treatment of pulmonary tuberculosis in Swiss sanatoria is an apparently reasonable example, especially as our own sanatoria are so full. In the case of milk and eggs there is, I understand, a committee one of whose duties it is to draw up a list of malades for which such supplements are permitted, while another is to advise the Minister of Food in doubtful cases. Does a similar committee exist to advise the Treasury? Is there a list of maladies that entitle patients to such certificates for Continental holidays? And is there any considerable body of medical opinion that advocates the treatment of thrombosis by foreign travel?

* * We understand from Exchange Control that the expenditure of patients going to Switzerland is not limited provided adequate medical evidence supports their going to that country. They should notify the authorities of the approximate time they intend to spend there and the sum required. Patients should apply on Form T2, which should be accompanied by a medical certificate.—ED, B.M.J.

Summer Prurigo

Dr J. B. SPEARMAN (Gillingham) writes: I am a sufferer from summer prurigo (April 19, p. 651). When in the R.A.M.C. I was posted for tropical service, I nearly used it to "dodge the column." Yet in India and Burma I had no trouble at all, and could sun-bathe with everyone else. Then with return to "civilian street" it reappeared. I usually reckon to see it appear during Whitsuntide, but this year it came out on the Sunday after Easter. I wonder if any of your readers can suggest a reason for its non-appearance in the Tropics? Perhaps it was graduated exposure on the voyage out, I kept out of the sun as much as possible in those weeks—but why should it return in this country?

Edentulous Halitosis

Dr F. COLEMAN (London, W1) writes: A more likely cause for an unpleasant taste in the mouth in edentulous patients is the wearing of dentures at night, and especially if they are constructed of vulcanite. A trained observer can always tell whether patients wear their dentures at night from the inflamed condition of the mucous membrane of the palate and gums. In the case of full dentures this represents an area of approximately 10 sq. in. (65 sq. cm.) of inflamed tissue (i.e., five or six in the upper and four or five in the lower). A vulcanite denture is more harmful in this respect owing to its porosity (increased if the rubber is insufficiently vulcanized), which harbours food and debris, apart from the rough surface it presents to the underlying tissues. The treatment should be to instruct patients to remove their dentures at night and to cleanse them, and if this fails to give relief to substitute an acrylic resin or a metal based denture for the vulcanite denture. Retained roots and buried roots should be excluded as suggested, but are less likely to be the cause of the condition under discussion (*Journal* May 3, p. 625). It should be noted that the word "halitosis" suggests smell rather than taste, although the two conditions are no infrequently associated.

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BRITISH MEDICAL JOURNAL

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THE EPIDEMIOLOGY OF TUBERCULOSIS*

By

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The earliest observation on the contagious nature of tuberculosis occurs in the Ordinances of Manu in India, thirteen centuries B.C. In these, pulmonary consumption and swelling of the glands of the neck are declared to be unclean, incurable diseases. Those who wanted to marry are cautioned not to select a spouse from a consumptive family even though the family had a good lineage and possessed great wealth. These laws show a knowledge of tuberculosis, and as the disease was regarded as an impediment to marriage it seems likely that it was regarded as contagious. In Europe the earliest reference to the contagious nature of tuberculosis was made by the Greek orator Isocrates in his *Aegineticus* (§ 29), written about 390 B.C. In this he states "The majority of those who had nursed this disease [phthisis] had themselves fallen victims to it." The Hippocratic school, however, did not generally subscribe to this view, preferring the idea of the tuberculous diathesis which has persisted even to the present day. About one hundred years later Aristotle realized that consumption could be spread by close contact with the diseased person. Galen and Avicenna held similar views. It is more than a tragedy that these early Greek observations were disregarded and forgotten in later centuries, for it was only towards the end of the seventeenth century that in Latin countries such as Spain and Italy the contagious nature of the disease was again being recognized. In Britain, Edward Mainwaring was possibly the first to assert that tuberculosis was spread by contact, as in 1667 he wrote "You must not frequently converse with a phthisical person whose unwholesome breath may infect the sound by drawing in putrid vapours which the other breathes forth, but above all a phthisical bedfellow is most dangerous to affect a sound person and chiefly to be avoided."

Later, in 1694, Richard Morton in his book *Phthisiologia*, which is an outstanding presentation of the symptomatology of tuberculosis, wrote "A contagious principle also propagates the disease, for, as I have found by experience, an affected person may poison a bedfellow by a kind of miasm like that of a malignant fever." Towards the middle of the nineteenth century, however, leaders of the profession like Bright and Addison (1839), also Graves (1843), almost completely disregarded the contagiousness of tuberculosis, and attached great importance to diathesis. This unparalleled reverence for the past with its diathesis had so dominated men's minds that little or no progress had been made for centuries regarding the true nature of the disease. Laennec (1826), though he unified the whole

concept of tuberculosis by asserting that wherever tubercles occurred the disease was tuberculosis, was of the opinion that at least in France tuberculosis was not usually contagious. That tuberculosis could be produced in animals by inoculation with tuberculous material was shown in 1843 by Klencke, and in 1868 Villemin finally proved experimentally that tuberculosis was an infectious disease. It was Villemin who first showed that tuberculous material from bovine sources was more virulent for rabbits than that from human. In 1867 William Budd, of North Tawton, as a result of a study of the geographical distribution of consumption in past and present times, concluded "The tuberculous matter itself is (or includes) the specific matter of the disease and constitutes the material by which phthisis is propagated from one person to another and disseminated throughout society." Even after the discovery of the tubercle bacillus by Koch in 1882 we find from the Collective Investigation Record (British Medical Association, 1883) that many British physicians reported that they had never observed a case of probable transmission of the disease from a case of phthisis. Later Theobald Smith (1896, 1898) reported the existence of "a distinctively human or sputum, and a bovine variety of tubercle bacillus."

Though Koch proved that the tubercle bacillus was the *causa peccans* and stressed the importance of inhalation of infected sputum in the spread of the disease, it is strange how in 1901, while accepting that human and bovine types were different, he yet concluded that the latter was rarely pathogenic for man. Koch (1882) had undoubtedly found the bovine bacillus in human disease, for he had obtained from a case of caseous pneumonia (No. 27) a culture of tubercle bacilli which after inoculation into the anterior chamber of the eye proved virulent for rabbits. In 1911 the British Royal Commission proved conclusively that the bovine bacillus was a definite cause of tuberculosis in man. It is not surprising that Koch went astray when we consider the relative rarity of primary abdominal tuberculosis in Germany as compared with this country. Indeed, Koch himself in his address gave post mortem statistics from various German sources to support the rarity of this condition. At a later date Ghon and Kudlich (1930) found in 2,114 cases of tuberculosis in children in Central Europe a primary intestinal infection in only 24 (1.14%) and tonsils infection in 2 (0.09%).

Cycle of Infection in Human and Bovine Tuberculosis

The two chief varieties of tubercle bacilli to be considered are the human and the bovine types, as they are almost solely responsible for disease in man and in animals.

* A Special University Lecture in Pathology delivered in the University of London on March 6 1947

The avian may be dismissed, owing to the rarity of this type of infection in the human subject (Gloyne, 1933, Feldman, 1938, Bradbury and Young, 1946). The human type passes from man to man, more often by droplet infection than through the agency of dried sputum.

Infection with the bovine type is found chiefly in cattle, though many other types of animals and also man are liable to be infected. The chief mode of spread in cattle is by droplet infection, and thus, as in man, the primary lesion is most often in the lungs. Man is infected with bovine bacilli chiefly through the ingestion of contaminated milk, though air-borne infection is also possible, as is well exemplified in the cases of bovine conjunctival tuberculosis in millers reported by Jensen *et al* (1940). The cycle of infection, however, does not stop there (Fig 1), as it has

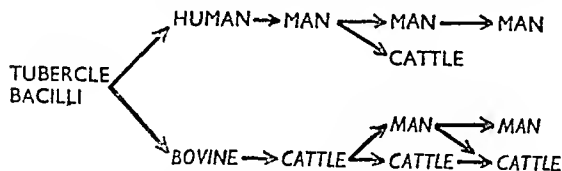


FIG 1—The cycle of infection in man and in animal

been observed that bovine infection may pass back from man to cattle (Magnusson, 1941, 1942, Griffith and Munro, 1944, Plum, 1940, Nielsen and Plum, 1939, Tice, 1944), and also from man to man, as in the five proved cases reported by Griffith and Munro (1935), Munro (1939), Jensen *et al* (1940), and Hedvall (1942).

The human type of tubercle bacillus may also infect cattle, as it has been observed that cows in contact with a human case of pulmonary tuberculosis, though developing no sign of active disease, may give positive tuberculin reactions. Many of these cases have been proved by the isolation of a human type of bacillus from the tissues of cattle which may show no active disease or minimal lesions in either the respiratory or the alimentary system (Giltner, 1923, Hindersson, 1933, Stenius, 1933, Bang and Jepsen, 1936, Crawford, M (personal communication), 1936, Plum, 1937, Van der Schaaf and Van Zweiten, 1939, Reid, 1939, Plum, 1940, Nielson and Plum, 1939, Feldman and Moses, 1941, Hillemark, 1942, Rosa, 1942, Magnusson, 1942). Neither Hindersson (1933) nor Plum (1936, 1937) succeeded in isolating human tubercle bacilli from the milk of cows naturally or experimentally infected with the human type. Thus infection of cattle with the human type is more of a nuisance, as it results in confusion at tuberculin-testing. Bovine infection, on the other hand, usually gives rise to serious losses. Someone in contact with a previously clean herd should be suspected when many positive reactors suddenly appear at routine tuberculin-testing.

The cycle of infection in man and in animals is thus much more complicated than originally suspected.

A Infection with the Human Type of Bacillus

1 Respiratory

The chief pathway of infection for tuberculosis in the human subject is via the respiratory system. In a consecutive post-mortem series of 434 cases of tuberculosis in children under 13 years the primary site of infection was found in the respiratory system in 283 (65.2%), in the abdomen in 140 (32.3%), and in the cervical glands in 9 (2.07%). No definite primary portal of infection could be identified in 7. (In 5 of the cases there appeared to be double sites of entry—one in the thorax and the other in the abdomen.)

Respiratory tuberculosis is most commonly caused by the inhalation of infected droplets, occasionally, however, pulmonary tuberculosis may be secondary to tuberculosis elsewhere, as, for example, in the mesenteric or cervical glands, due usually to blood spread from these sites. Tubercle bacilli must, however, be frequently inhaled without producing any recognizable lesion, and it must be assumed that in these cases the tubercle bacilli are destroyed by the resistance of the tissues of the healthy individual. It is thus not the bacillus itself, the presence of which is essential, but the harmonious working together of many factors which results in disease. These factors probably play a more important part in the pathogenesis of the disease than the organism, but the true nature of many of them and their mode of action is still obscure. Tuberculosis is a universal disease and the chances of infection are enormous, and it is a native or acquired resistance, or both which prevents the disease assuming epidemic proportions. Is this resistance humoral or cellular? It would appear to be more associated with the latter, as Lurie (1942) has shown experimentally that tubercle bacilli phagocytosed by the mononuclear leucocytes of normal animals are not killed whereas the same cells in actively tuberculous or immunized animals have increased bacteriostatic or bactericidal properties which seem to be independent of the body fluids as these properties remain after the cells have been transferred into a normal animal.

In a series of cases of primary respiratory tuberculosis in children under 13 years we isolated the human type of bacillus from the primary lung lesion or the tracheo-bronchial glands in 160 (96.4%) and the bovine in 1

TABLE I—Primary Respiratory Tuberculosis Types of Tubercle Bacilli

Type	0-1 year	1-2 years	2-3 years	3-6 years	6-13 years	Total
Human	58	31	21	24	26	160 (96.4%)
Bovine	1	2	2	1	—	6 (3.6%)

(Table I) Griffith and Munro (1944) in figures collected from various authors found that the types of tubercle bacilli occurring in the sputum of Scottish patients with pulmonary tuberculosis comprised 2,609 (94.3%) human and 160 bovine strains, and from cases in England, Wales and Eire 4,113 (98.1%) human and 81 bovine.

In most cases of human infection in childhood the source of infection is usually a near relative, and in a recent series of cases of meningitis of all ages due to the human type of bacillus investigated in Scotland the mother was the most frequent source (Table II). The significance of this family

TABLE II—Relationship of Contact to 144 Cases of Meningitis Infected with Human Strains

Mother	44	Brother	20	Grandmother	1
Father	22	Aunt	12	Grandfather	1
Sister	21	Uncle	6	Others	11

infection is important, as it subjects those coming in contact with it to repeated infections, and also to the liability of massive doses of tubercle bacilli. Both these factors may overcome any natural or acquired resistance possessed by a member of a family, more particularly should the resistance be lowered by acute disease, overwork, or malnutrition.

In childhood the primary infection results in the primary lung lesion, originally described by Parrot (1876) though often credited to Ghon (1916). It may also occur in adults and during the war period we observed typical childhood acute primary pulmonary lesions more often in the adult than formerly, due, I think, to the greater number of rural dwellers coming to work in factories in urban areas. The primary lung lesion in the child is usually small and m

be readily missed unless carefully searched for at necropsy (Blacklock, 1932). It is usually single, but why this should be so in view of the probability of multiple infections—as, for example, in the case of a child with a tuberculous parent—is unknown. The secondary lesion in the tracheo-bronchial glands in the child under 3 years is usually massive. The reason for the greater size of the lesion in the glands as compared with that in the lungs would appear to depend on the degree of hypersensitivity which the child has developed in the interval elapsing between the occurrence of the lesion in the lung and that in the glands. Owing to this hypersensitivity the lesion in the glands is more of an exudative type, and thus massive caseation occurs. In the older child the degree of tuberculosis in the tracheo-bronchial glands is usually less than that in the younger, in fact in older children and adults the glandular lesion may be entirely absent. Terplan (1946) has also noted this. In post-mortem examinations in adults small healed primary lung lesions are often found, and in a series of cases still being studied in the Royal Infirmary, Glasgow, only about 5% show any evidence of tuberculosis in the tracheo-bronchial glands. This relative absence of secondary lesions in the glands of older children may be partly accounted for by the more frequent evidence of healing as judged by the growth of fibrous tissue around the primary lung lesion. This fibrosis increases *pari passu* with age (Table III), and will close lymphatic channels

TABLE III—Primary Lung Foci in Children Evidence of Healing

Age	No. of Foci	Percentage Healing
6 months	40	0
12	58	10.3
2 years	62	37.1
3	40	40.0
6	44	52.2
13	46	67.4

and thus prevent the spread of the bacilli to the glands. This, however, is not the primary reason, for it is obvious that in order to allow granulation tissue to form and subsequent fibrosis to occur the bacilli must be fixed at the site of infection and prevented from undue multiplication, at least for a time, by some bodily defensive mechanism. Age is undoubtedly an important factor in determining healing. The longer the primary infection in the child is delayed the greater chance of resolution, particularly in the period between 5 and puberty, but why this should be so is unknown. This probably accounts for the higher mortality in children of the hospital class as compared with those who are better off. In the former there are more opportunities of infection occurring in early life, due largely to the overcrowded conditions under which most of them live, than in the latter, in whom primary infection is usually delayed until school age or later. A further and important factor is that between 5 and 14 years there is greater proportion of changes from a positive to a negative tuberculin reaction than at any other age (Zacks and Cartwell, 1942).

If the disease is not localized at or near the site of infection then, in the child, generalization occurs, resulting in acute generalized miliary tuberculosis with or without meningitis. The total human percentage for the latter in Scotland was 82.8 as reported by various workers between 1907 and 1947 (Watt, 1907; Wang, 1916–17; Blacklock, 1932; Griffith, 1934; Blacklock and Griffin, 1935; Macgregor *et al.*, 1935; Macgregor and Green, 1937; Macgregor and Scott, 1936; National Investigation (Scotland), 1933–4). The proportion of human infections was higher in the older than in the younger age groups (Table IV). The main portal of entry of human strains is via the lungs,

TABLE IV—Types of Tubercle Bacilli Cerebral Tuberculosis Scotland

Date	0–5 years		6–15 years		Over 15 years		Total	
	H	B	H	B	H	B	H	B
1907–37	178	72	71	19	30	6	281*	99*
1943–4	193	42	153	15	152	5	498	62
Total	371	114	224	34	182	11	779	161
Human %	76.5		86.8		94.3		82.8	

* Includes 2 cases ages not stated

and thus most of these cerebral deaths should be included with tuberculosis of the respiratory system, though by the Registrar-General they are tabulated separately under the heading of 'meningeal tuberculosis'.

The first infection in the lungs with tubercle is pathologically distinct from all others in that it affects a virgin soil and at its onset is localized. In most cases, particularly in older children and in adults, this localization persists and complete healing results. But the patient has now developed hypersensitivity, the degree of which varies from patient to patient for some years after the initial infection, though it tends to lessen as age advances. For example, in a series of still unpublished Mantoux tests which Griffin and I made in 1932–4 in 1,732 clinically non-tuberculous children, all under 13 years, testing each child first with 0.1 mg and thereafter, if negative, with 1 mg and 10 mg of old tuberculin, we found that of those who did not react to 0.1 mg the percentage who gave positive reactions with 1 mg increased as age advanced. The same was true of those who reacted negatively to 1 mg but positively to 10 mg (Fig. 2). On

account of this waning hypersensitivity in the older as compared with the younger child there is more of a formative response on the part of the fixed tissues, with resulting localization of the infection. The tissue reaction to reinfection tuberculosis, which in the adult is usually exogenous, depends on many factors such as degree of hypersensitivity and of immunity, dose and virulence of the infecting bacilli. Of these various factors hypersensitivity is the most easily investigated in the human subject, the others are difficult. Experimentally infected animals in which hypersensitivity has waned have acquired a high degree of resistance to any subsequent infection (Willis, 1928). The same would appear to be the case in the human subject, for in most adults healed primary lesions, often minute, are found post mortem. It should be noted however, that this acquired resistance is by no means absolute and may be broken down by acute and chronic disease, overwork, and malnutrition. A high degree of hypersensitivity is an unfavourable factor as demonstrated in animals by Rich and McCordock (1929) and in tissue cultures by Rich and Lewis (1928). These authors have shown that tubercle bacilli *per se* cause little necrosis in normal tissue, though they quickly do so when hypersensitivity is present.

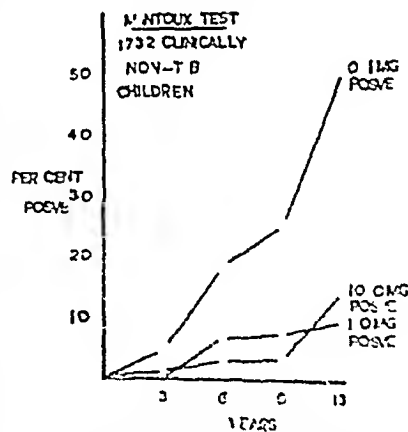


FIG. 2—Results of a series of Mantoux tests showing increased percentage of reactions as age advances

2 Alimentary Infections

Figures for primary abdominal tuberculosis are small. The collected figures from 1914 to 1944 for Scotland (Mitchell, 1914b; Wang, 1916-17; Blacklock, 1932; National Investigation, 1943-4) show a total percentage of human infections of 22.1 (Table V). As most of the abdom-

TABLE V—Types of Tubercle Bacilli, Tuberculosis of Abdomen and of Cervical Glands, Scotland

Site and Date	0-5 years		6-15 years		Over 15 years		Total	
	H	B	H	B	H	B	H	B
Abdomen 1914-32 1943-4	10 3	51 5	3 1	10 2	2 2	2 4	15 6	63 11
Total	13	56	4	12	4	6	21	74
Bovine %	81.2		75.0		60.0		77.9	
Cervical glands 1914-35 1943-4	9 17	50 30	13 8	44 55	5 27	2 23	29* 52	102* 108
Total	26	80	21	99	32	25	81	210
Bovine %	75.5		82.5		43.9		72.2	

* 2 human and 6 bovine cases included; ages not stated but under 12 years.

inal cases were examined post-mortem, care was taken to exclude any source of infection in the lungs from which the abdomen could have been infected. To account for these primary alimentary lesions human tubercle bacilli must have been swallowed in food contaminated by droplet infection or, in the case of young children, by fingers contaminated from floors on which droplets of sputum may have been present. In the case of children between 9 months and 2½ years Dieudonne (1901) recovered tubercle bacilli from the dirt on their hands in 2 of 15 cases. Still another method is through the imperfect cleansing of eating utensils, as has been demonstrated by Hutchinson (1947) for dysentery bacilli, streptococci, and staphylococci.

Of the cases of primary tuberculosis of the cervical glands investigated up to 1944 in Scotland (Mitchell, 1914a, 1914b; Griffith, 1915, 1929; Wang, 1916-17; Blacklock, 1932; Griffith and Smith, 1935; National Investigation, 1943-4) the proportion of infections with the human type was 27.8%. The human type of bacillus is thus not mainly responsible for tuberculosis of the abdomen and cervical glands.

B Infection with the Bovine Type of Bacillus

1 Alimentary

Infection with the bovine type of bacillus is mainly through the alimentary system, and accounts for the greater proportion of cases of cervical gland and abdominal tuberculosis in the various Scottish investigations (Table V). The highest proportion of bovine infections is found in early life, and this is probably due to the greater consumption of milk at that age than at any other. There are thus greater opportunities for infection should the milk contain tubercle bacilli. As the mucosa of the intestine and of the nasopharynx is a less favourable site than the lungs for attack by tubercle bacilli, which grow slowly, some coincidental lesion may probably allow the bacilli to invade these mucosae. The more frequent occurrence of acute catarrhal conditions in these sites in childhood as compared with adults may provide a *locus minoris resistentiae* in which tubercle bacilli may gain a foothold. This may partly account for the greater frequency of tuberculosis of the cervical glands and of the abdomen in children than in adults. Further, the possibility of acquired resistance due to an arrested infection in the lungs may also determine the relative infrequency of

alimentary tuberculosis in the adult as compared with a child. This is well exemplified in the case of a phthisic cavity in the adult where, in spite of a sputum containing numerous tubercle bacilli, secondary tuberculous ulcers may not be found in the intestine.

The rural inhabitant is more liable to bovine infection than the urban, as is shown by the greater incidence of bovine infections in cervical adenitis in country (77.8%) than in urban patients (46.2%) (Table VI). The fig-

TABLE VI—Permanent Residence of Patients, 1943-4 Investigation, Scotland

Site of Disease	Town		Country	
	H	B	H	B
Abdomen	3	6 (66.7%)	3	5 (62.5%)
Cervical glands	28	24 (46.2%)	24	84 (77.8%)
Cerebral*	306	20 (6.1%)	191	42 (18.0%)

* In 1 case residence not stated.

for abdominal tuberculosis are too small to be used for comparative purposes, those for cerebral tuberculosis, however, show a bovine percentage three times higher rural than in urban cases. More detailed analysis of figures obtained in the 1943-4 investigation further confirms this higher proportion of bovine infections in rural areas. In tuberculous meningitis 8% were infected with bovine strains in the large burghs and cities of Scotland as against 15.9% in the rural areas of the counties; surgical tuberculosis 20.1% of the cases in the burghs and cities were caused by bovine infection, in the rural areas this percentage was more than double—45.4%. Bovine infection is thus more of a rural than an urban problem. This finding is further substantiated by figures for the western area of Scotland. In this area 56.7% of the entire population of the country reside, and Glasgow accounting for 39.8% of the population of the area. In 1914 there were in this area 3,219 (77.5%) of the 4,146 attested herds in Scotland. In Ayrshire, for example, 88% of the dairy herds are attested. This large proportion of attested herds in the western area partly accounts for the region having the lowest bovine percentage of all in Scotland in the meningitis series and the second lowest in the surgical series (Table VII). It is not the w-

TABLE VII—Percentage Bovine Infections, Cerebral and Surgical, Scotland

Area	Cerebral	Surgical
Eastern	27.3	54.2
North-eastern	26.7	44.1
South-eastern	13.4	43.7
Northern	8.3	24.0
Western	6.1	27.8

explanation, which is more apparent when the figures for the western area are analysed. In the meningitis cases Glasgow had a bovine percentage of 2.3, the large burghs in the Clyde Valley area had together 8.2, and the rural areas in the Western Counties 10.9. The corresponding bovine percentages in the surgical cases for these places were 8.8, 13.6, and 44.4, respectively. In Glasgow 95% of the milk sold for consumption is subjected to some form of heat treatment (45.9% pasteurized under licence, 49.1% heat treated, and 5% sold as raw milk), and this accounts in part for the very low bovine percentage in the city. In the large burghs the proportion of milk subject to some form of heat treatment is lower than in Glasgow, while in the rural districts of the western area from where Glasgow draws its milk supply any form of heat treatment is practically non-existent. Thus in Glasgow, partly owing to the extensive heat treatment of milk, the mortality rate for bovine meningitis is less than one quarter and the

morbidity rate in surgical tuberculosis due to bovine infection is one-fifth of those in the rural areas of the Western counties from which it draws its milk supply. Ruys (1946) has made similar observations in Amsterdam, where during the war practically all the milk was pasteurized, and where there was a decrease in bovine tuberculosis in children, though no such decrease was observed in the surrounding rural areas.

Another factor in this difference in the incidence of bovine infection in urban and rural inhabitants which must be considered is an immunological one. Infection with the human type of bacillus must be less common in the country than in the towns, and the rural dweller therefore escapes this type of infection, he consequently develops no tuberculo-immunity, and thus is more liable than the town inhabitant to bovine infection. Indeed, it has been suggested that the presence of bovine bacilli in milk may serve as an immunizing agent in the human subject. This is, however, a dangerous doctrine, for neither the dose nor the virulence of the bacillus is under control, and tuberculous disease, often fatal, may result. For example, applying the bovine percentage—namely, 11.1—which we obtained in Scotland during 1943–4 for meningitis to the 1,033 meningeal deaths recorded for these years by the Registrar-General (Scotland), it can be computed that 115 of these were due to infection with the bovine bacillus. Similarly applying the bovine percentage of 33.8 for surgical tuberculosis obtained in the same investigation to the 1,043 cases of surgical tuberculosis notified in these years, it is estimated that 6,906 of the cases were caused by the bovine bacillus.

Reinfection tuberculosis due to the bovine bacillus is unusual, as it is not common to find post-mortem evidence of fresh infection in cases of tuberculosis of the abdominal or cervical glands when old lesions already exist. This is a marked contrast to the lung, where the finding of a small healed primary focus, usually without glandular involvement and more recent reinfection tuberculosis, is not uncommon. It is worthy of comment, however, that even in healed cervical and abdominal glands viable tubercle bacilli may still be present; indeed, we have been able to isolate bovine bacilli from calcified abdominal glands. From such an apparently healed focus tubercle bacilli may escape and cause secondary lesions in bones, joints, urogenital system, etc., years after the primary infection in the glands has taken place.

2 Respiratory Infections

Respiratory tuberculosis of bovine origin is rare, accounting for 3.6% in our necropsy series in children (Table I), and for 5.7% of cases in Scotland and 1.9% in England, Wales, and Eire in the collected figures for all ages reported by Griffith and Munro (1944). In our series bovine bacilli were isolated from the primary lung foci and related tracheo-bronchial glands, thus there is little doubt that the infection was of respiratory origin. Infection in these cases was probably derived from open cases of pulmonary tuberculosis due to the bovine bacillus.

Conclusion

The duty of every medical man is first to prevent disease, that is not possible, to cure, and if that is impossible, to alleviate. How is this dictum to be applied to tuberculosis? As regards prevention—human infection is the more difficult to control as there are so many known and unknown carriers of the disease in our midst. As Osler (1905) remarked "The germ of tuberculosis is ubiquitous; few reach maturity without infection, none reach old age without focus somewhere." It is obviously impossible to segre-

gate all those who may spread the disease, but in factory, in workshop, in school, and in college mass radiography together with adequate clinical examination can play an important part in excluding foci of infection, especially among the young susceptible 15-to-25-years age group, in which tuberculosis is the main cause of death. But mass radiography applied indiscriminately to the population at large will achieve little if we cannot admit to hospital all those who are liable to disseminate the disease, both the young incipient and the old chronic case. Little is eventually to be gained in the control of the disease by dismissing from hospital the old chronic to provide a bed for the young case that will only result in further spread of the disease. All this is a problem for preventive medicine. Higher standards of living, housing, nutrition, and recreation must also play their part; these are problems for social medicine. These measures may help to reduce the incidence of the disease but will not completely eradicate it.

Bovine infection is the easier to control, and in this agriculturists and veterinarians have already accomplished much. The ideal, of course, is that all milk for human consumption should come only from attested herds, but this is a long-term policy and in the meantime some universal form of adequate heat treatment seems to be the only solution, particularly in view of the bulking of our milk supplies. This is no counsel of despair, as it must be emphasized that in addition to tuberculosis there are many other equally important milk-borne diseases which are preventable by heat-treatment, even though all milk eventually comes from attested herds.

Prophylactic vaccination with BCG is still a controversial question, and over 20 years of trial has left the medical profession in a state of confusion as regards its efficacy. Many reports, chiefly from Scandinavia and more recently from America (Aronson and Palmer, 1946), and the recent Memorandum to the Minister of Health (Tyler, 1946) testify to the advisability and the adequacy of this measure. It is uncertain, however, that in a mixed population such as ours the same results would hold as elsewhere, particularly as tuberculosis is such a prevalent disease with us, and frequent infection must be the lot of us all. The discovery by Petroff *et al* (1927–8) that BCG could dissociate into avirulent R and virulent S forms raised doubts in the minds of many regarding the use of a living vaccine. No definite case of tuberculosis has, however, yet been proved as resulting from the use of properly prepared BCG vaccine. Vaccines of killed bacilli have been employed with apparent success by Goodwin and Schwentker (1934), Opic *et al* (1939) and Wells *et al* (1944). As in all tuberculosis research, it will be long before we can assess and pass a final judgment on the efficacy of BCG vaccination. This interval must be at least 15 to 25 years in order to allow us to judge its efficacy in the young adult age group, in which at present tuberculosis is such a serious problem. Meanwhile, BCG may serve a useful function until chemotherapeutic or immunological research provides us with something as reliable for the cure of tuberculosis as penicillin has been for pyogenic infections. In his Memorandum Tyler (1946) has given all the essentials for a scheme of prophylactic vaccination. It is hoped that those in authority will carefully consider his suggestions, as the disaster at Lilbeck is still fresh in our minds.

With regard to the cure of established tuberculous disease, nothing can be added to the valuable contribution which D'Arcy Hart (1946) has made to the chemotherapy of tuberculosis. Streptomycin is still under trial as a curative agent, and the results of these trials are awaited with interest.

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OXYGEN POISONING IN MAN

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PART II

Signs and Symptoms of Oxygen Poisoning

The available knowledge of the signs and symptoms of oxygen poisoning in man at the beginning of these experiments was extremely scanty. Only about 12 cases of exposures where acute toxic symptoms had occurred had been described. It is not certain that Bornstein suffered from oxygen poisoning (see below). All these exposures were in compressed air, and with the exception of Bornstein all subjects were seated and at comparative rest. The British Naval instructions at this time (1905) read as follows: "Symptoms: Tingling of the fingers and toes and twitching of the muscles, especially round the mouth (warning symptoms). Convulsions followed unconsciousness and death if a remedy is not taken." The US Naval instructions stated: "The first signs of toxicity are the flushing of the face, nausea, dizziness, muscle-twitching. A feeling of being irritable and a loss of excitement may follow. As the pressure is increased, nausea, vertigo, and, finally, unconsciousness and convulsions ensue."

It was inevitable, with the limited data available, that these instructions were brief and not altogether accurate. Tingling of the fingers and toes had not been reported in any experiment, but was inferred from its occurrence in the aura of idiopathic epilepsy. In the first large series of human experiments, described in this article, a more complete picture of the syndrome of oxygen poisoning in man has resulted. Most of the signs and symptoms described in the pre-convulsive stage, in the auras, or the non convulsant equivalents of epilepsy have been encountered. As in that disease, the total of signs and symptoms is now known. Yet—again as in epilepsy—the individual pattern of signs and symptoms varies enormously within this framework. Signs and symptoms as experienced when the subjects were breathing pure oxygen in compressed air are first described, as the subjects' experience was more normal and careful direct observation possible.

Facial pallor usually occurs a few minutes after beginning of the exposure. It varies from person to person in degree and time of onset. The degree of facial pallor is in no way indicative of the subject's sensitivity or of the impending end-point. Fasciculation of the lips or face is often seen early in the experiment and continues throughout the exposure. This has been partially attributed to fatigue caused by the mouthpiece and a not infrequently nervous tension. It is a common occurrence when pal-

re breathing from a spirometer for B M R estimations fasciculation frequently appears in muscles which later show severe and sustained twitches, and it is undoubtedly increased by breathing oxygen at increased tensions. A number of subjects show facial perspiration varying in degree from fine beads to literal pouring. Generalized perspiration is infrequent, and is usually associated with the occurrence of more acute symptoms. Salivation seems to be increased (as in animals), but some is undoubtedly reflex from the irritation of the mouthpiece, and is therefore difficult to assess. Almost all the subjects appear to be under stress even though they have no specific symptoms. These are all early findings, and the subject will continue without further event for varying times according to his tolerance.

The next group of symptoms to be described may be classified as minor crises in so far as they are usually transient and the subject is able to continue breathing oxygen. The subject may complain of nausea, vertigo, malaise, apprehension, or choking sensations. Intermittent p-twitching of a slight or moderate degree or an increase in the frequency of respiration may be noted by the observer. Palpitations, involving an awareness not only of the action of the heart but of arterial pulsation throughout the body, may cause the subject considerable discomfort. These disturbances may last for only a few seconds to a few minutes, and the subject finally resumes his former symptomless state and may continue the exposure for a considerable time before an acute end-point. The course of these minor crises is unpredictable, and the observer has to be constantly on the alert for a sudden exacerbation with danger of convulsion. Other subjects have no such transient episodes, but first experience pronounced symptoms shortly before or at the end-point.

Finally, a group of symptoms occur which, although not demanding immediate cessation of the exposure, signify that intoxication is becoming more intense and that acute symptoms will not be greatly delayed. There may be pronounced mood changes with depression or euphoria, severe irrational apprehension, sometimes amounting to acute terror, may be experienced. Alternatively, the subject may feel "far away" or experience complete indifference to his surroundings. Others are somnolent, and in one case the subject fell into a deep sleep from which he was aroused with difficulty. At this time the attendant may notice various abnormalities of behaviour, the subject showing clumsiness with his apparatus, loss of balanced judgment, fidgeting, or the unnatural disinterest already mentioned. A sensation of depression or constriction, frequently indescribable, in the epigastrium or in the praecordium may be experienced. Visual or auditory hallucinations are late phenomena and mean that the end point is not far off. They have only occasionally been reported in the earlier crises. Visual disturbances include flashes of light, usually in the centre of the visual fields, haloes round objects, lateral movements of images, micropsia, and apparent changes in illumination. Auditory hallucinations such as bell-ringing and knocking are far less common. Both deafness and hyperacuity are encountered. Elaborate auditory or visual hallucinations, which are classified initially under psychical seizures, are not experienced. Unpleasant tastes and odours have not been encountered (the "dry" but were reported by two subjects in the "wet"). Constriction of the visual fields occurs only after prolonged exposures, is gradual in onset, and can be marked, without the more acute manifestations of oxygen poisoning. In a few cases nausea and vertigo, together or separately, become so severe that the subject reverts to air-breathing before convulsive symptoms appear.

Definite twitching of the lips usually means that the end-point is near. This is the most common termination. The twitches are powerful and sustained. They are usually first seen on one side of the upper lip, but if the exposure continues they increase in power and frequency and spread to the whole mouth and face and sometimes to other parts of the body. On occasion a marked twitch is followed by a long period of quiescence before recurrence. This is exceptional, and in most cases, if oxygen-breathing continues, convulsive movements of the lips pass into generalized jactitations or convulsions. Twitching of the cheek and nose are often seen with or without lip-twitching. Occasionally there is isolated twitching of the arm, leg, spinal, or abdominal muscles.

In some cases a few seconds or minutes before the end of the respirations, which are normal and serene throughout, show a number of abnormalities. The commonest occurrence is rapid panting. In other instances there is marked inspiratory predominance, reminiscent of asthma, but without wheezing. Respirations sometimes become grunting in character, and in severe cases this may develop into an acute state of apnoea in the inspiratory position. Subjects with severe respiratory symptoms usually convulse, although a few escape on being turned on to air.

It will be seen that an accurate description of such a varying picture is not easy. The clinical impression gained was of two distinct processes occurring in many different patterns. One is an insidious intoxication which may affect the function of practically any part of the central nervous system, and added to this is an increasing convulsant tendency that is usually, but not always, first manifested in the facial muscles and finally becomes generalized. There are great variations in the resistance to the general background of intoxication and in the resistance to the convulsant factor. Certain individuals may show powerful twitching movements, either localized or generalized but retain consciousness, while others pass into what is indistinguishable from an epileptic fit immediately after such convulsive movements and sometimes in their complete absence.

The syncopal type of attack was seen on only a few occasions. There were usually associated muscular twitchings. One of these subjects appeared like a case of so-called "shock," being pale, flaccid, and in a cold sweat, with a poor pulse. He did not convulse. The blood pressure was not ascertained. Another subject collapsed but did not appear to be "shocked." He was unable to move or speak, although he appreciated his surroundings. Such states are described in epilepsy under the name of cataplexy. Space does not allow the description of individual exposures.

Convulsive Attacks

The convulsive attacks of oxygen poisoning were on the average of two minutes' duration, the subject being unconscious. If the subject was turned on to air immediately the convulsion started only one attack resulted. In one case where oxygen breathing was inadvertently continued a second convulsion began after a pause of about thirty seconds. Incontinence occurred in a number of instances. Detailed description of these attacks is unnecessary as they in no way differed from a major convulsive attack of idiopathic epilepsy.

Confusion, dissociation, headache, nausea, and vomiting as experienced after an epileptic fit occurred in many cases. Some individuals showed marked emotional instability, which is not a feature of leptazol or electrically induced post-convulsive states. The majority, however,

were subdued and ataxic for about 15 minutes after, and if left alone fell asleep. Occasionally subjects complained of pronounced photophobia. In a number of cases there was post-convulsive automatism, the subject suffering from complete amnesia for a period from one-half to seven hours. There were some stiff backs and subcutaneous extravasation due to muscular violence.

Off-effect

A number of subjects suffered marked exacerbation of symptoms after returning to air-breathing. Severe nausea, increasing pallor, sweating, and vertigo have all occurred in subjects who were previously symptomless. Other subjects showed a sudden dissociation and panting. In a few cases it appeared that convulsions were precipitated by reverting to air-breathing. A possible explanation of this off-effect may be the sudden fall in oxygen tension, causing temporary cessation of respiration in already damaged nerve cells. In some cases, no doubt, the toxæmia was already of such a degree that convulsions were inevitable. Decompression appears to precipitate convulsions in such subjects and also in animals. The "startle" phenomenon, where sudden and unusual sensory stimuli precipitate convulsions—that is, decompression—may account for some of these cases*. It has therefore become a rule in this work that if a subject has severe symptoms and reverts to air-breathing he is not decompressed until his symptoms have gone and relative normality has been attained.

The recovery from a non-convulsant end-point is remarkably rapid and the subject appears normal in five minutes or less. All twitching usually disappears in about a minute. The subject may appear dazed for a few minutes longer and his respirations are inclined to be irregular, with intermittent deep excursions. Euphoria is frequent, but this may well be due to relief at having survived a toxic exposure without convulsing. In some cases pallor persists for as long as an hour, and sometimes the subject behaves as if he were slightly drunk for the same period. This latter syndrome is known in experimental diving circles as "oxygen jag".

Oxygen Poisoning under Water

So far only signs and symptoms as seen in the "dry" have been described. In a series of 388 dives to end-point, under water, the following symptoms were recorded: convulsions in 46 (9.2%) cases, twitching of lips, 303 (60.6%), vertigo, 44 (8.8%), nausea, 43 (8.3%), respiratory disturbances, 19 (3.8%), twitching of parts other than lips, 16 (3.2%), sensations of abnormality (drowsiness, numbness, confusion, etc.), 16 (3.2%), visual disturbances, 5 (1%), acoustic hallucinations, 3 (0.6%), paraesthesiae, 2 (0.4%). The most striking observation is the remarkable predominance of lip-twitching. It is probable that many of the more subtle symptoms occurred but that they were difficult to appreciate under water. A number of divers who reported severe lip-twitching, and were hauled up jactitating and confused but did not convulse, remembered only severe lip-twitching as their end-point. Further observations by the attendant at such a critical time were difficult, particularly with the subject in a diving-suit.

Since Bornstein's single experiment in the "dry" (1912) it has often been stated that exercise at toxic tensions caused twitching of the muscles employed. In a series of "wet" dives to toxic depths with hard work symptoms were analysed in 120 end-points. The findings were as follows: Convulsed, 6.8%, lip-twitching, 50%, vertigo,

20.8%, nausea (vomiting two cases), 17.5%, choking sensations, 2.5%, dyspnoea, 2.5%, body tremors, 1.7%.

It appears that nausea and vertigo increase in frequency if the subject is exercising. Twitching of the muscles exercised was not encountered in the whole series. Carbon dioxide absorption has to be extremely efficient with hard work, especially in air, where the canister becomes hot, and a large series of such experiments in the "dry" were marred by inadequate carbon dioxide absorption, are not reported here. In these "spoiled" experiments the subjects experienced twitching of muscles and severe tremors, and this was shown to be due to high tensions of carbon dioxide in the circuit.

Subjects breathing oxygen at increased tensions but without toxic signs or symptoms occur are remarkably normal. The mental torpidity described by some observers has not been noted, even at considerable depths, except after long exposures in the "dry". Judgment and the capacity for hard physical work appear to be in no way impaired. Under-water divers are more free of symptoms than are in the "dry" right up to the moment of lip twitching or convulsing. No doubt the abnormal environment and accoutrement obscure the minor premonitory signs. This apparent normality and the frequent suddenness of convulsive symptoms make oxygen-breathing under water at toxic depths highly dangerous, particularly as the subject often gains a very false sense of security.

Special Investigations

These experiments were carried out under war conditions, and owing to the urgency of the work and the many other immediate operational problems being investigated it was unfortunately not possible to extract the maximum data from this unique series by elaborate special investigations. However, a number of important observations were made, and these will now be considered under appropriate headings.

"Lorrain Smith Effect" (Pulmonary Damage) in the Human

Lorrain Smith (1899) reported fatal pneumonia in a rat at four days' exposure to 73% oxygen. Many animal experiments have been carried out since, and the general conclusion has been that 60% oxygen causes no pulmonary damage in animals or man (Barach, 1926) even after indefinitely prolonged exposures. Becker-Freyseng and Clamann (1939) produced bronchopneumonia in a healthy man by breathing 90% oxygen for 60 hours.

In over 1000 experiments where subjects were exposed to toxic pressure (4.68–1.9 atms abs) the exposure was always terminated owing to signs or symptoms involving the central nervous system. Frequent chest examinations were completely negative. At more shallow depths, however, nervous symptoms are encountered only after very long exposures or not at all. It was thought possible that there might be a greater risk of lung damage at such depths. Dives up to three hours at 2.1 atms abs in the "wet" caused pulmonary irritation. A series of prolonged dives to 12 (3.7 m, 1.36 atms abs) with periods at 50 ft (15.2 m, 2.5 atms abs) gave equally negative results. An example was a dive of 6 hours 9 minutes, continuously in oxygen at 12 ft (5.39 minutes) and at 50 ft (30 minutes), where no pulmonary irritation was encountered.

It can be stated with reasonable certainty that no real water dive will be made where lung damage will result at high tensions of oxygen, and that at depths greater than 30 (9.2 m) nervous symptoms will terminate the dive long before any pulmonary irritation occurs. Lorrain Smith (1899) reported that a rat died of pulmonary damage after 20 minutes at 4.5 atms of oxygen, yet a subject completed 61 minutes at 4.6 atms, breathing oxygen, with no demonstrable pulmonary damage. Total evidence suggests that man has more tolerance to lung damage than small experimental animals.

* Since writing this article it has been noted that a similar suggestion was made by J. W. Bean (1945).

A number of these subjects breathed oxygen at increased tensions several times a week for two years. It was considered possible that although the pulmonary damage suffered in a single exposure was inappreciable there might be a cumulative effect. Frequent routine examinations of the subjects' chests were therefore carried out. Radiographs were taken regularly and the vital capacities noted. In not a single case has there been any positive finding suggestive of lung damage. The subject who dived to 70 ft (21.3 m) to end point two or three times a week for three months won the Portsmouth middle-weight boxing championship during this period. It would appear that there is no cumulative effect on the lungs in oxygen diving.

Cardiovascular Findings

Benedict and Higgins (1911) reported bradycardia in man breathing increased percentages of oxygen at atmospheric pressure. This finding has often been confirmed, both in man and in animals. Bean and Rottschäfer (1938) showed with animals that, although the bradycardia was mediated by the vagus, blocking of this nerve had no effect on oxygen poisoning. In the experiments described here it was found that, although the pulse changes were little more than could be accounted for by prolonged basal conditions, there was in some cases a marked slowing of the pulse (35–50), particularly after long exposures at 60 ft (18.3 m). The pulse was regular and there was no suggestion of dropped beat or any type of heart-block. Some of these subjects who did not convulse did not recover their normal rate till several hours after the exposure. The degree and rate of onset of the bradycardia had no fixed relation to tolerance or other symptoms, nor did the pulse changes give any warning of acute symptoms or convulsions.

Only a limited number of blood-pressure recordings were made at 90 ft (27.4 m). There was a gradual rise of both systolic and diastolic pressures which stabilized after some 10 minutes at about 15 mm above the normal levels. Just before the onset of acute symptoms a further brisk rise of about 15–20 mm occurred. These findings are similar to those of Behnke *et al.* (1935–6). Microscopical study of the subjects' nail-bed capillaries while under toxic tensions and while suffering acute symptoms revealed no significant changes. X-ray and clinical examinations have shown no enlargement of the heart in subjects who were often exposed to toxic tensions over a long period. It is difficult to see why this should occur unless there is severe pulmonary damage, but it is a common belief among medical officers and divers, particularly in the Italian Navy, that oxygen breathing increases the size of the heart. This has not been confirmed.

Neurological Findings

In experiments continued over a period of three years no adverse after-effect has been noted in any subjects' neurological integrity, intellectual ability or personality. Neurological examination of subjects while breathing oxygen at 60 ft (18.2 m) and 90 ft (27.4 m) in the 'dry' showed no significant change in reflex activity. Constriction of the visual field has already been mentioned. Some subjects showed marked dilatation of the pupils as they approached the end of the exposure. The only other important finding was the development of a positive Chvostek sign in a number of subjects during exposures. Although this usually developed in the latter half of the exposure, it was not a reliable sign of the approach of acute symptoms although if present it became more marked as the exposure continued. Some subjects had a positive Chvostek sign at any time. Controls in air at atmospheric pressure revealed that a few otherwise normal subjects had a positive Chvostek sign, which in some cases was present only and absent on another. Such a finding in air, or even developing during the exposure, did not necessarily signify poor oxygen tolerance. In one quite unique subject acute symptoms were started with twitching of the muscles of the left hand (the only case of twitching of the hand recorded in the whole series), which then spread up the arm to the shoulder and on a few occasions this was followed by convulsions. This series of events was similar to a Jacksonian attack and quite unlike the usual muscular twitching.

Electro-encephalographical Findings*

Briefly, exposure to oxygen at 120 ft. (36.6 m) had no immediate effect on the EEG recordings. In general there was a slight increase of fast activity (25–32 p/s) and also increase in voltage of the 3–5 p/s waves. Coupled with this was a progressive decrease of the amount and voltage of the dominant frequencies (6–12 p/s). The tracings tended towards a sequence of 3–5 p/s waves with a superimposed ripple of fast activity. These abnormalities were episodic. Infrequently, spikes—that is, single high-voltage fast sine waves—appeared and increased in number. They were bilateral and symmetrical. Subjects who had non convulsant end points showed no other changes. Those who convulsed gave a picture of electrical activity during and after the fit which was indistinguishable from that seen in grand mal epilepsy. It was apparent that there was nothing specific in the convulsions of oxygen-poisoning, as regards electrical activity, once they had started. In some cases there were signs of disturbance—that is short bursts of 5 p/s activity with increasing voltage just before the attack. Others showed no change of cortical electrical activity before the major convulsive attack. In view of the similarity of the convulsions, both clinically and electrically to those of epilepsy it was thought that a study of the EEG of subjects in air, and with hyperventilation, might show inborn instabilities that could be correlated with oxygen tolerance. Fifteen subjects from the Admiralty Experimental Diving Unit were graded in order of average oxygen tolerance. This was based on many dives at various depths in the 'wet' and in the 'dry' over a long period. There was no statistically significant correlation, although the three most resistant subjects had normal EEGs. However, the other two 'normals' occurred in the last five in the endurance rating. No 'normals' had convulsed at this time, but two did so in the later experiments.

Electromyographs of the lower facial muscles showed bursts of potential with lip twitching without any associated abnormality of cortical electrical activity. Conversely, bursts of fast cortical activity occurred without increase in muscle action potential. Observations showed that clonic movements or twitching of peripheral muscles was not necessarily associated with changes in the EEG.

Toxic Effects of Oxygen on Brain Metabolism

Prof F Dickens (1946) in associated MRC (R.N.P.R.C.) research, investigated the action of high pressure oxygen on rat-brain slices. This work is briefly referred to here for the sake of completeness. He showed that the respiration of isolated cerebral cortical tissue is progressively and irreversibly poisoned. Curves plotting the percentage fall of initial respiratory rate against time were remarkably similar in type to those showing the elimination of a group of individuals by toxic symptoms at a fixed depth (see Fig 4 'dry'). The time/pressure relationship for a fixed degree of respiratory poisoning was also of a similar type to that obtained for the means of times causing acute symptoms in a group of men at various depths. The order of sensitivity to high pressures of oxygen of the various rat tissues was as follows: Brain cortex > spinal cord > liver > testes > kidney > lung > muscles. The actual tension of oxygen in the brain tissue *in vivo* and *in vitro* under these conditions is not yet accurately known, but from Dickens's experiments it is certain that convulsions occur in man and animals when the brain tissue respiration is but minutely impaired. A similar problem is presented by the effect of narcotics on brain slices and *in vivo* (Quastel, 1939). Dickens presents strong evidence that the primary effect may be in the inhibition of pyruvic oxidase, and that the secondary effects would be general poisoning of carbohydrate oxidation, since all known paths of carbohydrate oxidation converge at the stage of pyruvate. Magnesium, manganese, and cobalt ions strongly protect pyruvic oxidase from oxygen poisoning in tissue slices. Protection by metallic ions is not entirely similar *in vivo* in animal experiments (Marks, 1944). In view of the known -SH character of this enzyme and the known ability of these metals to protect this group, it is likely that

* These unpublished EEG investigations were carried out in the later collateral MRC (R.N.P.R.C.) research by Brown, Downman, MacIntosh, and Williams. The unit subjects were employed in a number of the experiments.

the -SH group of pyruvic oxidase is the seat of oxygen poisoning. The irreversibility of the poisoning in these experiments may be explained by the known difficulty of reconstituting the -SH group *in vitro*. If, as it appears, convulsions or acute symptoms occur in a very early stage of this process, then reactivation in the more physiological conditions of the intact organism is extremely feasible. This would account for the reversibility of acute oxygen poisoning in man and animals if the exposure is immediately discontinued.

Discussion

The most important aspect of oxygen poisoning is the intoxication of the central nervous system. It seems that the whole cerebrospinal axis is involved. The twitching of the muscles is definitely subcortical in origin, and the sensitivity of the facial nerve to tapping would indicate that even the most peripheral components are affected. Meanwhile the cortex is also being poisoned, and in a number of cases phenomena exactly similar to epileptic auras occur which are presumably due to cortical dysfunction. In some cases severe muscle-twitching, and even convulsions, may be precipitated without any such aura being reported. The more peripheral motor discharges may predominate throughout and even cause generalized jactitations without electrical or clinical evidence of cortical disturbance. In other cases non-convulsant cortical disturbances may cause symptoms of such severity that the exposure is discontinued. The remarkable individual variation in reaction to unphysiological tensions of oxygen is again emphasized.

It is not known why the lips should be so specifically affected. The possibility of the added irritation and fatigue caused by the mouthpiece was considered, but was excluded by the demonstration of lip-twitching in man in helmets without mouthpieces (Donald, 1942), and also in rabbits and other animals (Marks, 1944). These peripheral twitching movements are almost certainly related to the myoclonic seizures of epilepsy, in contrast to the Jacksonian type of attack. These myoclonic seizures commonly affect the face, but can occur elsewhere. Penfield and Erickson (1941) concluded from electroencephalographic studies that these attacks originate from the grey matter in the brain stem and spinal cord. It is significant that a similar conclusion has been reached with regard to the origin of the muscular twitching in this work. Of equal interest is the comparative rarity of myoclonic seizures and frequency of Jacksonian seizures in epilepsy, and the reverse in oxygen poisoning. The rarity of somato-sensory disturbances (paraesthesiae) and elaborate hallucinations (perhaps associated with absence of petit mal) is worthy of note. At no time was any attack akin to petit mal observed either clinically or electrically. Thus even in oxygen poisoning, in which epileptic auras are closely imitated, petit mal is unknown. This emphasizes the uniqueness and importance of that phenomenon in idiopathic epilepsy.

A small group of naval epileptics (five) tested by the MRC workers did not show any apparent increase of sensitivity to oxygen poisoning, but the experiments were too few for definite conclusions to be drawn. Penfield emphasizes the great variability in the physiological state of the epileptic cortex. "It may be quite normal in reaction, or it may be abnormally stimutable, completely refractory, or at other times unequally hyperactive." Such variability of behaviour combined with the enormous variability of human susceptibility to high pressures of oxygen makes a far larger series of experiments desirable. However, the pattern of toxic symptoms appeared similar to those in normals, and the general impression gained was that there was no essential difference of reaction, or any

increased accessibility to the convulsant mechanism, by the channels or processes involved in oxygen poisoning. It is possible, and indeed highly probable, that there are distinct chemical or cellular systems the adequate and separate disturbance of which will allow or cause convulsions. On first principles it would appear likely that the depression of essential carbohydrate oxidation in nerve cells would cause depression in function and not increased activity. If this is the case, then the "auras," motor twitches, and convulsions are more likely to be release phenomena and not due to primary excitability of the parts of the central nervous system concerned. The sudden violent discharge to utter exhaustion (as shown in convulsions by the EEG) is strange behaviour in cells in which the oxidative processes are damaged.

The relatively slow and deliberate evolution of auras akin to those experienced in epilepsy is, so far as I know, unique to oxygen poisoning and should be further explored by experimental workers. Although the condition is artificially produced, it approximates far more closely to the natural epileptic phenomenon than other induced convulsant states. The electrical localization of epileptic discharges in idiopathic non-convulsant equivalents has already been carried out in a number of cases. It would be possible to select resistant subjects who experienced definite auras without marked "peripheral" motor discharges. The electrical study of these auras in such subjects would be a new approach to the problems of cortical localization and function. Further study of the various patterns of cortical dysrhythmias before convulsions may contribute to the knowledge of the mechanisms of epilepsy.

The therapeutic use of oxygen as a convulsant in the various psychoses has been suggested in the past, but the lack of knowledge of the syndrome, combined with the greater ease and safety of other methods, has so far prevented its use for this purpose. The complicated and rather frightening ritual (to strangers) of pressure work, and breathing from a closed circuit, render the value of this method very questionable. Changes in the central nervous system could be induced up to the point of convulsions. With experienced attendants these could be avoided in most cases if desired. Evidence may be obtained as to whether the improvement, if any, was caused by such changes alone or by the convulsions they can precipitate.

Conclusions

In the first large series of experiments on human beings, knowledge of the dangers and symptoms of oxygen poisoning has been expanded. It has been demonstrated that these dangers are far greater than was previously realized. The variation of tolerance between individuals, the variation of tolerance of each individual, the impairment of tolerance with work and under water, all make diving or pure oxygen below 25 ft (7.6 m) of sea-water a hazardous gamble. The impairment of tolerance under water is as mysterious as it is unfortunate. Despite the fact that a comprehensive picture of human symptoms of oxygen poisoning is now available, it is emphasized that no signs or symptoms can be given that would ensure a timely cessation of oxygen-breathing in all cases. The variation of symptoms even in the same individual, and at times their complete absence before convulsions, constitute grave menace to the independent oxygen-diver. The only possible conclusion is that such tensions of oxygen should be scrupulously avoided.

Summary

Previous research into the effect of increased tensions of oxygen on man up to the commencement of this work briefly described

An account is given of experiments to determine the tolerance of groups of men to such tensions of oxygen under varying conditions

The signs and symptoms of oxygen poisoning in man are described

The possibility of pulmonary damage by increased tensions of oxygen is discussed

Electrical and chemical changes in the central nervous system are briefly described

The relation of oxygen poisoning to epilepsy and the possibilities of further useful investigations are discussed

The danger of breathing oxygen at increased tensions is emphasized

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ACUTE NON-SPECIFIC DIARRHOEA AND DYSENTERY

LOCAL CHILLING OF THE ABDOMEN AS A CAUSATIVE FACTOR

BY

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Acute enteritis of unknown origin is common in Europeans visiting and living in hot climates. It is so common and so widespread that the lay public in every country use a colloquialism peculiar to their district to describe the local manifestation of a complaint which, though second only to sea-sickness in its power of temporary prostration, seldom lasts more than a few days, so that it is soon forgotten or is accepted as a perennial part of the white man's burden. Its social and economic consequences, though brief, are severe to the individual, but its military consequences can be disastrous to a community of fighting men: apart from jeopardizing a single operation there is nothing so calculated to lower morale as recurrent attacks of diarrhoea.

In the intervals it is made light of by the public and is rarely considered seriously by the profession. Not all standard textbooks or monographs even refer to it, and in those that do so it is seldom discussed at a length which suggests that it is probably the illness encountered most commonly among the white population in hot climates. Even the most reputable authors, moreover, show little confidence, agreement, or justification in describing its cause, and still less in recommending prophylactic measures. It is ascribed variously to "exposure to chill, and irritation of the bowel by coarse and unsuitable food" (MacArthur, 1942), to potentially pathogenic bacteria (McDonagh, 1942), to "the recognized dysentery organisms, precipitated by sudden chilling" (Napier, 1946), and as "probably bacterial in origin" (Manson-Bahr, 1945). Macgregor (1946) gives good reasons for this dissatisfaction with the traditional causes and, after showing a close association in time with acute upper respiratory disease, favours a virus infection, on the principles believed by Burns and Gunn (1944) to cause diarrhoea in infants, as described in a *BMJ* editorial (1942).

Opinion is, therefore, overwhelmingly in favour of infection, and this belief is based on three main points: (1) Its symptomatology is similar to that due to known pathogens. (2) It occurs in outbreaks as well as sporadically. (3) In the many outbreaks of enteritis of unknown cause during the war it has been shown that the more thorough the investigation the more often is a known pathogen recovered (Hardy and Watt, 1945). Similar symptomatology, however, is known to occur with any form of irritation within the lumen of the gut, and its simultaneous appearance in different people is by no means necessarily indicative of infection, while to attribute the disease to an unknown organism which has never been demonstrated is to admit to a degree of professional complacency which is as astonishing as it is unscientific.

Chilling of the Abdomen

Perhaps equally unscientific, but of longer duration, is its traditional association with chill. In some (MacArthur, 1942, Napier, 1946) references to acute enteritis exposure to chill, in quite general terms, is mentioned as a probable factor in its cause, either predisposing or actual. This appears to have passed from one book to another without much consideration or justification. Now it is in fact a matter of common knowledge that *chilling of the abdomen* by the rapid ingestion of cold fluid in large quantities when the body is hot does often induce diarrhoea, and it is fairly

The British Legion Unit of Rheumatology set up experimentally by the British Legion a year ago, to specialize in the treatment of servicemen and women suffering from rheumatic diseases has now been transferred complete with staff from the Three Counties Hospital Arlesey Beds to the North West Hospital Havestock Hill London, N W 1. The Minister of Health has agreed to take over the unit on May 31, and to encourage the provision of further units throughout the country.

well recognized that *chilling of the anterior abdominal wall* frequently does likewise. Too much ice cream or too long an iced drink, or moderate amounts of either taken quickly instead of by sips, are methods of provoking diarrhoea as proverbial as that of allowing a wet bathing costume to "dry on" while sun-bathing. Bampffield (1819) wrote as follows:

The copious perspiration of the newly arrived European becomes accumulated, when he is sitting or walking on the lower part of the shirt, more especially about that part of the abdomen where the waistband of the small clothes or pantaloons presses against it the tight or close application of which occasions an increase of heat and of perspiration at this particular part, during the day, and intercepts the exhalation as it flows down the body, hence, if he should lie down in this state, cold will be induced on a particular part of the abdomen, by the evaporation of the exhaled fluid from the wet linen in contact with it, perspiration before profuse, will be now effectually suppressed and its injurious consequences felt by the chylipoietic viscera.

Johnson and Martin (1841) introduce this quotation to their readers by saying "We do not recollect that the following circumstance has ever been noticed heretofore as a predisposing cause of dysentery." McDowall (1927) writes:

'The wearing of so-called cholera belts signifies the importance of keeping this particular region of the body (the abdomen) warm, for the alimentary canal is a region especially liable to be infected as a result of cold. The production of diarrhoea or the return of symptoms after an attack of dysentery, which may follow a cold bath or sea-bathing has long been recognized.'

Hunt to Travellers (1938) states that "A drop in the night temperature in the Tropics constitutes another danger, so protect the abdomen with warm clothing at night time," and it advises the traveller to "consider also the liability to chill, and whether the often derided cholera belt is essential." Napier (1946) writes:

"The flannel cholera belt, whose powers of cholera prevention were of course mythical but which could be guaranteed to produce a nice band of prickly heat in most climates, has fortunately gone out of fashion. Quiescent abdominal infections are sometimes stimulated into activity by local chilling which the cholera belt was designed to obviate, it is therefore advisable for those subject to attacks of diarrhoea to put wraps round their abdomens, rather than over their shoulders, when cooling off after exercise."

Physiological Deductions

Better understanding of physics and physiology enables the present-day physician to appreciate that, owing to the high latent heat of steam, the anterior abdominal wall is seldom more chilled than by the evaporation of sweat, and also that as the temperature of the air rises so does the proportion of body heat lost by evaporation, to the eventual exclusion of other methods. He can furthermore predict other factors which will influence this process—namely, the humidity of the air and the velocity of air movement.

Diarrhoea is therefore to be expected in those entering a hot climate from a cold one, whose thinner clothes afford less protection from the cool evening breeze to an abdomen accustomed to thicker and warmer clothes, whose garments in the heat of the day cling to the abdominal wall, where they lie closest to the body, and provide a system whereby the greater the temperature the more body heat shall be lost through this vulnerable surface. It is to be expected that residents in hot climates should suffer frequently from diarrhoea while they are continually exposed to the same conditions, that the frequency of attacks should be highest in the early months of summer (Northern Hemisphere),

when the diurnal variation in temperature is greatest, and in the autumn or rainy season, when a higher humidity causes the body surface to be covered with a film of perspiration at moderate or similarly varying temperatures.

Clinical Observations

Too many have ample (and painful) experience that these expectations are often fulfilled, some clinical observations made in H.M. ships during the war may, however, provide more acceptable evidence than personal reminiscence. Typically the patient was awakened shortly after midnight with generalized abdominal colic and an urgent call to defaecate, vomiting was rare and tenesmus absent. In mild cases a few loose stools and waning bouts of colic saw the end of the attack by the following mudday, but in severe cases the colic persisted and the stools became watery, progressing even to mucous and blood stained, and the course lasted several days with marked prostration and anorexia and a slightly raised temperature. Spontaneous recovery was rapid and complete.

Sporadic cases were frequently observed to occur, more often in warm climates than in cold, among those working in parts of the ship where the temperature, air velocity, and humidity were highest, and in those wearing unsuitable clothing—for example, overalls without undergarments, shrunken sheepskin waistcoats, and, until recognized, a central source of cold drinking-water proved to be the cause of this complaint also in hot weather. The frequency of small and large outbreaks was remarkable and in contrast to the exceptional rarity with which known pathogens were detected upon appropriate bacteriological investigation when this could be undertaken, moreover not one corresponded epidemiologically in any way to the expected features of disease borne by water, food, insects, or droplet infection. It will be appreciated that distilled water was used nearly always, and that analysis of water from the storage tanks was rarely performed but never suggestive. Outbreaks usually started during the night, mostly through out the hotter months of the year, with a first peak in early summer and a second, and larger, peak in the "stuck" period of early autumn. Three major outbreaks were observed before landfall at the end of quick passage from England to the Eastern Mediterranean, during unaccustomed and exceptionally cold weather in Arctic waters, and on passage through the Suez Canal from South to North.

Investigations

The routine and repeated examination of patients' stools was carried out whenever facilities were available. In the course of three and a half years I recollect only one case being diagnosed by laboratory methods as a specific infection. No other significant findings were reported.

Water—It will be appreciated that the water consumed on board was nearly always distilled in the ships, but sometimes obtained from a certified source ashore. The fresh water storage tanks were cleaned and relined without any alteration in the incidence of the attacks, and two analyses of the water showed nothing suspicious in content or in comparison.

Food—Most food was stored up to three months, but not consumed after three years in the cold-store did not alter incidence, nor did the lack of fresh fruit and vegetables during a period of some months. Tinned food was mostly uncracked and some tins were badly dented, but blown or doubtful or were discarded. Attacks of enteritis were not associated with any particular foodstuffs, and those who had had their even meal ashore were equally affected.

Food preparation and handling—No history of intestinal infection was obtained from the cooks, and they were from time to time victims of the outbreaks themselves. Food was prepared centrally, in one large galley, and in small ones contained in a separate compartment, if

prepared for immediate use only. The temperature of the water used for the washing of cooking and eating utensils was always over 130° F (55° C) and usually very much hotter.

Droplet infection and insect vectors—The incidence of attacks was not associated in time with that of either acute upper respiratory disease or sandfly fever. Close contact between cases was not a feature of the disease, and the incidence was not higher among the sick-berth staff who slept in the sick-bay than in others. The peaks of the attacks corresponded with the maximum prevalence of flies, but attacks occurred when flies were altogether absent, cockroaches abounded at all times in the galleys and pantries.

While the practice of hygiene and the limitations of investigation by operational conditions were open to criticism, conditions were sufficiently sterile, metaphorically if not bacteriologically, to warrant attention being turned to chilling of the abdomen as a possible factor in causation. In fact the association was noticed early and the more often it was sought the more frequently it was found, until in the explosive outbreaks it was observed so constantly that it was established beyond doubt. It has been said that attacks began typically soon after midnight and affected those who ate their evening meal ashore or those joining ship in the afternoon as frequently as those whose shore leave had been stopped for many days. The only common factors remaining were the cool of the evening and the first few hours of sleep; the majority of ratings slept in hammocks, and hammocks were slung from the deckhead—the very place where the cool night air was introduced into all living spaces below deck by an extensive plenum system of ventilation.

Plenum Ventilation in Ships

This extreme frequency in ships was generally attributed to the plenum system of ventilation. The overcrowding of troopships was a notorious necessity, and in one warship in which many of these observations were made Sir Sheldon Dudley's (1946) appreciation of the spatial restrictions was by no means an overestimate, for in many compartments both the space per man and the number of air changes were half those intended at the very times they should have been liberal. The dry-bulb temperature of a forward mess deck when unoccupied, in one ship, was observed to be 90° F (33° C) in November evenings in the Western Mediterranean and in another ship to be constantly between 90° and 110° F (43° C) in a cabin amidships during four summer months in two consecutive years. In consequence working or resting in comfort was possible in some instances only so long as the louvre was pointing towards the body, the anterior surface giving the greatest relief, while at night, with blackout restrictions added, a few hours' rest was achieved only by lying (often with overalls rolled down to the waist) within a few feet of the louvre—a unique arrangement, since hammocks must be slung from the deckhead of living-spaces, where the plenum apparatus is properly spaced to avoid this very same effect by day. Ratings continued, even after being advised against it, to sleep wearing overalls rolled down to the waist with no other covering, and in cabins it was a common practice to direct the flow of air to the bunk by tying pyjama trousers to the louvre. In the explosive outbreaks the ratings who slept in hammocks suffered much more frequently, more severely, and earlier than those who slept on camp beds. It is pertinent to add here that in the previously mentioned outbreak in Arctic waters one victim was an officer, keeping a night watch in an exposed position, who was wearing a very shrunken sheepskin waistcoat.

The presentation of these few clinical observations in logical sequence may carry conviction that chilling of the abdomen or anterior abdominal wall is a common cause of acute non-specific enteritis ashore and afloat in all climates, but especially hot ones.

Prophylactic Measures

Whether it is the predisposing or actual cause is for practical purposes unimportant in the present state of medical knowledge, for prophylactic measures against this disease are not only common sense but calculable. On entering a hot climate suddenly, which air travel will render more frequent in future, the change from thick to thin clothes should be made gradually, if possible, and an under-vest worn and exercise avoided until acclimatization is achieved. During residence a bush-shirt, or a loose-fitting shirt with cellular undervest, should be worn, and a change to thicker clothes, if at all possible, made before sundown. An undervest should be worn, especially in spring and autumn and in windy or humid weather. Cool drinks should be sipped slowly by day, and sitting in the direct draught of forced ventilation for long periods should be avoided.

The plenum system as arranged in living spaces for day-time usage is unsuitable for the ventilation of sleeping accommodation where hammocks or tier bunks are employed. By night a cholera belt or a blanket folded across the abdomen should be worn with or without other bedclothes.

Whatever the mechanism of the predisposing cause opinion is still overwhelmingly in favour of infection being the actual cause. The obstinacy with which this belief is held without any basis in fact amounts to bigotry, until such an organism is demonstrated it would be at least reasonable to attribute the enteritis to a change in the ecology of the intestinal tract, which might fairly be presumed to be a sequel to vascular reflexes stimulated by chilling, but there is as yet, I believe, no evidence to show that it is not attributable to either neuromuscular reflexes or even purely physical causes such as chilling or salt deficiency (Stenning, 1945). Since it is evident that no further progress is likely from clinical observations there is here a strong case for experimental research.

Summary

Acute non-specific enteritis is common in hot climates. Its social and military consequences are important.

Its cause is subject to dispute, and prophylaxis is uncertain.

Local chilling of the abdomen is a known cause of diarrhoea. Circumstances causing local chilling are common still more common in hot climates, and extreme in overcrowded ships. Examples attributed to this cause are given.

Prophylactic measures are deduced.

A plea is made for experimental research.

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EPIDEMIC DIARRHOEA AND VOMITING

BY

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Two small outbreaks of epidemic diarrhoea and vomiting which occurred in Cornwall during 1946 are described below, they supply presumptive evidence of the incubation period and mode of spread of the disease, and, further, that given favourable soil the condition can prove fatal. A review of the literature is included in an attempt to analyse the similarities and differences between "epidemic nausea and vomiting," "epidemic diarrhoea and vomiting," and "endemic diarrhoea and vomiting of newborn babies."

Observations

A mild form of diarrhoea and vomiting had been endemic in Cornwall throughout 1946, the first cases were noted in March, the disease reaching a peak in May and again in October. The first of these two epidemics broke out at the Redruth Public Assistance Institution in early June. The hospital block in which most of the cases occurred is a two-storied building standing alone. The top floor contains a ward for female bed-patients (A), a small ward for sick children (B), one for male bed-patients (C), and the nurses' kitchen and dining-rooms, the ground floor has wards for male (E) and female (D) up-patients. The children's nursery (F) and a ward for low-grade mental defectives (G) are in separate blocks, both a considerable distance from the hospital.

All the food in the institution, except that for the nurses, is prepared in a central cookhouse, which has been modernized and is in every way satisfactory, none of the six girls employed in the preparation of the food at any time suffered from diarrhoea or vomiting. The cookhouse for the nursing staff is on the top floor of the hospital block. A cook and a maid are employed, the maid being off duty with diarrhoea and vomiting from June 10 to 13. The water supply (mains) and the milk supply (accredited) were both investigated, with negative results.

The first case occurred on May 31 in Ward A, the subsequent 32 cases and the dates of their appearance are shown in Table I.

TABLE I—Cases at Redruth

Ward	No of Cases	Population at Risk	Attack Rate	Date of Occurrence
A Women bed patients	7	14	50%	May 31 June 3 6, 6 8 11 13
B Sick children	—	6	—	—
C Men bed patients	5	14	35%	June 1 1, 1 3 6
D Women up patients	—	30	—	—
E Men up patients	1	30	3%	June 13
F Children's nursery	—	12	—	—
G Mental patients	8	24	33%	June 10 10 11 11 14 14 15 15
H Nursing staff	9	12	75%	June 7 7 10 12, 12 15 15 15 17
I Domestic workers	3	—	—	June 7 10 14

It will be noted that the sick children's ward escaped infection in spite of its position between the two wards most seriously involved, that in each ward the interval between cases was approximately 72 hours, and that the mental ward was the only part of the institution other than the hospital block to be affected. A domestic worker who was employed in Ward A but slept in a side ward on the mental block developed the disease on June 7, the first case occurred among the mental patients on June 10.

Details of the clinical history of the epidemic are included in Table III. Briefly, the symptoms were mild, though diarrhoea in a few cases was prolonged and severe, definite prodromal symptoms were absent, the attack beginning with lower abdominal colic, followed within half an hour by forceful repeated vomiting. Alternatively the abdominal pain was absent, vomiting being the primary symptom and so sudden in its onset that the patient vomited over the table or bedclothes. Within a couple of hours diarrhoea supervened, with copious and frequent stools, 12 to 20 being passed in the first 24 hours. Mild pyrexia was present in 10% of cases, but with one exception the temperature was normal again within 24 hours. Relapses were not seen, but reinfection occurred in two instances after a lapse of six to eight weeks.

A second outbreak of epidemic diarrhoea and vomiting occurred during December at the County Mental Hospital, Bodmin. The hospital accommodates 1,524 patients. The epidemic was confined to the female block, a large two-story building split into four wards, each of 60 patients. The first cases occurred in Wards 1 and 3 on Dec 4, and between that date and the occurrence of the last case on Dec 12, 27 patients were affected (Table II). The clinical picture was identical with the Redruth outbreak, though owing to the high average age of the patients, manifestations were more severe, three deaths occurring from dehydration and collapse in patients, all of whom were over 75 years of age. Details of the dates of onset of disease are given in Table II.

TABLE II—Cases at Bodmin

Ward	No of Cases	Population at Risk	Attack Rate	Date of Occurrence
1 Female	17	60	28%	Dec 4 6 6 7 7 7 9 9 9 10 10 12 12, 12 12 12
2	Nil	60	—	—
3	10	60	16.6%	Dec 5 5 6 6 6 9 9 9 9 12
4	Nil	60	—	—

The hygiene in the institution was carefully investigated and found to be satisfactory. A central cookhouse supplies food for the hospital, the water is main supply, and the milk comes from the home farm. Samples of milk and water were taken, but results were negative. Numerous samples of stool and nasal swabs were taken from patients in both epidemics, but apart from two specimens containing Morgan's bacillus, and one from which *B. dysenteriae* (Flexner) was isolated, no pathological organisms were found. Agglutination to typhoid and salmonella groups was likewise negative.

In each epidemic routine measures for the prevention of spread of alimentary and upper respiratory tract infections were taken—namely, immediate isolation of patients, adequate ventilation and bed-spacing, and the wearing of masks by the nursing staff. Such simple measures appear to have been rewarded by very good results.

Comments and Conclusions

Perusal of the dates given in Tables I and II leads to the conclusion that the incubation period in the two outbreaks described was 72 hours, with a minimum of 48 hours and a maximum of four days. In both of the epidemics a high attack rate occurred in one or two wards, whereas adjacent wards in the same block were unaffected, in spite of the fact that all were supplied with identical food and water, further, all samples of food, milk, and water were satisfactory. One must conclude that the infection is borne and gains entry through either the upper respiratory tract or the gastro-intestinal tract—probably the latter,

signs of involvement of the fauces are not frequent. The disease attacks all ages, and usually follows a mild course though among the aged symptoms are more serious and the disease may prove fatal.

Literature and Discussion

The first recorded outbreak of epidemic nausea and vomiting in Britain occurred in 1936, when Miller and Raven (1936) described an epidemic in a girls' boarding-school in Thanet. Since this date at least four epidemics of a similar type have been recorded. In order to facilitate the comparison of the epidemiology and symptoms of these outbreaks I have tabulated the salient features (Table III).

themselves and the order of their predominance in different epidemics may be accounted for by the different age groups affected, the season of the year, and the well-known existence of closely related but slightly different strains of the organism. The endemic distribution with periodic exacerbations into mild widespread epidemics, the short incubation period, and the absence of sustained immunity strongly resemble the behaviour of the common cold or influenza, so that it seems probable that a virus will be found to be the causative organism. Reimann *et al* (1945) were unable to transmit the disease to animals or to isolate a filtrable agent, but they obtained results strongly suggesting that the disease could be communicated

TABLE III—*Details of Outbreaks on Record*

Nomenclature of Epidemic	Gray (1939)	Smith and Davies (1941)	Bradley (1943)	Sakula (1943)	Brown <i>et al</i>		Reimann, Hodges and Price (1945)	Cornwall Epidemics
	Epidemic Nausea and Vomiting	Acute Gastro enteritis	Epidemic Nausea and Vomiting	Gastro-enteritis in newborn	Epidemic Diarrhoea and Vomiting		Epidemic Diarrhoea Nausea and Vomiting	Epidemic Diarrhoea and Vomiting
					Adults	Babies		
Season	Autumn	Autumn	Autumn	Autumn	Spring	Spring	Autumn	Spring/autumn
Age most affected	Children	Troops	Young adults	Babies, average age 13 days	Young adults	Babies 0-3 months	Children and young adults mostly	Adults
Endemic in population	Yes	Yes	Yes	No	Yes	—	Yes	Yes
Mode of transmission	Presumably a droplet infection	Probably direct contact	Communicable disease portal of entry upper respiratory tract	Feeding bottles	—	—	Probably air borne hand to mouth spread cannot be excluded	Air borne infection
Incubation period	At least 48 hrs	14-7 days	2-7 days	—	4 days	—	2 days extremes 30 hrs-7 days	3 days Extremes 2-4 days
Prodromal symptoms	—	Shivering and malaise	Nausea	Nil	Nil	—	Nil	Nil
Initial symptom	Nausea and vomiting	Vomiting	Vomiting	Vomiting	Abdominal pain diarrhoea	Diarrhoea	Abdominal discomfort for nausea diarrhoea	Vomiting abdominal pain
Nausea and anorexia	Prominent symptom	—	Present in 20%	—	Present in 8%	—	Present in 75%	Present in 9%
Abdominal pain	—	Feeling of heaviness	Epigastric pain fairly frequent no colic	—	Lower abdominal pain with 50% colic	—	Abdominal discomfort in 43%	Lower abdominal colic
Vomit	Yes in 90%	Forceful in 75%	Projected 51%	Severe	Yes 47%	Yes 18.2	Yes 48%	Yes 50%
Diarrhoea	Rare in children frequent in adults	Yes 93%	Of minor importance 23%	Severe	Yes 100%	—	Yes 85%	Yes 94%
Vertigo	Common symptom sea sick	—	Dizziness present	—	No	No	Yes 7%	Rare
Headache	Frontal headache in a few cases	—	Frontal headache invariably present	—	Yes 11%	—	Yes 66% frontal	Frontal headache in 10
Pyrexia	Mild pyrexia in 12% school children	Mild pyrexia	Mild pyrexia but seldom above 100° F (37.8° C)	Mild only one case over 100 F	Mild pyrexia in 34%	Nil	—	Mild pyrexia in 25%
Pulse	Occasional bradycardia	—	Bradycardia not met with	—	—	—	—	—
Collapse—dehydration	—	—	—	Yes	Two cases of collapse responded well	—	—	Collapse in elderly patients 3 deaths
Faeces	—	Infected	Resemble early stage of streptococcal throat swabs negative	—	Not infected	—	Infected in 20/30	Not infected swabs negative
Agglutinations	Nil	Nil	Nil	<i>Ps. pyocyanea</i> in 44%	Nil	—	Negative Nil	Negative Nil
Organisms isolated	—	—	—	—	—	—	—	—
Most prominent symptom	Vomit	Forceful vomit followed by diarrhoea	Forceful vomit	Diarrhoea	Diarrhoea	Diarrhoea	Diarrhoea	Diarrhoea
Severity of symptoms	Mild	Mild	Mild	15 deaths 83% mortality	Mild	Mild	—	Mild but severe in old age
Average duration	3 days	—	—	—	4-6 days	3 days	—	3 days
Relapses	—	—	A few cases After one week	—	Nil	Nil	—	Nil
Babies affected	No	No	No	Yes	—	Yes	No	No

It will be seen that epidemics described under the headings of epidemic nausea and vomiting, acute gastro enteritis, and epidemic diarrhoea and vomiting possess many points of similarity. They have seasonal incidence in spring and autumn, an incubation period of 48 to 72 hours, and symptoms are of an afebrile gastro intestinal infection, mild in nature, lasting three or four days and attacking in the main children and young adults. With the exception of the outbreak at Bodmin, described above, no fatal cases have been reported.

It is highly probable that all these cases were caused by the same organism. The slight variations in the symptoms

to human volunteers by the inhalation of a fine mist of nasopharyngeal washings or stools from patients. The evidence that epidemic diarrhoea and vomiting of newborn babies is not caused by the same organism as that in adults is strong. Babies were involved in two of the six epidemics reviewed above. The first was an epidemic outbreak of diarrhoea and vomiting in a general hospital; the patients affected were for the most part adults, but the disease spread to two of the three babies wards, 37 mothers and 22 babies contracting the disease. In their description of the epidemic Brown *et al* (1945) state 'It was soon apparent in respect of the young babies that this outbreak

in no way resembled in severity a previous epidemic, of neonatal diarrhoea which had occurred in the maternity wards at the beginning of the year, and which had been associated with a high mortality. Moreover, on that occasion no adults had been involved. The second, described by Sakula (1943), is a typical outbreak of diarrhoea and vomiting occurring in newborn babies, with a case mortality of over 80%.

The clinical distinction between these two epidemics, both involving babies, is obvious. Further evidence against the association of the two diseases is supplied by the infant mortality rate for diarrhoea and vomiting in Cornwall. Throughout 1946 a widespread outbreak of diarrhoea and vomiting was prevalent among the adult population. Yet the infant mortality from diarrhoea and vomiting for 1946 is the lowest for some years, being 1.7 per 1,000 live births.

Summary

Two outbreaks of diarrhoea and vomiting occurring at two county institutions in Cornwall during 1946 are described. These outbreaks were part of a widespread epidemic among the surrounding population. With the exception of three deaths all in aged patients symptoms were mild and conformed to previous epidemics reported in the literature, a summary of which is included. Evidence obtained from these Cornish outbreaks points to an air-borne disease with an incubation period of 72 hours: the portal of entry being either the upper respiratory or the gastro-intestinal tract, the organism is probably a virus. The relation between epidemic diarrhoea and vomiting in adults and that which occurs in newborn babies is discussed, the evidence points to the two conditions having a separate aetiology.

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Gray, J. D. (1939) *Ibid*, 1 209.
Miller, R., and Raven, M. (1936) *Ibid*, 1, 1242.
Reumann, H. A., Hodges, J. H., and Price, A. H. (1945) *J. Amer. med. Ass.* 127, 1.
Sakula, J. (1943) *Lancet*, 2 758.
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FATAL POISONING BY "LETHANE" INSECTICIDE

BY

C. V. HARRISON, M.D., B.Sc.

The following case is recorded in the belief that it is the first example of fatal poisoning by lethane insecticide.

Case Report

A woman of 35 was found unconscious in a chair, breathing heavily. She had vomited and there was an empty bottle of 'semprolia' lethane insecticide near by. It was subsequently discovered that she was a widow and had been ailing with abdominal symptoms for some time and, being too ill to work, was nearly destitute. She was immediately transferred to hospital, but on arrival was found to be dead.

The relevant necropsy findings were as follows. The face was more pink than usual. The right side of the heart was dilated and the internal organs were moderately congested. The mouth and oesophagus were healthy. The stomach contained a little oily fluid with a strong odour of oil of citronella like that of the bottle found by her. There were numerous pin-point petechiae running together into clusters mainly along the lesser curvature of the stomach but spreading out on to the adjacent walls. There were similar but less severe petechiae in the duodenum. The appendix was the seat of a well-localized abscess containing approximately 5 ml of pus, this was presumably the cause of the abdominal symptoms. The liver was acutely congested and had the same odour as the stomach contents. There was an excess of frothy mucus in the trachea and

major bronchi and some oedema of the right lung. In addition both lungs showed extensive petechiae running together to form ecchymoses under the pleurae of the lower parts. All other organs appeared healthy.

Microscopically the liver contained a trace of fat and had collections of inflammatory cells in most of the portal tracts. Other organs showed no definite abnormality. The central nervous system was examined particularly for evidence of nerve cell damage, and some swelling of the cells and loss of Nissl granules was noted, especially just lateral to the fourth ventricle, but as the necropsy was carried out 16 hours after death it was not possible to be certain that these were not autolytic changes.

Comment

The empty bottle found near the patient was of 55 ml capacity. It had contained an insecticidal hair oil, the composition of which was given on the label as lethane 384 special, 49%, light petroleum, 49%, oil of citronella 2%. Lethane 384 special consists of 12.5% of lethane 384 (N-butyl carbonyl thiocyanate), 37.5% of lauryl thiocyanate, and 50% light petroleum. A 55-ml bottle would therefore contain 3.5 ml of N-butyl carbonyl thiocyanate and 10.3 ml of lauryl thiocyanate. The patient was judged to be about 8 st (50 kg), and, assuming that she took the whole contents of the bottle, the dose would be 0.07 ml/kg of lethane 384 and 0.206 ml/kg of lauryl thiocyanate.

Cameron *et al.* (1939), who studied the toxicity of these two drugs in rats, rabbits, and guinea-pigs by subcutaneous and intraperitoneal injection, found that the minimal lethal dose of lethane 384 was between 0.025 and 0.2 ml/kg and of lauryl thiocyanate between 0.08 and 10 ml/kg. In the case of both drugs, therefore, the maximum dose which could have been taken by the patient lay within the range of lethal doses observed by Cameron. In fact, the effective dose taken was less than that stated above, because some was lost by vomiting, and further, we were unable to discover whether the bottle was full. Even if the effective dose was as little as one-half of the maximum possible, the lethal dose for each drug still lies within the ranges observed by Cameron.

Cameron failed to observe any characteristic post-mortem lesions in his experimental animals, but concluded from clinical observation that death was due to respiratory failure, probably nervous in origin. We have similarly failed to find any characteristic lesion. The dilated right heart, congested viscera, and pleural petechiae suggest that death was due to respiratory failure. The petechiae in the stomach were presumably due to simple irritation, and the inflammatory changes in the liver were almost certainly secondary to the appendix abscess.

The particular preparation which proved fatal in this case can be bought at any chemist's shop and is not labelled 'poison'. It is marked with the words "For external use only" in print measuring 20 letters to the inch, followed by the words "Not to be taken" in print measuring 24 letters to the inch.

In view of the toxicity of lethane insecticide as evidenced by the present case it seems highly desirable that such preparations should be clearly labelled "Poison".

REFERENCE

- Cameron, G. R., Doniger, C. R., and Hughes, A. W. McK. (1939) *J. Path. Bact.* 49 363.

The Ministry of Food expects to be in a position to distribute small quantities of imported citric acid, and proposes to allocate supplies direct to such importers as can establish their claim to having engaged in this trade in the years immediately preceding the war. Importers who wish to participate in this scheme should apply for full details to the Ministry of Food, Miscellaneous Food Products Division, 39, Portman Square, London W.1.

Reviews

ATLAS FOR DERMATOLOGISTS

Atlas of Histopathology of the Skin By G. H. Percival M.D., F.R.C.P. Ed. A. Murray Drennan M.D. F.R.C.P. Ed., and T. C. Dodds F.I.M.L.T. FRPS (Pp 494 376 photo micrographs in colour 75s) Edinburgh E and S Livingstone 1947

Owing to its accessibility, it is easier to make microscopical preparations to illustrate morbid conditions of the skin during the lifetime of the patient than of other bodily organs. Moreover the numerous morbid conditions that may affect the skin make possible a wide variety of microscopical pictures. A comprehensive atlas of the histology of skin diseases might therefore be an enormous undertaking were it not that the clinical picture is often more distinctive than that revealed on microscopical examination, for it is not uncommon for eruptions presenting different clinical appearances to show very similar histopathological changes.

The authors have produced a very good book. There are 370 figures, almost all in colour, the first group illustrating the normal skin and its appendages in about 20 figures, the remainder constituting a fairly complete atlas of cutaneous histopathology, and including figures of most of the important animal parasites common in the British Isles. The authors have not included any figures of the pathogenic fungi, although there are illustrations of the pathological changes which these fungi cause. This atlas a product of the Edinburgh School, illustrates British dermatology, and the authors, who have been assisted by many British dermatologists, have barely drawn upon the rich material provided by the Tropics but there are illustrations of several of the tropical skin-infesting insects and of Oriental sore and leprosy.

We may question whether colour photography is yet able to yield illustrations equal to those provided by the artist skilled with pen and brush. In this volume the colour illustrations have been made by the Finlay process, which is generally admitted to be the best method of reproducing colour photographs, and though the illustrations are as good as any we have seen, this process is yet far from perfect. It appears to accentuate the blues and purples unduly and to attenuate the reds. Most of the sections illustrated here were stained with haemalum and eosin and the Finlay process does not appear to do justice to them, in some instances giving them a muddy appearance. On the other hand the definition of those (not so numerous) prepared with iron haematoxylin and the van Gieson process is clearer, and the sections prepared to show elastic tissue are also good. One of the best illustrations—figure 20—shows nerve fibres impregnated with silver ending in a Meissner corpuscle.

The authors have accomplished a difficult task with skill. As they themselves say, this work is not intended for the general medical public but primarily for those interested in the specialty of dermatology, and every dermatologist should study it. The general pathologist, however, will find it useful in helping him to solve his occasional dermatological riddles.

H. HALDIN-DAVIS

GROUP PSYCHOTHERAPY

Group Psychotherapy: Theory and Practice By J. W. Klappman M.D. (Pp 344 21s) London William Heinemann (Medical Books) 1946

During the war the necessity of treating large numbers of patients suffering from not very deep-seated psychoneuroses led to renewed attempts to practise group therapy. This had been tried in the 1914-18 war but fell into disuse with the insistence on complete analysis and catharsis of each patient. The author of this book surveys the subject of group psychotherapy and suggests that too much stress may have been laid on the patient's emotions and that much can be done by encouraging him to use his intelligence. Moreover in group therapy a transference may be obtained to both the therapist and other members of the group, causing an extraverted attitude in the patient, which often arouses his interest and makes him desire

individual therapy when that is necessary (as it generally is) in addition to group therapy.

Lectures can teach the patient the nature of his illness and discussion by the group of anonymous case histories often of members of the group, may give him some insight into his own condition. These methods are suitable for treating groups of mild schizophrenics in mental hospitals, and groups of patients with other types of mental illness out-patients or even private patients, may be organized. Some authorities favour set lectures others discussions, psychodrama, or puppetry, and play therapy with children is commonly practised. The author stresses the advantages of group therapy among mothers and children. Patients often enjoy this form of group intercourse and continue it after discharge from hospital. The groups should usually be of 7-10 persons, but some therapists lecture to large audiences. The book includes a schedule of lectures as well as the author's impressions of results, accurate statistics are difficult to obtain. This book is worth studying by all concerned with the treatment of mental illness, especially institutions.

R. G. GORDON

OPHTHALMOLOGY

Principles of the Contact Lens By H. Treisman F.R.C.S., D.O.M.S., and E. A. Place (Pp 88, 40 illustrations 10s 6d) London Henry Kimpton 1946

L'Ophtalmologie Du Praticien By A. Cantonnet (Pp 172 85 figures 100 francs) Paris Librairie Maloine

Principles of the Contact Lens is the first monograph on this topic with which an ophthalmic surgeon has been associated, and the account is therefore more strictly clinical than those that have come from opticians. The authors devote about a third of their short study to the historical and optical aspects of the contact lens and then discuss the value of contact lenses in neuroparalytic keratitis, trichiasis, macular lesions, ptoxis, symblepharon, and pemphigus of the conjunctiva in addition to the more widely recognized uses. They describe two types of contact lens—the ground glass lens and the moulded glass lens—and mention plastic contact lenses towards the end of the book. The clinician should find particularly helpful the chapters dealing with the preliminary test, buffered solutions and tolerance.

The second book is one of the "Petits Précis" series, edited by Dr. Cantonnet. It is a remarkably complete summary of elementary ophthalmology and contains some matter not generally found in similar volumes, such as a fairly full account of binocular vision, the Cantonnet-Nouet alphabet for the blind, and a section on ocular hygiene. The author discusses treatment rather dogmatically and sometimes differs from the practice in Britain.

ARNOLD SORSBY

NATIONAL HEALTH SERVICE

Your Guide to the National Health Service A Manual for Patients, Doctors, Civil Servants, Hospital Officers and other Health Workers By A. David Le Vay M.S. F.R.C.S. (Pp 78 3s 6d) London Hamish Hamilton Medical Books 1946

Though this book is said to be for doctors as well as for others interested it is doubtful if the former will find it very helpful for, as the author indicates, the Act is merely a skeleton awaiting the flesh of Regulations, and most doctors who have studied it have found a good deal wrong with the skeleton. However though the author is a convinced believer in the Act and its consequences his book is worth reading much of it is factual and the style is clear and pleasant. Mr. Le Vay is aware that opinions may differ and his criticism is fair.

We may take exception to a few points for example, why has the author paraded once more that platitudinous buying and selling of practices, which he says is equivalent to the buying and selling of patients? No one who has bought a practice in an area served by several doctors could make such an assertion except under the influence of political propaganda. It is stated emphatically that the doctor will not be the servant of the State. Is this not playing with words? There is nothing derogatory about working in such a service, though most doctors would prefer to be employed

and paid by their patients, but when doctors have sold their practices to the State when their incomes come mainly, or even wholly, directly or indirectly from the State and when they can be excluded from the Service on the final decision of a Minister, it is not easy to understand in what sense they will retain their independence.

Certification is mentioned only briefly, but the author might have referred to the implications which many doctors see and fear in the future ubiquity and importance of medical certificates in connexion with the money benefits of National Insurance. Discussing expulsion from the Service and right of appeal to the courts the author very fairly marshals the arguments on both sides but agrees that the Minister should have the last word. He sees no reason why the taking over of the hospitals should lessen local voluntary work and interest and says, not perhaps with much conviction, there is plenty of room in hospital life for voluntary help—the linen rooms and the domestic side generally will remain open as before. He considers that 'central ownership of hospitals is only the predecessor to decentralization and the encouragement of local independence', and he concludes that 'the Service will be very good or very bad, and whether it is good or bad depends on whether there will be a tightening of bureaucratic control and on the wholehearted co-operation of the doctors. Yet how can anyone, with the embrace of post-war bureaucracy about him, hope for a slackening of its hold, fortified as it is in this case by the great powers given to the Minister and his staff. However, the optimist may be right. The book is honestly written, persuasive in tone, and not deliberately provocative.

ALFRED COX

TEXTBOOK OF ALLERGY

Allergy. By Erich Urbach, M.D. and Philip M. Gottlieb, M.D. Second edition, revised and enlarged. (Pp. 965. 410 figures. 70s.) London: William Heinemann (Medical Books) 1946.

In the second edition the authors have revised and enlarged this book and added new sections on the psychosomatic aspects of allergy, the Rh factor, allergic bronchitis, allergic cough and eosinophilic erythroderma. Of the 3,325 references almost 1,300 are new to this edition. The classification of the phenomena of hypersensitiveness—always a difficult problem—is rather involved. The authors' views on propeptan therapy, a form of treatment originated by the senior author, are far from being generally accepted by specialists in this field, and the dosage of pollen extract recommended in hay fever is considerably lower than that usually prescribed in this country.

This excellent reference book, up to date and well constructed, is probably the most complete on allergy yet published. It will be welcomed by those especially concerned with the subject and many chapters will interest all students of medicine though the general physician may find it heavy going in parts.

D. A. WILLIAMS

INCOME TAX

At Home with Income Tax. By R. W. Harris. (Pp. 178. 6s. 6d.) London: Stone and Cox 1946.

The aim of this book is to provide the ordinary taxpayer, in a compact and readily accessible form, with a guide to the income tax while avoiding complicated problems that are not of general interest. The author has succeeded to an extent quite unusual in this field. The general arrangement is excellent, the print clear, and the exposition simple (so far as simplicity is attainable in this subject) and illuminated by examples. The 'Notes for Professional Men' and those dealing with expenses are as useful as a broad description permits, the importance of taking income tax into account in connexion with the terms on which a share in a practice changes hands will particularly interest medical practitioners. The author discusses PAYE briefly, and mainly from the weekly wage earner's standpoint.

One of the hazards besetting this sort of book is that changes in the law are liable to make it out of date in a comparatively short time, but the fundamental features of the income tax, which are well explained here, are not likely to alter much. We can recommend it as the best available guide for 'the ordinary man and woman' for whom it is intended.

BOOKS RECEIVED

[Review it not include by notice here of the books received]

A Contribution to the Knowledge of the Influence of Canadian Tropical and Sex Hormones on the Growth of Rats. By J. H. Garverick and S. F. D. Joseph. (Pp. 116. 10s. 6d.) New York and Amsterdam: Elsevier Publishing Co. 1946.

A review of experiments on the influence of sex hormones on the growth of rats, showing the existence of a sex-dependent growth curve.

Handbook of Elementary Anatomy. By John J. Teasdale. (Pp. 165. 6d.) London: H. K. Lewis 1946.

A book of selected plates depicting the anatomy of the human body for students of medicine and biology.

The Birth of a Child. By G. A. D. P. (Pp. 99. 6s.) London: H. K. Lewis 1946.

The author explains the process of childbirth and the role of the midwife and general practitioner.

A Study on Oxygen Toxicity at Atmospheric Pressure. By W. T. L. O'Brien. (Pp. 93. 5s. 6d.) London: H. K. Lewis 1946.

A study on oxygen toxicity at atmospheric pressure, showing the effects of oxygen on the human body and the role of the general practitioner.

Postgraduate Obstetrics. By W. J. M. (Pp. 253. 10s. 6d.) London: H. K. Lewis 1946.

An American textbook of obstetrics, showing the latest developments in the subject and the role of the general practitioner.

Parenteral Alimentation in Surgery. By J. S. M. (Pp. 283. 21s.) London: H. K. Lewis 1946.

The author discusses the use of parenteral alimentation in surgery, showing the latest developments in the subject and the role of the general practitioner.

Anatomical Terms. By J. J. F. (Pp. 116. 10s. 6d.) London: H. K. Lewis 1946.

A pocket book to help students of anatomy, showing the latest developments in the subject and the role of the general practitioner.

The Care of Children from One to Five. By J. S. M. (Pp. 193. 10s. 6d.) London: J. and A. Churchill 1947.

The third edition of this well-known book, showing the latest developments in the subject and the role of the general practitioner.

The Treatment of Diabetes Mellitus. By J. S. M. (Pp. 116. 10s. 6d.) London: H. K. Lewis 1946.

A textbook on diabetes mellitus, showing the latest developments in the subject and the role of the general practitioner.

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THE EPIDEMIOLOGY OF TUBERCULOSIS

Prof J W S Blacklock, whose London University Lecture on the epidemiology of tuberculosis is printed in the opening pages of this issue of the *Journal*, has made two notable contributions to the study of this disease. The first of these, the report¹ on which is now a classic in the literature of its subject, was a combined morbid anatomical and bacteriological study of tuberculosis in children as seen post mortem during a seven-year period at the Royal Hospital for Sick Children, Glasgow. The former method of study made it possible to identify the site of the primary focus, the latter, since it included ascertainment of the type of tubercle bacillus, identified the source of the infection. The primary focus was abdominal in 101 cases, among tubercle bacilli isolated from such lesions, 54 strains were of bovine type and only 12 human. On the other hand, in 173 cases with a primary focus in the lung all but 3 strains (97.3%) of the bacilli isolated were of the human type. These observations, so unmistakable in their significance, did more than any others finally to refute the doctrine of von Behring and Calmette that the route of infection in infancy is almost exclusively alimentary, and that subsequent lung disease is due to migration of the bacilli from a glandular focus draining the alimentary tract. The extreme danger to young children of lung infection by direct inhalation was plainly revealed, indeed, in all but 5 of these 173 cases in which a primary thoracic lesion was found this infection was the cause of death. It appears that in Scotland this form of tuberculosis may have a higher mortality than elsewhere, but it is now more widely recognized as a highly fatal condition, particularly in the youngest age group. At the same time we have learned to look for the source of infection in pulmonary tuberculosis at all ages not in some reactivated glandular focus but in another case among the patient's recent household or other contacts.

This aspect of epidemiology is not forgotten in the lecture we print to-day. It is in fact amplified by a statement of the frequency with which different relatives in the household were found to be the source of an infection terminating in meningitis. But the greater part of the lecture deals with a fresh investigation pursued during the war on a considerably wider scale with the main object of determining the present relative frequency of infections due to the human and bovine types of tubercle bacillus. In this connexion, again, it is interesting to recollect that medical

science was misled for years by false belief emanating from the most authoritative source. Koch himself denied the pathogenicity of the bovine type of tubercle bacillus for man, and this was fully recognized only after the publication of the Final Report of the British Royal Commission in 1911. It was not indeed until 1929 that the late W T Munro demonstrated the existence of human phthisis due to the bovine type of bacillus. Our present detailed knowledge of the frequency of infection from cattle derives mainly from the work of the late Stanley Griffith, and, since the majority of his type determinations of bacilli from different human lesions were made fifteen or more years ago, they do not necessarily reflect the conditions existing to-day. It is important to know how much tuberculosis is being produced by the consumption of infected milk, age and geographical distribution, and the forms which it assumes. Such information is here made fully available for Scotland during the years 1943-4. The results acquire their chief interest when analysed geographically. It is shown, more clearly perhaps than ever before, that human infection with the bovine type of tubercle bacillus is a disease of rural areas where milk is consumed raw, and uncommon in cities where almost all milk is heat-treated if not pasteurized under licence. Thus the percentage of bovine infections in cervical adenitis was 46.2 in the towns and 77.8 in the country, the corresponding figures for cerebral tuberculosis were 20 and 42, and for surgical 20.1 and 45.4. It is even possible to relate the frequency of infections of bovine origin in various rural areas to the known condition of their cattle. In the Western area, including Ayrshire, where a large proportion of the herds are attested, bovine bacilli are much less often the cause of human disease than in parts of Scotland with a less enviable dairy-farming record.

An interesting corollary to this study is the work of J Sigurdsson,² pursued during the same period but under the shadow of German occupation in Denmark. This work involved, among other things, detailed inquiries and clinical investigations among families living in widely scattered and isolated farms. The author modestly remarks that his only means of transport for these extensive rural travels was a "bike". Denmark has made considerable progress towards the eradication of tuberculosis in cattle, a policy of permissive and compensated slaughter has been pursued since 1932, and many areas are free from the disease. On the other hand, others remain where it is still common, and owing to the thorough system of veterinary control the condition from this point of view of every area, and indeed apparently of every farm, is known. Sigurdsson's principal material consists of 566 type determined cases of pulmonary tuberculosis or pleurisy, of which 165 came from rural areas. No fewer than 67 of these 165 (40.6%) were infected with the bovine type of tubercle bacillus—quite the highest proportion ever observed—whereas in only 3.6% of the 362 purely urban patients was this type of infection found. The novel feature of this investigation follows: it consisted of pursuing inquiries into the records of the cattle with which the rural cases had been in contact. The result was to show that no less than 94% of the patients who had

¹ *Tuberculous Disease in Children*. Med Res Cncl Sp Rep Ser No 172 1932. London.

² *Acta tuberc scand*, 1945 Suppl XV.

an infection of bovine type had been in contact with "strongly tuberculous" cattle within the past two years. Sigurdsson is convinced that the inhalation of bacilli in stables containing animals with pulmonary disease is the main cause of these infections. Support for this contention is afforded by the sex frequency, males being more affected and more occupied than women in stable work, and by the demonstration of living tubercle bacilli in the dust and dirt of such stables. His further observations consisted of examining all members of the households of 200 farms in the parish of Grimstrup, at one half of which all the cattle were negative tuberculin reactors, whereas in the remainder they were "strongly tuberculous". Whether judged by the tuberculin reaction or by clinical or radiographic evidence of disease, households in the second category showed the higher percentage of infection. In many of these cases the route was doubtless alimentary. There are many other points of interest in this extensive study, which includes a comprehensive review of other—particularly Scandinavian—work. The author is convinced, for instance, that the prognosis is no better when human phthisis is due to the bovine instead of the human bacillus. He shows that the bovine type may spread from man to man, and from man to cattle, as well as from cattle to man. But the chief importance of his work is in showing the danger to human beings not only of consuming infected milk but of contact with infected animals in the stable. Evidence of direct infection from cow to man was also provided in this *Journal* three years ago by L. J. Cutbill and A. Lynn, of the Cheshire Joint Sanatorium. That infection by inhalation may occur in these circumstances has certainly not been generally recognized, and the risk is one with which farming people should be made familiar.

OXYGEN POISONING

As men descended to ever greater depths under water a number of symptoms were observed whose causes were gradually disentangled. The most important were those due to bubble formation on decompression. These can be prevented by a suitable time-table for ascent in stages. However, other symptoms are most marked while air at high pressure is being breathed. They are probably due to the fact that all gases are poisonous if breathed at sufficiently high pressure. Many solids and liquids are not poisonous, for the good reason that the blood does not dissolve them in toxic quantities. But the amount of gas taken up is proportional to its partial pressure. Behnke and his colleagues made the very remarkable discovery that not only nitrogen but argon is a mild narcotic at high pressures. What is even more surprising is that, per weight absorbed, nitrogen and argon are just about as narcotic as nitrous oxide. When breathing air at a depth of 300 feet—that is to say under 10 atmospheres pressure—a diver is exposed to a partial pressure of nearly eight atmospheres of nitrogen. Nitrous oxide is about forty times as soluble in blood as nitrogen, so the diver absorbs about the same volume of nitrogen per minute as he would of nitrous oxide

at atmospheric pressure from a mixture containing 20% of this gas. He does not lose consciousness but becomes rather stupid and irresponsible. Nitrous oxide and ether may be two or three times as narcotic as nitrogen per weight absorbed. They are certainly not five times as narcotic. They are more efficient as anaesthetics because they are more soluble both in water and in lipids, and for no other reason. Hydrogen and helium are not appreciably narcotic at ten atmospheres pressure. They may well be so at five or a hundred atmospheres.

Many gases have a marked physiological effect at pressures considerably below that at which they could be expected to have any narcotic action. One of these is oxygen. The experiments which K. W. Donald described in the last and the present issue of the *Journal* were part of the preparation for attacks on enemy ships such as the *Tupiza*, carried out by small groups of divers. Oxygen has a double advantage for such work. Not only does a diver carry far less oxygen than air for a given stay under water, but he need not betray his presence by bubbling. If air is used all the nitrogen in it must be discharged as visible bubbles. But a well-trained man can use up almost all the oxygen if this gas is supplied in a pure state. It had been known since Paul Bert's work of 1878 that oxygen is convulsant when breathed at high pressures. But up to 1942 there were no quantitative data as to its effect on men. Dr. Donald describes the work carried out at the Admiralty Experimental Diving Unit in 1942 to 1943. Not only were large numbers of men subjected to high pressure oxygen both in compressed air and under water, but repeated experiments were done on the same individuals. As it is perhaps unlikely that the work will ever be repeated on so large a scale it is to be hoped that the results will be published in full so that a complete statistical analysis is possible. From a practical point of view the most important conclusions reached were the extreme variability of tolerance, both between different individuals and in the same man from day to day, and the fact that tolerance under water was less than in compressed air. Convulsions have occurred at a depth of only 40 feet. Thus J. S. Haldane's misconception which led him to recommend that oxygen should not be used at pressures exceeding two atmospheres absolute, or 33 feet of sea water, would seem to have been justified by practical experience. Under war conditions it can be used and has been breathed at great depths. A one per cent chance of convulsions is a small additional risk to a man who intends to fix a mine under an enemy battleship. But it is not a risk which should be taken in peacetime.

Apart from the work described by Donald, numbers of experiments were done on civilian personnel. When the results are published, while Donald's main conclusions are not likely to be shaken, some of them may be seen in a slightly different perspective. In particular the effect of oxygen on the respiratory tract will perhaps appear to be a limiting factor in certain types of dive, though it was not so in those investigated by him. In spite of the careful biochemical work of Dickens, the cause of oxygen convulsions is completely obscure. The first requisite for its elucidation will be the measurement of the partial

pressure of oxygen in the venous blood leaving the brain just before a convulsion. Recent technical advances render such a measurement entirely possible even in human subjects, let alone animals. If the partial pressure of oxygen in the brain just before a convulsion is found to be several atmospheres, then it is possible that the inactivation of enzymes which Dickens reports may be a causative factor. If, on the other hand, the partial pressure does not always rise above half an atmosphere some other cause will have to be sought. In any case research on this problem will clear up the question of how far the brain can protect itself from oxygen poisoning by vaso constriction, and thus throw further light on the fundamental problem of the control of cerebral circulation. Whatever the biochemical process behind oxygen convulsions it is likely to be simpler than that behind convulsions caused, say, by metrazol or picrotoxin, and, above all, it is more likely to throw light on the causation of epilepsy. The research in question shows, clearly both the good and the bad points of much research done in connexion with the war. On the one hand quantitative data were obtained on men on a scale which has so far been quite impossible in peacetime. On the other hand, on account of the urgency of the practical problems in view, it was impossible to investigate the physiological processes at work in full detail. As a field for further research oxygen poisoning remains wide open, but unfortunately the technical equipment needed is rather expensive.

Similar problems could and should be tackled in peacetime. For example, the vapours of various solvents cause a good deal of ill-health and occasional deaths. But we do not know whether it would be possible to lower the risk by eliminating specially susceptible workers, as is the case with oxygen poisoning. Again, the inhalation of textile dusts is a steady source of death from nephritis and a group of conditions whose common factor is hyperpiesia. We know nothing of the biochemical processes at work, which should clearly be studied in animals before any experiments are done on men. Industry is as important as war, being indeed a prerequisite for modern war. If work on a similar scale to that of the Admiralty Experimental Diving Unit is done in the industrial field in the next generation, British industry may become a model of hygiene to the world in the twentieth century, as it was a model of productive efficiency in the nineteenth.

PLASMA MEPACRINE RECONSIDERED

The control of chemotherapeutic remedies by estimations of their concentration in the blood first came into general use in the case of the sulphonamides, following the work of Marshall and his colleagues. The methods applied were simple and the procedure became popular, especially in the United States where at one stage of the war it was reported that all the scientific medical men were "blood-level-minded". Accordingly, in 1942, when mepacrine (atebrin, quinacrine) began to be used to control malaria, it was natural that one of the first steps should be the study of its concentration in the different body fluids. Appropriate methods for this purpose were devised by Brodie and Udenfriend and by Masen, based on the extraction of the mepacrine by ethylene dichloride with suitable adjustments of the pH and measurement of the fluorescence of the

material obtained. The question was studied by Shannon¹ and by many other American and British workers.

Sulphonamides are distributed approximately equally through most of the body fluids and tissues. Mepacrine behaves quite differently, since it has a high affinity for protein and for certain types of cells. Most of the mepacrine is stored in the tissues and only a small proportion is found in the blood. The concentration in the skin is approximately 80 times that of the blood, in the muscle 50 times, and in the liver 2,000 times. In the blood itself distribution is uneven. The concentration in the erythrocytes is up to twice that of the plasma, and in the leucocytes over 200 times. The concentration in whole blood is approximately four times as great as that in the plasma. Finally, of the mepacrine in the plasma 80-90% is bound to plasma proteins and 10-20% is dissolved in plasma water, presumably it is this last fraction which is in equilibrium with the mepacrine in the tissues. In view of this complex distribution there was much discussion during the war as to which concentration of mepacrine—in plasma, in blood, or in some other fluid—was the most important. On the authority of Shannon and his colleagues it was generally agreed that plasma mepacrine was the most reliable indication of the level of mepacrine in the other tissues of the body. A great deal of work was done on this assumption—for example, the extensive observations made on volunteers at Fort Knox,² and all aspects of the dosage of mepacrine and of its suppressive and therapeutic actions against malaria were related to plasma mepacrine levels.

The whole basis of this work has now been questioned in a recent paper by Marshall and Dearborn, working in the laboratory which launched "blood concentrations" into modern therapeutics. They studied the therapeutic action of mepacrine in the malaria produced in ducks by *Plasmodium lophurae*, the host-parasite combination which has been most widely used in recent American laboratory work on malaria. Ducks maintained on a constant daily dosage of mepacrine showed marked variations in the plasma concentration of mepacrine, both between different ducks and in the same duck on different days. These variations are due mainly to variations in the distribution ratio between plasma and tissues, most of the compound being stored in the latter. (Although not mentioned by Marshall, much of this variation might well be due to changes in the level of ammonium ions, since even low concentrations greatly influence the distribution of mepacrine between cells and body fluids.^{3 4}) The concentrations of mepacrine in the tissues and in the erythrocytes were much less variable than those of the plasma. There was little or no correlation between plasma concentration and therapeutic effect, but there was good correlation between dosage and therapeutic effect. Although this work has still to be confirmed, and it remains to be shown that what happens in ducks also happens in man, this paper calls for reconsideration of the basic assumptions of investigations on mepacrine. It does not invalidate all studies of the concentrations of drugs in body fluids, it merely points out that in the case of mepacrine the plasma concentration is not such a reliable indicator as was previously believed. In that case there might be much to be said for going back to the estimation of its concentration in whole blood, taking precautions to check the leucocyte count. The whole blood concentration is much easier to measure than the concentration in the plasma, it can be done by a simple portable, and cheap instrument described by King and Gilchrist.⁵ However, mepacrine is rapidly becoming out of date. From

¹ *J. Pharmacol.* 1944 81 307

² *Arch. intern. Med.* 1946 78 64

³ *Ann. trop. Med. Parasit.* 1945 39 53

⁴ *J. clin. Invest.* 1946 25 694

⁵ *Lancet* 1945 1 814

1942-5 it was of enormous military importance in controlling malaria in the Pacific and Mediterranean areas. It will now be replaced gradually by paludrine, chloroquine, or other new antimalarials yet to be discovered. So perhaps this challenge to accepted beliefs will not necessitate as much revision of previous work as would otherwise have been the case.

A minor point of some interest is illuminated by Marshall and Dearborn's paper—namely, to what extent the substance present in the blood or tissues is unchanged mepacrine and to what extent it is merely an inactive degradation product. Taggart has studied material from Marshall's ducks. He reports that of the fluorescent material obtained from the liver one day after a single dose, 90% is unchanged mepacrine, but 14 days after a single dose only 15% of the fluorescent material is really mepacrine and 85% consists of degradation products, which are presumably inactive. Once again it has been shown that the application of analytical chemistry to therapeutics is beset with pitfalls and that a broad and balanced judgment is needed properly to assess the valuable contributions that can be made to clinical practice by these measurements.

VACCINIA AND ECTROMELIA

In 1941 Hirst¹ and McClelland and Hare² described the agglutination of chicken red-blood cells by material containing influenza viruses A and B. Since that time Burnet and his co-workers³⁻⁵ have applied this new technique to the study of a large number of viruses, and similar types of reaction have been given by viruses previously considered to be unrelated. Specific agglutination of the red blood corpuscles of many other species has also been useful in differentiating certain of the viruses. The Melbourne workers⁶⁻¹⁰ have recently described a possible relation between the viruses of vaccinia and infectious ectromelia of mice which gives rise to much interesting speculation. Red blood cells from only 50% of fowls are fully susceptible to agglutination by these viruses. With the exception of mouse red-blood cells, which are agglutinated specifically by ectromelia virus only, both viruses gave negative results with three ducks, one man, two calves, three rabbits, and two rats. Two of five pigeons gave susceptible cells. Thus the susceptibility of mouse cells to ectromelia virus was not paralleled by any power of vaccinia virus to agglutinate cells from the species most susceptible to its pathogenic activity. The haemagglutination with both viruses is of the same character, but the haemagglutinins of these viruses differ from the influenza viruses in several respects. The agglutination is best shown at 37° C, in contrast to the influenza viruses, which give more satisfactory readings at lower temperatures. The haemagglutinin of ectromelia is distinct from the virus particles, whereas influenza virus haemagglutinin is a function of the actual virus particle. Ectromelia virus haemagglutinin is susceptible to inhibition by specific immune serum and to almost equal titre by vaccinia immune serum. None of the normal human, rabbit, or calf sera at a dilution of 1:10 showed any inhibition of agglutination. This contrasts with the usual finding with influenza virus strains.

There was in addition active cross immunity between ectromelia and vaccinia viruses in rabbits and mice. The two viruses have a number of other common features. Both are relatively robust forms which survive well in broth filtrates or glycerolized emulsions at ordinary refrigerator temperatures. The elementary particles of both are probably about the same size. In the chorio-allantoic membrane of the developing chick embryo the difference in lesions is striking, but Burnet considers they can be ascribed to differences in the vigour of multiplication of the two viruses in embryonic cells. It is unfortunate that little or no evidence is available as to the natural occurrence of ectromelia in wild mice or other rodents. Burnet concludes that in general there seem to be no physiological and biological differences between vaccinia and ectromelia viruses great enough to preclude the possibility of a common origin. The differences between the viruses are, however, extensive enough to make it certain that if they have a common origin the two lines have undergone a long evolution in dissimilar hosts. Further comparative study of the other mammalian pox viruses using the red cell agglutination technique may help to elucidate the evolutionary history of the group.

ACUTE NON-SPECIFIC GASTRO-ENTERITIS

Acute gastro-enteritis affects persons of all ages but is rarely fatal except in the very young and the old. Some of the causes of this disease are known such as the Salmonella and dysentery groups of organisms, food poisoning due to bacterial exotoxins, and also food poisoning caused by the toxic products of bacterial growth. There remains a large proportion of cases in which no specific cause can be found and in which the clinical syndrome varies thus suggesting that there is more than one infective agent responsible. Included in this group is true neonatal diarrhoea of the type reported some months ago at Derby,¹ where no adults were affected but there was a high mortality among the babies. Maternity hospitals in Oxford and Leicester had another type of outbreak in which the nursing staff, mothers, and babies were affected, though on the whole the disease was less severe than at Derby. There were no signs of upper respiratory tract infection in these outbreaks, and the same applies to the two epidemics in Cornwall described by Hargreaves elsewhere in this issue (p. 720). In other outbreaks, particularly those affecting adults, there have been signs of faecal infection: this was true of the epidemics discussed by Bradley² and by Reimann.³ There have also been large numbers of cases among the general public in widely separated parts of the country. Here the disease has had a very sudden onset, the first symptom being vomiting followed by diarrhoea, with a fairly rapid recovery, the illness lasting about three days.

It has been suggested that a virus is responsible for acute gastro-enteritis, a view supported by Reimann and discussed by Hargreaves. Work in this country on lines similar to Reimann's has consistently given negative results but it is possible that the infective agent in the cases studied was different, as they did not show faecal involvement. Acute non-specific gastro-enteritis is often diagnosed as "gastro-influenza," but it is unlikely that the accepted influenza viruses A and B play any part, so far as incidence is concerned the two diseases do not bear any relationship to one another. Gile⁴ has drawn attention to certain strains

¹ *Science*, 1941, 94, 22.

² *Canad. J. Publ. Hlth.*, 1941, 32, 530.

³ Nagler F. P. O. *Med. J. Austral.*, 1942, 1, 281.

⁴ North E. A. *Austral. J. exp. Biol. med. Sci.*, 1944, 22, 105.

⁵ Burnet F. *Nature*, 1945, 155, 543.

⁶ Burnet F. *Austral. J. exp. Biol. med. Sci.*, 1942, 20, 81.

⁷ Lush D. J. *Comp. Path.*, 1945, 53, 157.

⁸ Beveridge W. I. B. and Lind P. C. *Austral. J. exp. Biol. med. Sci.*, 1946, 24, 127.

⁹ Burnet F. and Boake W. C. *J. Immunol.*, 1946, 53, 1.

¹⁰ — and Stone J. D., *Austral. J. exp. Biol. med. Sci.*, 1946, 24, 1.

¹ *British Medical Journal*, 1947, 1, 371.

² *Ibid.*, 1913, 1, 309.

³ *J. Amer. med. Ass.*, 1915, 127, 1.

⁴ *British Medical Journal*, 1934, 1, (31).

of *Str faecalis* which are active producers of tyramine, a substance possibly toxic to young babies, such strains have been isolated from a few outbreaks of infantile diarrhoea. Tyramine would be non-toxic to adults, however, because they are able to break it down.

There is increasing interest in the part played by the coliform group of organisms and their possible pathogenicity. Work by Kauffman⁵ and by Vahlne⁶ has laid down a classification of this group based on serological methods. Vahlne found a high incidence of two or three groups among coliform strains isolated from cases of cystitis, appendicitis, and cholecystitis, so certain coliform strains may perhaps be accepted as being more potentially pathogenic than others. Stuart⁷ and Christensen⁸ have suggested that these organisms are responsible for gastro-enteritis in adults but the evidence they give is not conclusive.

Though the aetiology of acute non-specific gastro-enteritis is unknown there are circumstances which favour its occurrence. The majority of cases of neonatal and infantile diarrhoea appear to arise in institutions, a fact to be accepted with reserve since there are no reliable figures on which to assess the incidence in the general population. Nevertheless, descriptions of recent outbreaks refer to overcrowding in maternity units and nursery schools and stress the inadequate nursing facilities. It is obvious that these conditions are ideal for the spread of any infective agent.

Kershaw, in another part of this issue (p. 717), ascribes some forms of acute gastro-enteritis to local chilling of the abdomen. This may be a factor in the cases which he describes, but it is unlikely to operate in Britain. Here chilling predisposes the patient to the most common of all infections in this country—that of the upper respiratory tract. The moral of Kershaw's article lies in its insistence on adverse hygienic and other conditions as being important factors in determining the appearance of a large number of cases of gastro-enteritis in a community in which the disease is sporadic. Though interest may be centred on the actual agent responsible for disease, it must be remembered that any condition which lowers the resistance of the individual will favour the onset of infectious disease, and where the agent is only potentially pathogenic, then external circumstances may in fact determine the onset of an epidemic in a community.

SWISS RATIONS

Prof. A. B. Fleisch was president of the Swiss Commission *federale pour l'alimentation de guerre*. His account⁹ of food control is particularly interesting because the Swiss problems were very similar to ours. The Swiss had imported over half their food. In order to check the growth of a black market they aimed at supplying enough calories, and tried therefore to produce the maximum energy value from their soil. Prof. Fleisch discusses the calories and protein for human consumption obtained per acre from various crops and from livestock. The cultivated area was doubled, and potato crops rose to two and a half times their pre-war level. Livestock, not excluding milch cows, was reduced, though the numbers of pigs and hens were not cut down as drastically as in Britain. The extraction rate of flour was raised to 94% or over for a short period and was kept at about 90% for most of the

war, so long as the rate was not over 90% the flour proved satisfactory.

The Swiss were not able to import butter or substitutes, their 2-oz. ration was made from milk produced at home. They were left with the problem of the best use of skim milk, previously used for feeding livestock, and few people chose the 2 pints which could be taken in place of 1 pint of whole milk. There was also little demand for dried skim milk. In spite of propaganda to stimulate the use of skim milk for human consumption 38% was still used for feeding livestock. Rationing was introduced gradually from November, 1939, onwards. The supply of milk was restricted from January, 1942, inequality of distribution caused much bitterness. Milk was rationed from October–November, 1942, at the same time as bread, which had been much used for feeding hens and other livestock. Extra rations were allowed for adolescents aged 12 to 19, for pregnant women, and for three categories of workers in amounts graduated according to the heaviness of their work. Children up to 6 years received special rations. A low-price ration card was introduced which allowed the purchase of more of the cheaper and less of the dearer foodstuffs without alteration of calories, protein, or fat. Canteen meals were considered as a means of saving fuel, but were held to be impracticable, since Swiss workers have a two-hour break in the middle of the day. After the rationing of bread and milk had begun, coupons had to be given up for school meals. In the winter of 1944–5 the children could no longer afford these coupons, and the number of meals supplied fell, during the summer of 1945 coupons were no longer demanded.

The number of calories taken by a normal consumer, with average consumption of unrationed foodstuffs, was in the neighbourhood of 2,100 per day, except during the middle half of 1945, when the lowest level reached was 1,783 calories in May. Prof. Fleisch compares this intake with the average calories taken per head according to *Food Consumption Levels in the U.S.A., Canada, and the United Kingdom*. This comparison is most misleading. This pamphlet, as is expressly stated, gives the calories per head calculated from the amount imported and produced and not, as has been incorrectly stated in a White Paper, "at the retail level." The comparable figure for the number of calories taken in Britain per head was not between 2,900 and 3,000 but about 2,300.

The death rate from tuberculosis remained about the 1938 level, but the number of notifications in 1945 was more than twice the total for 1939. Death rates from other diseases decreased. There was less sickness among school children, and their average heights and weights were maintained. The Tuxford index fell during the period of extra scarcity in 1945 and then recovered. There was also much less dental caries. The Swiss Paediatric Association discussed rickets in June, 1943, and did not consider that it had become more frequent or severe. Opinion leaned towards the use of single large doses of vitamin D in prophylaxis of the children in Zurich, 60% were so treated in the winter of 1942–3.

From the autumn of 1941 to the spring of 1946 the weights and haemoglobin levels of 700 persons were recorded. Both fell slightly in 1945 and then rose again. Apart from this there were seasonal variations, weights being highest in the winter and haemoglobin values in the summer. There was much agitation in the newspapers and in Parliament for vitamin supplements, but the great majority of doctors did not consider that adults needed them. In a short experiment at Zurich supplements of vitamins B₁ and C were given to school-children. They had no detectable effect on growth but were thought to improve appetite and to reduce fatigue.

⁵ *Acta pathologica* 1944 21 20.

⁶ *Acta path. microbiol. scand.* 1944⁶ Suppl. 62.

⁷ *J. Bact.* 1946 52 431.

⁸ *Ibid.* 1947 53 317.

⁹ *Ernährungsprobleme in Mangelzeiten*. By A. B. Fleisch. Basle: Schwabe and Co. 1947.

LEPROSY IN BRITAIN

Since the war a small number of cases of leprosy have been detected in Britain among returning soldiers and prisoners of war from the Far East. We are indebted to the medical secretary of the British Empire Leprosy Relief Association for the following brief notes of six cases already seen.

Case 1—Male, aged 38, civilian internee, Far East. Diffuse, slightly raised irregular, reddish brown inflamed areas on face, trunk, arms, and legs. History of slow spread for the last two years. No lesions on genitalia lower abdomen, or any flexor surface. Scrapings from the corium of the affected skin showed abundant acid fast bacilli. Diagnostic points: Far East history, under bad conditions, long duration of lesions, distribution, acid-fast bacilli.

Case 2—Male aged 34, Far East prisoner of war. Lesions on upper and outer left arm and right loin of eight months' duration—about 2 in (5 cm) in diameter, roughly resembling ringworm. Edge slightly raised and dull red with well defined margin. Area of skin enclosed by the ring is flattened and slightly hypopigmented. Definite anaesthesia to light touch. No acid-fast bacilli found.

Case 3—Female, aged 49, civilian internee, Far East. Lesion just above and on outer side of left knee. Duration three years. Lesion oval shaped roughly resembling ringworm, long diameter about 2½ in (6 cm), margin pale yellowish red and slightly raised. Both centre and margin of lesion show definite anaesthesia to light touch. No acid fast bacilli found.

Case 4—Soldier with service in Far East. Lesion on left loin for last eighteen months—about 4 in (10 cm) in long diameter oval plaque slightly raised and about the colour of a subsiding erysipelas. Anaesthesia to light touch. No bacilli.

Case 5—R.A.F. officer with service in several theatres. Lesion of two years duration. Faint diffuse blush on upper right shoulder with no defined edge. No anaesthesia. Scraping from corium showed acid fast bacilli.

Case 6—Soldier with service Far East. Diffuse yellowish brown infiltration of face and irregular ill defined patches over body. Both ulnar nerves thickened above elbow and tender on palpation. Duration four years. Scrapings from the corium show masses of acid fast bacilli.

Cases 2 and 3 are both early tuberculoid leprosy, the diagnosis being made from the clinical appearance and the anaesthesia. Bacilli were not found. Case 6 is a case of advanced leprosy, infective to children on prolonged contact, which unfortunately went on for four years before being diagnosed. Other cases undoubtedly exist and it may be expected that more will develop. The diagnosis of leprosy should be kept in mind in all cases of resistant skin lesions of long duration where there is a history of service and residence in countries in which leprosy is endemic. The importance of early diagnosis and treatment need not be emphasized.

LEPROSY IN THE EMPIRE

An exhibition arranged with the object of drawing public attention to the incidence of leprosy in the Empire is to be held at Overseas House, St James's, from June 11 to 21. The British Empire Leprosy Relief Association is responsible for the exhibition which will be opened by Lord Wavell, and will be named 'Who Walk Alone,' after the American best seller by Perry Burgess. At a preliminary Press conference Sir Bernard Bourdillon, chairman of the Association gave the number of lepers in the Empire to-day as two millions of whom 97.5% were in India and Africa. A great deal had been done by means of self supporting settlements, with well-planned houses and streets, each settler having his own farm land and some job to do within the settlement. The organization of settlements had greatly diminished the former concealment of the disease, which of course encouraged its spread and it was shown that with good attention and care the leper's expectation of life might be almost normal. Help in the treatment of leprosy had been afforded by the sulphonamide drugs, but these were expensive as compared with the usual chaulmoogra oil treatment. The seeds of the chaulmoogra tree were grown in the settlements themselves, so that each injection cost only about sixpence.

Dr G. A. Rynie, medical secretary of the Association and formerly of the Sungai Buleh Leper Colony, Malaya, said that he expected a temporary increase in the number of lepers in this country as a result of the return of the 14th Army and prisoners of war from Burma. Perhaps 30 cases might come to light during the next five years. There was little fear of further infection during this incubation period. The exhibition will illustrate the progress of the fight against leprosy, the magnitude of the problems yet to be solved, and the urgent need of funds to enable the activities of the British Empire Research Association to be more widely extended.

NATIONAL HEALTH SERVICE ACT

EXECUTIVE COUNCILS

The Minister of Health on May 15, laid before Parliament Regulations relating to the executive councils to be set up under the National Health Service Act 1946. This is another of the essential preliminary steps in the organization of the new Health Service. The Fifth Schedule appended to the Act states that an executive council shall consist of a chairman appointed by the Minister of Health and 24 other members: 8 appointed by the local health authority, 4 by the Minister, 7 by the local medical committee, 3 by the local dental committee, and 2 by the local pharmaceutical committee. The Act envisaged the setting up of executive councils in each county and county borough to organize locally the health practitioner services.

The new regulations came into force on May 15 and do not apply to the Isles of Scilly. The procedure to be adopted is as follows:

A local health authority, local medical committee, local pharmaceutical committee or local dental committee shall forthwith give notice in writing to the Minister of the names and addresses of any person appointed by them to be an original member of the council and to the clerk of the council of the name and address of any other member appointed by them. The clerk of the council shall forthwith inform the Minister of the names and addresses of any members so notified to him.

The first chairman of the council shall hold office until March 31, 1949. Of the original members of the council one-third shall retire on March 31, 1949, one-third on March 31, 1950 and the remainder on March 31, 1951. The order of retirement of the original members shall be determined by drawing lots at a meeting of the council held as soon as convenient after its constitution.

The term of office of members will be three years and members will be eligible for reappointment. Where a vacancy occurs by reason of the death, resignation or disqualification of any member, the vacancy will be filled either by a nominee of the Minister or by a person appointed by one of the electing bodies so as to maintain the balance of representation laid down in the Fifth Schedule.

Procedure

Questions considered by the council will be determined by the majority of the votes of the members present. Minutes will be kept by the clerk who is to be a person appointed by the council and approved by the Minister. The clerk and such other officers as may be necessary will be remunerated in accordance with scales approved by the Minister.

The council is to appoint a finance committee and other committees as necessary. Except in the case of the finance committee these committees may include persons who are not members of the council. The council may make rules and revoke standing orders for the regulation of the proceedings and business of the council and of its committees. The council is to meet not less often than once in every three months.

Supplementary Ophthalmic Services

It is laid down in Part III of these regulations that except in the case of areas exempted by orders made under subsection 4 of Section 41 of the Act, the executive council shall appoint an ophthalmic services committee. This committee will exercise

on behalf of the council the duty of making arrangements for the testing of sight and for the supply of optical appliances. The ophthalmic committee will have 8 members appointed by the executive council from among the members of the council other than those appointed by the local medical committee, and one medical practitioner nominated by the council from those members appointed by the local medical committee. Three other medical practitioners having the prescribed qualifications, 3 ophthalmic opticians and one dispensing optician will be appointed by such organizations as the Minister may recognize as composed of members of the professions concerned.

In this connexion and for the purposes of Part IV of the Act and the Seventh Schedule the expression "medical practitioners having the prescribed qualifications" means

A medical practitioner who has

(a) Completed an academic or postgraduate course in ophthalmology approved by the committee hereinafter in this paragraph mentioned and received a diploma or certificate in respect of such course, or

(b) Held for a period of two years an appointment as an ophthalmic surgeon or assistant ophthalmic surgeon on the staff of an eye hospital or a hospital having a special eye department, or

(c) Held any appointment for a period of two years affording special opportunities for acquiring the necessary skill and experience of the kind required for the services to be rendered, and who shall, to the satisfaction of the Minister acting on the advice of a committee to be recognized by him for the purpose of approving such qualifications, have had adequate, including recent, experience.

The original members of the ophthalmic services committee, which is to appoint its own chairman, are to retire on March 31, 1949. Thereafter the term of office of members shall be one year. Members will be eligible for reappointment. These regulations also define the "prescribed qualifications" for ophthalmic opticians and dispensing opticians.

PATENT MEDICINES

Proposals for Control

The Pharmaceutical Society of Great Britain has asked the Minister of Health to bring the sale and advertising of proprietary medicines under statutory control. The Society has submitted to the Minister a 14,000 word report, based upon five years' investigation. Since 1914, when the Select Committee of the House of Commons published its *Report on Patent Medicines*, newspapers, advertisers, pharmacists, and the manufacturers of proprietary medicines themselves have done much to suppress abuses, but the conclusion is reached that the position to day is little less objectionable than it was then.

"Throughout the pages of most newspapers and periodicals in general circulation, states the report, sufferers from all manner of diseases and ailments are offered beans, tablets, wines, powders, salts, pills, ointments, tonics, hormones, glands, and vaccines that will bring them youth, health, charm, slenderness, strong nerves, inner cleanliness, lively livers, freedom from pain, increased (or decreased) weight, iron for the blood, purer blood, vitamins, contentment, resolution, immunization, vitality and so on. The advertisers' claims are frequently so fantastic that one would not be surprised to find them offering secure jobs and large salaries into the bargain." To remedy this state of affairs the Society puts forward a number of proposals.

(a) The duty of securing the maintenance of proper standards for proprietary medicines and their advertisements should be placed by statute upon the Minister of Health in England and the Secretary of State in Scotland.

(b) In carrying out these duties, they should be assisted by an advisory committee including pharmacists, medical practitioners, and representatives of the appropriate Government departments, and persons with a specialized knowledge of the subject.

(c) A registrar having pharmaceutical qualifications will be needed, together with

(d) A register of medicines and manufacturers.

(e) The sale of unregistered medicines should be prohibited.

(f) Standards for medicines and for advertisements should be prescribed by regulations made on the advice of the Committee. These standards should include (i) a requirement that the disclosure of composition must be in approved words and quantities, (ii) the prohibition of false, misleading, or exaggerated claims, and (iii) the prohibition of offers of diagnosis through the post.

(g) Similar provisions should be applied to surgical appliances and to 'treatments'.

(h) Complaints of non compliance with the regulations would be heard by the Committee which would advise the Minister whether or not the medicine or the manufacturer should remain on the register, any action by the Minister would be subject to appeal to the High Court.

(i) The services of the inspectors of the Pharmaceutical Society should be available for the necessary duties of enforcement.

Probable Increased Demand

The introduction of a comprehensive Health Service is not expected in itself to minimize in any way the demand for patent medicines. The Select Committee prophesied in 1914 that the sales of secret remedies would tend to decrease because of the operation of the National Health Insurance Act. In point of fact the volume of proprietary medicine sales doubled during the next ten years. The public are not expected to react any differently to the new Health Service, nor is their right to self-medication denied. It is contended however, that protection is needed in the exercise of that right.

"Unless therefore," the report concludes, "appropriate steps are taken to provide this protection, the era of a comprehensive Health Service may bring with it the golden age for commercialized charlatanry, which makes a butt of the orthodox practitioners on whom the service depends and a victim of the public, to the prejudice of the Service. It is therefore desirable, before the compelling pressure of these selling methods can be exerted still further, to direct attention to the following conclusions which, it is suggested, are to be drawn from the facts set out in this report.

1 "Proprietary medicines are advertised in terms of the grossest exaggeration, advancing claims which are frequently fraudulent.

2 "The persistent and ubiquitous advertising of proprietary medicines makes the public conscious of disease, teaches that ill health is the normal condition of human beings, and encourages self-medication as a habit.

3 "The claims made for some medicines lead to the public's postponing seeking skilled advice and encourage symptomatic treatment, thereby prejudicing the success of treatment directed to the cause of the symptoms.

4 "Many advertisements for proprietary medicines are based upon creating an atmosphere of fear—fear of ill health or of an operation, of premature old age, of an incurable disease.

5 "Reliance is placed upon uncritical testimonials as evidence of the value of proprietary medicines.

6 "Exaggerated claims are made for medicines for the relief of chronic conditions, such as asthma and rheumatism, and hopes are held out which cannot be realized.

7 "By implication or indirectly the advertising of proprietary medicines undermines public confidence in a State Medical Service and in the registered medical practitioners at whose hands such a service must be provided.

8 "Questionnaires are sent to patients with the suggestion that the manufacturers of the medicine will diagnose from the patient's answer what his complaint is and what medicine should be given him. These forms are sometimes never looked at and there is evidence that the same medicine is supplied without regard to the information which the patient gives.

9 "Pamphlets and advertisements are published which advertise articles as sexual tonics.

10 "Excessive prices and fees are charged for some medicines and for some treatments and money that can ill be spared is extracted from the sick.

11 "Many advertisements are couched in scientific or semi-scientific terms, often meaningless or having a pretence to scientific advance, designed to impress or deceive uneducated and credulous people.

12 "Endeavours are made to circumvent legal requirements relating to disclosure of composition.

13 "Certificates of analytical bodies referring to qualitative and quantitative particulars are issued to proprietary medicine manufacturers on a commercial basis and are used by them in advertisement in implied support of claims concerning which the certificates have no relevance.

14 'Preparations are compounded in a manner and of such substances as to defy analysis and preclude the production of evidence at law as to composition'

15 "The advertising of proprietary medicines is so extensive that the influence of advertisers prevents the ventilation of reforms in the public Press and so derogates from the principle of the freedom of the Press"

16 The volume of advertising of proprietary medicines gives these articles a significance which is out of all proportion to their true value to the community'

According to the *Daily Telegraph* the Proprietary Association of Great Britain stated on May 16 "It is not easy in the absence of the report to comment in detail upon the findings of the Society. The censorship work of the Proprietary Association of Great Britain, the Newspaper Proprietors Association, the Newspaper Society, and other trade organizations has practically eliminated all undesirable forms of advertising."

PROPOSED LONDON CENTRAL HEALTH COMMITTEE

Under the National Health Service Act the London County Council becomes the local health authority for the county of London and has the duty of establishing a health committee. An administrative scheme has been submitted to the Council for dealing with the local and domiciliary health services for which the Council will be responsible after April 1, 1948. Some of these services are already administered by the Council others will be transferred from the city corporation and the borough councils while yet others are duties newly imposed by the Act. The scheme proposed represents a new departure in local government in London providing as it does for members of the city corporation and the borough councils to participate directly in the administration by the county council of the personal health services. The central health committee will consist of 46 members, of whom 30 will be members of the county council. One will represent the city corporation, and 9 the borough councils, the remaining 6 will be co-opted, after consultations with the regional hospital board and other appropriate bodies, in such a manner as to establish liaison with the hospitals and to secure the services of doctors and other experts. Of the 40 local authority members whose names are proposed 21 are women.

The terms of reference of this committee include the provision, equipment, and maintenance of health centres, the care of expectant and nursing mothers and young children, midwifery, the provision of health visitors, home nursing, vaccination and immunization, ambulance provision, and liaison with hospital and general practitioner services. This committee will also be responsible for all matters relating to the function of the LCC as local health authority under the Lunacy and Mental Treatment and Mental Deficiency Acts, and all matters it present the function of the county council concerning milk, food and drugs, registration of nursing homes and, at the request of the Education Committee, the medical treatment of school-children.

Medical Treatment of School children

The report presented to the Council proposes that the new Health Committee should be responsible for providing or making contractual arrangements for, the treatment (as distinct from the medical inspection) of school-children in accordance with section 48 (3) of the Education Act. This proposal, it states, will permit the progressive integration of the treatment side of the school medical services with those other services specially maternity and child welfare which it will fall to the Council to provide under the new National Health Service Act.

Debate has taken place as to whether the sanitary functions of the public health service including drainage and smoke abatement should be transferred to the Health Committee but it is felt they should remain where they are at present, combined with housing, and that the only concern of the new Health Committee at any rate for some years, should be health matters affecting the person.

Area Health Subcommittees

The Council had already decided that the administration of the local health services should be decentralized, and that so

far as practicable their day to day management should be entrusted to area committees. For this purpose it is proposed to split up the county of London into nine divisions each division comprising from two to five metropolitan boroughs. The City of London is included with Bethnal Green, Poplar and Stepney in one such division. Each of the divisions will have its health committee really a subcommittee of the large central committee and on each of these committees there will be members both of the county council and of the borough councils, the latter in about double the number of the former. Thus the largest of the divisions, comprising Hampstead Paddington St Marylebone St Pancras and Westminster, will have 23 local authority members 15 of them drawn from the borough councils. The smallest division is the one covering Hackney Shoreditch and Stoke Newington, with 8 borough council and 4 county council members. There will be on each committee up to six additional co-opted members. These divisional committees however are not likely to be set up until on or after the appointed day.

It is claimed for the scheme that it will bring into the administration of the personal health services in addition to the members of the county council, more than 100 members of the City corporation and the borough councils 10 of them on the central committee and 92 on the divisional committees. It will also bring in 60 members—6 on the central and 54 on the divisional committees—co-opted for their special knowledge and experience of health and hospital matters.

RAMC WAR MEMORIAL FUND

The Royal Army Medical Corps—which next year celebrates its jubilee as a united corps under that name and also its first appearance in the field in the Khartoum expedition of 1898—is making a public appeal for a fund to commemorate the achievements of the Corps during the war. At a Press reception held at the Royal Army Medical College, Millbank, Sir Alexander Hood, Director General A.M.S. described the aims in view. The fund is to be devoted to the welfare of families of all ranks of the Corps who fell in the war also of all ranks who served and whose families may be in need through sickness or other misfortune. The term 'welfare' includes monetary grants assistance in training for civil technical qualifications help with the education of children and other purposes. A relatively small amount is to be set aside to provide a permanent memorial incorporating the names of the fallen. Sir Alexander Hood explained that it was considered desirable that no large amount should be spent on an expensive memorial in wood or stone further any central memorial, such as the equipment of a hospital or the making of a memorial garden would necessarily be accessible only to a small section of those interested. It is not proposed to capitalize any large sum and use the interest only but to distribute the money in such amounts as to afford substantial help in individual cases, and it is expected that the fund may serve within six or ten years. After the last war a similar fund amounted to £20,000 and it is hoped to beat that record. The personnel of the Corps with the help of the Emergency Medical Service have already raised £9,000.

An appeal for such a body as the R.A.M.C. is necessarily more difficult than for a territorial regiment which can draw upon its county or city associations. Moreover as the work of the R.A.M.C. is not combantant but humanitarian and has brought succour to every branch of the Army, as well as to many sailors and airmen—during the recent war well over four million sick were treated by the Corps—it is considered justifiable to bring the fund to the attention of the wider public. Sir Alexander Hood is president of the fund and the list of vice-presidents includes several former D.G.A.M.S.s and other senior officers. Each of the Commands is represented on the committee which also includes N.C.O.s and men. The honorary treasurer is Mr C. G. Randolph, director of Messrs Glyn Mills and Co., of Kirkland House, Whitehall. The fund of which H.M. the Queen is patron has received special permission from Field-Marshal Lord Montgomery to include in the appeal his message to the Corps: "admiration and high regard to a Corps whose contribution to victory has been beyond all calculation."

Reports of Societies

PENICILLIN IN NEUROLOGY ANGLO FRENCH MEETING

A joint meeting of the Section of Neurology of the Royal Society of Medicine and the Société de Névrologie de Paris was held on April 15 in London, Dr DOUGLAS MCALPINE presiding.

Sir HUGH CAIRNS said that four years ago Sir Howard Florey presented his department at Oxford with some penicillin. The first preparations contained only 50 to 100 units per mg and were very impure compared with the crystalline preparation of penicillin II now available, which contained 1,650 units per mg, but the dosage of penicillin given intrathecally worked out then had survived the coming of more abundant supplies. In gunshot wounds of the brain it was no use placing penicillin in the brain wound and hoping that all infection would be quelled, all indriven matter and necrotic brain tissue must be removed. In the absence of blockage of the pathways penicillin given intrathecally spread to all parts. A single intrathecal injection of 12,000 units would usually maintain an adequate concentration in the cerebrospinal fluid for twenty-four hours providing levels of between 0.3 and 0.6 unit per ml. Occasionally the penicillin disappeared more rapidly, so that when it was essential to maintain the concentration of penicillin in the cerebrospinal fluid it was better to give intrathecal injections twelve-hourly. The importance of a moderate intrathecal dosage was emphasized, he had never exceeded 20,000 units in a single dose. In most cases the lumbar route sufficed, but if the cerebrospinal pathways were blocked this route became ineffective. The cisternal route might be difficult in a case of meningitis, and there should be no hesitation in using the ventricular route whenever a block was suspected.

Systemic Administration

Penicillin given systematically, Sir Hugh Cairns continued, did not pass into the cerebrospinal fluid in appreciable amounts. Patients had developed relapses and had had pneumococcal meningitis when on systemic penicillin. However, it helped to overcome the primary source of infection and to deal with septicaemia when that was present, either from the primary focus or from relapsing meningitis. Penicillin also passed freely from the blood stream into the subdural space (though this statement should be made with some reserve because so far its proof rested on only one case). The sulphonamides were particularly important at the stage when the intrathecal administration of penicillin was being stopped. The immediate treatment of bacteriologically unidentified meningitis should be by sulphonamides and systemic penicillin in full doses, arrangements should be made for continuing such treatment during the transit of the patient to hospital, though there would be fulminating cases where that recommendation would not hold. In brain abscess most of the causal bacteria were sensitive to penicillin. Cerebellar abscess had presented a difficult problem, but with the aid of penicillin—and, where there was a Gram-negative organism, of streptomycin—success had been obtained, though this in no way diminished the need for unremitting expert care in each individual case. For preventing the infection of operation wounds penicillin powder was used as a routine, there was evidence that it was effective in diminishing post operative infections.

In conclusion Sir Hugh Cairns said that penicillin was not miraculous in its effects. Given access to sensitive organisms it would assist in their destruction for so long as its concentration remained adequate. The use of penicillin demanded a greater degree of precision and systematic planning than had hitherto been accorded to less powerful remedies.

Penicillin in Meningitis

Dr HONOR SMITH said that in pneumococcal cases penicillin was given intrathecally once or twice daily for a minimum of five days in doses of 8,000 to 16,000 units made up in a solution with 2,000 units per ml. Larger doses, especially when given in concentrated solution were no more effective and might be harmful. Lumbar, cisternal, and ventricular routes had been used for injection, and occasionally, in difficult re-

lapsing cases, all three had been found necessary, but in uncomplicated cases the lumbar route was safe and effective. Of the sulphonamide supplements sulphadiazine was the drug of choice. The sulphonamides might be given as soon as meningitis was diagnosed to tide the patient over the interval which might elapse before treatment with intrathecal penicillin could be given. The complications most frequently seen were spinal block and relapse. Treatment of the relapse did not differ from that of the initial attack, and if the relapse was promptly recognized and energetically treated the prognosis was good. Fifty unselected cases of pneumococcal meningitis had been treated, with 39 recoveries. Of the remaining 11 patients, two died from causes other than the meningitis, and four were virtually moribund when admitted to hospital. In the treatment of meningococcal meningitis intrathecal penicillin was rarely required, excellent results being obtained by treatment with sulphonamides alone.

Penicillin in Neurosyphilis

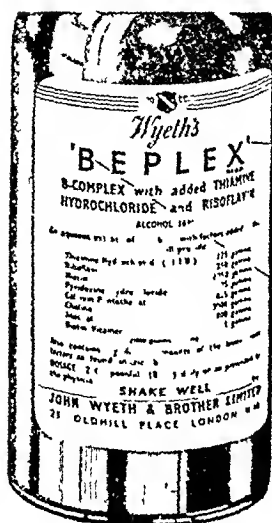
Dr C. C. WORSTER DROUGHT said that immediate results in early syphilis had been shown to equal if not to exceed those obtained with intensive arsenical and bismuth therapy, and there was little or no risk of toxic reactions. In cases of early syphilis treated with penicillin alone a moderately high relapse rate soon became apparent. Much remained to be learned in working out the most satisfactory method of applying penicillin in these conditions. Intravenous penicillin had little to commend it. The continuous drip technique was clumsy and there was a risk of thrombophlebitis. Relapse seemed to be more frequent after intravenous than after intramuscular injection. Recently there had been a tendency in the United States towards larger doses, several authors advocating 40,000 units every three hours up to a total dosage of 4 million units. Others thought that equally good therapeutic results were obtained by giving much larger doses of penicillin at longer intervals. If it was eventually shown that a fairly constant level of penicillin in the blood was really necessary for full therapeutic effect the use of the oil-wax preparations might have to be considered. Only preparations occasionally failed to be absorbed and there was a localized tender induration three days after injection. He had not abandoned arsenicals and bismuth used in conjunction with penicillin, it was even possible that synergistic action existed between the two methods of treatment.

Whether or not penicillin passed the blood brain barrier, it was certainly capable of exerting considerable effect on the meninges and central nervous system when given by parenteral injection. In his earlier cases treated with penicillin he did in fact use the intrathecal route, but he had abandoned routine intrathecal injection in neurosyphilis, preferring intramuscular injection in adequate dosage, except in certain cases of tabes with severe and frequent lightning pains. Serological reactions particularly the Wassermann reaction, were often little affected by penicillin treatment, and would continue to show positive results long after the cerebrospinal fluid had become normal. This appeared to be an additional argument for following up the penicillin with bismuth therapy. His present method of treating tabes was to give an initial course of penicillin intramuscularly up to a total dosage of 4 or 5 million units. This was followed by the usual arsenical and bismuth therapy until the serological reactions became negative.

Penicillin in General Paresis

Dr W. D. NICOL mentioned 57 cases admitted to the Malan Therapy Centre at Horton, 42 of them cases of general paralysis of the insane, and the remainder tabes and tabo paresis and miscellaneous cases. Thirty of these cases were given a course of penicillin after malaria, 14 received penicillin only, and 7 received a subsequent course of malaria. The penicillin was administered intramuscularly in every case in a dosage of 300,000 units daily, in one injection, for fourteen days. One of the most striking clinical features was the physical and mental improvement in many patients—a phenomenon rarely if ever seen during malarial therapy. Most dramatic results were seen in patients who were confused and in poor physical condition. Penicillin would prove a useful adjunct to malaria, but only time would show whether it could supersede it. It was known that malaria in an established case of general

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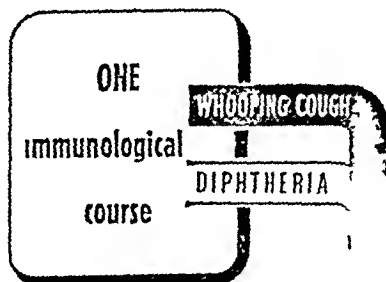
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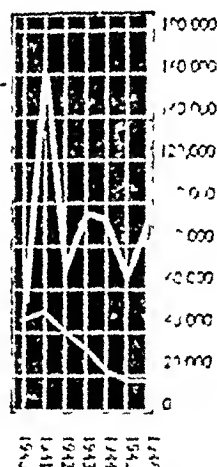
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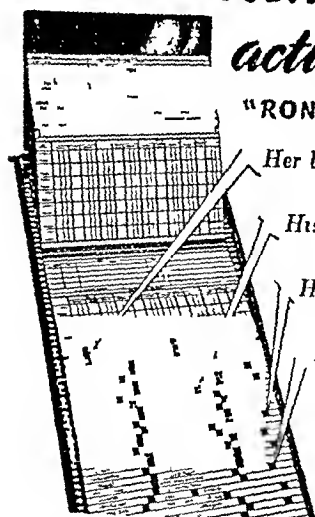
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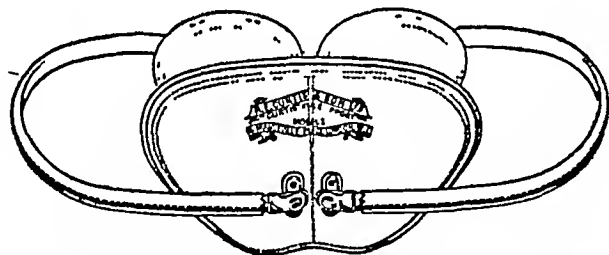
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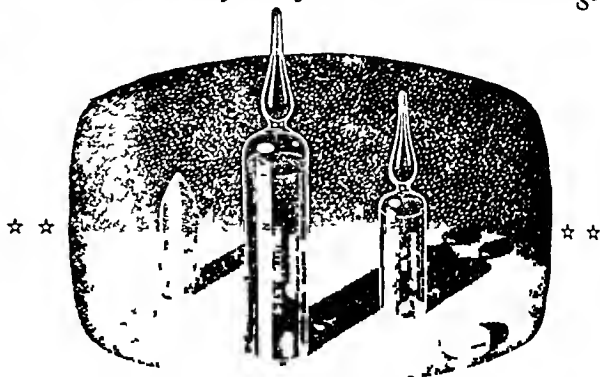
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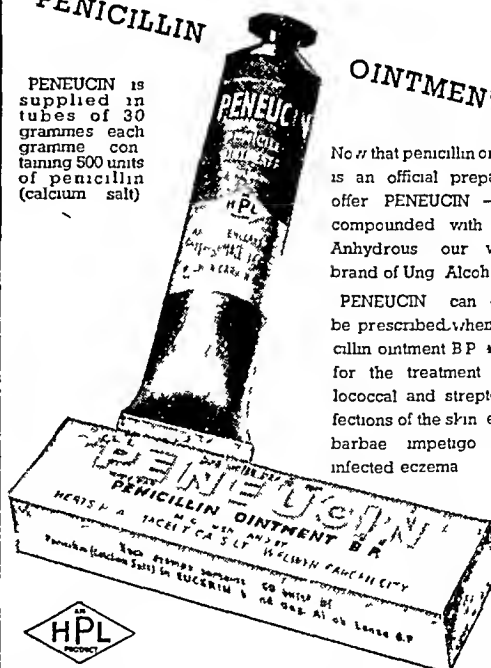
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paralysis of the insane should be accompanied by some additional form of therapy, and it might be that penicillin would be the optimum choice

Cerebral Oedema

The French visitors opened a later discussion on cerebral oedema. Prof ALAJOUANINE spoke on cerebral oedema in arterial hypertension.

The acute and temporary form, he said, was not the more frequent, but it had the more distinctive features. The clinical picture resembled closely that of subarachnoid haemorrhage. The patient first suffered from an intense headache, then vomiting occurred, with failure of visual function, and, sometimes gradually and at other times suddenly, there was unconsciousness, developing into deep coma. Several of his patients had had a number of attacks of cerebral oedema, one had had ten attacks in two years. In some cases there was also subarachnoid haemorrhage, so that there could be a mixture of the two conditions.

The second type, the chronic or permanent form of cerebral oedema, presented a different picture. Sometimes, but not always, it developed after two or three of the acute attacks, showing that there was a relationship between the two. The symptoms were those of pressure, which was demonstrated by headaches, vomiting and progressive drowsiness. This form of cerebral oedema had a bad prognosis. Sometimes hypertension and sometimes cerebral haemorrhage was the cause of death.

Dr DOUGLAS MCALPINE said that the subject of cerebral oedema had been rather neglected in this country by neurologists because the cases were usually admitted to hospital under a general physician. In a recent series of 18 cases the average age was 58. It was difficult to fit in the clinical picture with the conception of generalized cerebral oedema, but, as Prof Alajouanine had suggested, there were various grades and degrees.

Dr JACQUES LE BEAU (for M CLOVIS VINCENT) discussed cerebral oedema in neurosurgery. He said that, excluding head injuries, it was believed that compression of the brain stem might have something to do with the production of cerebral oedema, though it was not believed to be the cause. Prof GEOFFREY JEFFERSON, Dr J G GREENFIELD, and Dr A M STEWART-WALLACE contributed to the subsequent discussion.

ELECTRONIC HEARING-AIDS

At a meeting of the Section of Otology of the Royal Society of Medicine on May 2 with Mr H V FORSTER in the chair the design and application of electronic hearing aids was the subject of a paper by Mr E C NAYLOR-STRONG who demonstrated the components of these instruments and discussed their advantages and disadvantages.

Mr Naylor-Strong said that if certain minerals or salts such as quartz were submitted to mechanical strain of a very slight order an electric current of minute proportions was produced between the faces of the crystal. A crystal of quartz or Rochelle salt was attached to a paper diaphragm or the like. A sound wave falling on it would move the diaphragm slightly and so bend the crystal, producing electric currents so small as to be unable to activate any mechanism to produce sound unless magnified many thousands of times, hence the need for the valve amplifier. The amplifier must be capable of reproducing and magnifying faithfully each electric current in rapid succession and over all the necessary frequencies. It consisted of thermionic valves each connected to its neighbour by a set of electrical components.

Use of Audiograms

Hitherto the audiogram had been used as a measure of the patient's hearing loss and, to some extent, as an aid to diagnosis. It could also demonstrate the loss of certain pitches of sound, so that if it was desired to raise all the frequencies to the same level it could be shown that it was necessary to amplify some and leave others as they were or amplify them to a different degree. A hearing-aid which would enable the patient to hear all sounds equally was, so to speak, an amplifier which 'distorted' what it heard in a predetermined manner, the

'distortion' being the complement or reverse of the distorted sound heard by the deaf person.

The problem was, by studying the graph of the patient's hearing, to arrive at a judgment as to whether a particular aid would be of use to him. The complaints made by many patients had their origin in causes the effects of which the patients were unable accurately to describe. After analysing many complaints he had found that the telephonic or metallic effect of the hearing aid on a patient's hearing was due either to amplification at the wrong frequency or to over amplification in some part of the range. It was possible to make a suitable adjustment in many cases. The matter was not one purely of loudness of sound but rather of the part of the sound which should be amplified in order to transmit it naturally to the wearer of the aid. It was comparatively easy to fit a practicable hearing aid in middle-ear defects, whatever their cause and also in cases in which there had been a radical mastoid operation or any other surgical treatment which had removed or bound down the small bones.

What type of earpiece should be fitted in a case of otosclerosis? Here bone conduction was good and preponderated over air conduction, so that it might be supposed that it was better to use a bone conductor than an air conductor but he gave reasons why this was not so. Bone conductors did not reproduce the high notes to the same extent as did air conductors. Some patients could hear equally well with bone or air conductors, in such cases the bone conducting fitment was less necessary.

The results of experiments he had carried out showed that the frequencies which should be relied on in order to get intelligent speech were 512 to 2096, or perhaps 3500. The loss which could be allowed while at the same time reasonable hearing remained was about 30 db on the average, if the frequencies could be raised between the stated limits to a loss of only 20 db the patient would probably hear with an aid. Taking 30 or 40 db as an arbitrary line the lower the frequency at which hearing loss took place, the more difficult it was for an aid to be fitted. In most people over forty years of age there was a loss of high tones—the commencement of nerve deafness. The greater the loss of high tones and the earlier on the frequency scale it occurred the more difficult it was to use the electronic type of aid and ultimately there came a time when no hearing aid could be fitted. The difficulties in such cases were those of overall amplification as the gain from the hearing aid increased so did the internal noise level and these patients were most susceptible to the heterogeneous frequencies of background noise produced in the instrument by thermal agitation in the valves or by other electronic causes. This was a matter upon which research was still proceeding. Another difficulty arose from the frequency response of electric aids. Their size and limits made it virtually impossible for their cut-off to be sharp. Although the responses might be varied, some unwanted tones always came in because of the heterodyne effect of sound of varying frequencies.

Mr Naylor-Strong then showed a series of audiograms depicting successful cases and also failures. All the results shown were from tests he had himself conducted with the audiometers and measuring instruments made in his own laboratory. In conclusion he ventured the opinion that when the Government issued to the public hearing aids of electronic design there would be little that was revolutionary. It seemed highly probable that the designers would confine themselves to well tried principles and produce aids similar to those exhibited to the Section.

In the course of a brief discussion Mr EMERY MARTIN expressed concern for the elderly deaf patient with lower tone loss insufficient to preclude background noise so that hearing would be improved by increase of the upper tones though with a loss of 50 db at 4096 and almost complete loss at 7000. If fatigue resulted in permanent deafness the provision of an aid would cut out that person's hearing wherever it was not supplied with an aid, he might be able to hear by means of an ear trumpet. Mr NAYLOR-STRONG agreed that there was need for more research concerning the tiring or fatigue resulting from hearing aids. But he wondered whether any patients had been heard to say that they heard worse after having been fitted. If the aid was properly adjusted he could not agree that it would make the hearing worse.

Correspondence

De Morgan's Spots

SIR—Capt A R Murison and his fellow investigators on the above subject (May 10 p 634) remark that the literature on these ruby spots is extremely meagre. May I suggest that the reason is that most of those who have taken any interest in the subject and have looked for these spots in various morbid conditions have come to the conclusion, as I have, that almost every adult person, regardless of the state of his health, has one or (mostly) more of the spots on his body. I feel sure that Sampson Handley and all other surgeons attach no importance to their presence in regard to the diagnosis of cancer. Doctors who examine patients with degenerative cardiovascular conditions have doubtless found them constantly present, and so with psychiatric and other specialists. Personally I have found one or more present in every adult and even some children in whom I have taken the trouble to look for them. An adult without any must indeed be a *rara avis*.

For a more exhaustive statistical study of the subject I would propose that in every adult case the whole of the body (not merely the greater portion) should be examined. If patients and others were assured that there was absolutely nothing to fear from their presence, they could be left to examine most of their own skin, and in this way a fairly reliable statistic, with relatively little trouble, could be reached. I wish some archaeologically minded doctor, in his spare time would take the trouble to search the old treatises on the detection of witches in order to ascertain what the professional "witch finders" thought of the presence of ruby spots—I am etc,

London W 1

F PARKES WEBER

Physical Health of Children attending Day Nurseries

SIR—I was interested to read Dr Margaret E McLaughlin's account (May 3 p 591, and May 10, p 631) of the physical health of children attending day nurseries especially with reference to the measles epidemics. During the months of February, March, and April of this year there was an outbreak of measles in my district. Most of these cases originated at the day nursery, in all I had seventy cases. At the beginning of the outbreak the children were attending the nursery up to the appearance of the rash and only during the latter end of the outbreak were they sent home when the cough and rhinitis were present.

I should like to make a few comments on the complications of measles. I had three cases of bronchopneumonia, occurring at the latter end of the first week and beginning of the second week after the rash appeared, which responded favourably to sulphathiazole. I also had about half a dozen cases of otitis media, occurring in the second and third weeks, three of which had to have a paracentesis tympani done. The rest resolved at the early stage with sulphathiazole. Finally I had six cases of conjunctivitis, occurring in the first week. These were the result of treatment by the mothers, who washed the eyes with various solutions from milk to boracic lotion. It is interesting to note that in this district washing the eyes out with milk is a common and accepted practice—I am etc,

Sheffield

I GOTTLIEB

SIR,—The difficulty about articles such as those by Dr Margaret E McLaughlin in the *Journal* of May 3 (p 591) and May 10 (p 631) is that others are liable to draw more definite conclusions from them than do the authors who are aware of at least some of their limitations. You state in your leading article on the subject that her results are "clear cut and striking". They are certainly striking, but it is not so clear whether they are clear-cut. One of the most striking things about them is that the only accurately measurable criterion which she used in her comparison of a group of nursery children with a group living at home—namely the weight—gave results favouring the nursery group. The remainder of her material was based entirely on subjective impressions which are so often misleading. It would appear also that she did not even have the advantage in making the comparison of not knowing to which group a child belonged. It is now generally recognized that for any

scientific purpose in work of this kind it is essential that the examiner should not know to which group an individual belongs otherwise the result may merely reveal an unconscious bias.

It is clear from what Dr McLaughlin herself says that her two groups are derived from different classes of the community doubtless with different income levels. In addition so far as one can judge from her article, she does not allow for the fact that infectious diseases, which she found more frequently in the nursery group, are more readily diagnosed by trained nursery staff than by parents. It is a matter of general agreement that such remarks as "general condition good, satisfactory, etc." are of very little value for scientific purposes, since different observers differ widely in their impressions, and even the same observer will report very differently on the same group examined after an interval. This criticism applies to all the criteria of health except weight, used in this investigation.

Desirable though it may be, therefore, accurately to assess the effect on health of the nursery environment, and important though it is to minimize infection in our new nurseries, the present investigation does not afford the opportunity for such accurate assessment and must not be used as the basis for a illogical campaign against nursery provision—I am etc,

Orpington Kent

BRIAN H KIRMAN

Acid Drinks and Sulphonamide Therapy

SIR—Dr Petronella Potter (May 10, p 654) raises an important opinion in regard to the administration of "acid drinks" during sulphonamide therapy which if accepted is bound to cause a great deal of unnecessary harm and will actually incur the very danger of renal complications which she is so keen to obviate. Apparently it is still not realized that the organic acids used in these drinks—e.g., tartaric and citric—are those which are metabolized in the body into carbon dioxide and water and that any basic element present in the fluid—e.g., sodium or potassium—is freed to form an alkaline solution. For example, imperial drink contains 0.08% free citric acid and 0.46% potassium tartrate, and I think it is possible to cause an alkalaemia on sufficiency of this drink alone.

I would like briefly to recapitulate the value of giving these acid drinks. (1) By their flavouring value they greatly help the patient to assimilate large quantities of water. (2) The acid flavour stimulates salivation and therefore helps to keep the mouth clean—a very important consideration in febrile patients. (3) They aid alkalization. (4) They have caloric value because of the contained sugar. Therefore the statement that "all fruit drinks (and presumably acid fruits) must be forbidden has been mistakenly applied, and it should be known that these drinks are still valuable as an aid in the nursing and treatment of febrile patients—I am, etc,

Neiley

LEON RADCLYFFE

SIR—Dr Petronella Potter's letter (May 10 p 654) condemning the administration of fruit drinks to supply the extra fluid required in sulphonamide therapy fails to take into account the fact that the natural fruit acids undergo oxidation in the human body and their acidity is destroyed. To quote from Dr V L S Charley's recent article in *Chemistry and Industry* 1947, 19, 221, on "The Nutritive Value of Fresh Fruits and Fruit Juices": "The acids in fruits are very largely composed of citric, tartaric, and malic acid. These are metabolizable and are used in the body as a source of energy. The ash constituents are largely composed of basic materials, and consequently their ultimate effect is to make a contribution to the alkaline reserves of the blood and urine."

The use of such drinks should not therefore be condemned on the evidence submitted—I am, etc,

Widnes Lancs

R A GREGORY

Groundnuts in East Africa

SIR—The *Journal* of March 8 has just arrived, and I must comment on the leading article entitled "Groundnuts in East Africa" (p 301). No credit was given to the United Africa Company Limited, who submitted the original plans to the Secretary of State for the Colonies and Minister of Food substantially the same as have been adopted, and, according to the official Tanganyika Territory Government pamphlet, *The Groundnut Scheme*, the proposals "had been worked out in

some detail" The proposals as submitted were "considered of sufficient importance and promise to require a thorough investigation on the spot," and this led to the immediate dispatch of an official mission This puts in their right aspect your words, 'this long sighted scheme of the present Government,' who, though showing most commendable speed in putting the scheme into immediate effect to catch the 1947 planting season, were not the originators—I am, etc

Shiwa Ngandu N Rhodesia

C M PHILLIPS

Medical Certification

SIR—I gave a certificate on behalf of a patient, whom I have attended for years for a chronic condition, to enable her to make a request for extra money to go to Aix-les-Bains for special treatment, which she was accustomed to have before the war with considerable benefit This certificate was sent to her bank, who replied that their foreign department had discussed the matter informally with the Bank of England, who stated "that the certificate supplied is not sufficiently informative and must cover the following points (1) Age of applicant (2) Nature of complaint from which the applicant is suffering (3) What treatment has been given and with what result (4) Why it is considered necessary for applicant to leave the United Kingdom for further treatment (5) Why Aix-les-Bains has been selected (6) Duration of stay recommended"

I ask you to publish these bare facts as I should like to hear the opinions of my medical colleagues It would appear that a medical principle of some importance is involved in such a demand, which the Association might consider and take action with the department responsible As far as the patient is concerned, she is naturally indignant that her age and details of her general health should be in this way made known to the bank officials—I am, etc,

London W 1

MORTON SMART

SIR—With State medicine almost upon us, and with it presumably an enormous increase in form filling is it not time for representation to be made for the simplification of forms?

In the case of infectious diseases surely it would be sufficient merely to state the number of fresh cases which have occurred each day I cannot believe that the person's age, sex, or exact address are of any practical importance in diseases such as measles and whooping-cough when the public health authorities do not have to be called in

I suggest that a printed form as follows is all that is necessary

"I have this day diagnosed fresh cases of measles whooping cough Signature address"—I am, etc,

Newport Pagnell Bucks

A A CLAY

Basic Salary

SIR—Those of us who have now a well-established practice can no doubt view with equanimity the prospect of a salary based on capitation fees As one who has in the past fallen into most of the traps which beset the unwary (or he trusting) in general practice, I think this attitude is just the icme of selfishness Have these protagonists of a capitation fee only ever tried to start a practice from scratch and found what a soul destroying business it can be?—unless of course they happen to have been made in the image of Midas

These generous souls (made in the same mould no doubt as Dr J A Jamieson (March 29, p 425)) are the ones who talk so often at B M A meetings about their principles Let them be compelled to scrape together a living from this kind of practice and they will then perhaps learn the burning truth of Mr Micawber's elementary economics—I am, etc,

Hove Sussex

G I, DAVIES

Infant Deaths

SIR—The article by Dr J Tudor Lewis (Dec 14, 1946, 893) and subsequent correspondence (Dec 28, p 1006, and an 18 p 114) draw attention once more to the all important subject of infant deaths I have just picked up 34 months' issues of the *B.M.J.* and I write at sea, some thousands of miles from home, so it is likely that other letters will have appeared

long before mine reaches England, I would, however, like to make some observations

Dr Lewis's first point is the question of liaison between hospital and home In my opinion the 'family doctor,' if such a person is to exist in the future, is the ideal and possibly the only satisfactory liaison officer If he does not actually deliver the woman in the maternity home or hospital, he should whenever possible take an active part in supervising and advising her on her own health and the care of her baby before she is sent, or has permission to go, home He is the one person in a position to judge her ability and to assess her domestic difficulties Dr Lewis's article appears to be written entirely from a "public health" or "State medical" point of view—private practice and choice of doctor have ceased to exist.

I agree entirely with the comments of Drs I M Harkness and J B Cochrane (Jan 18, p 114) on the discharge of the five cases noted What terribly tragic and pathetic reading is provided by the record of Dr Lewis's seven cases! All in my opinion were discharged from hospital far too soon Even to good homes with more than average facilities it is asking too much for an enfeebled anaemic woman to undertake household duties and the care of an undersized puny infant 10 days after confinement The two children in Case 1 after one triplet had died, and weighing only 4 lb 2 oz. (1.87 kg) at birth, were kept in hospital only four weeks and two days The remaining cases were discharged to unsatisfactory conditions after only 10, 15, 10, 10, 9, and 9 days in hospital, respectively—totally inadequate periods either to stabilize the babies or to let the mothers recuperate And what exactly is meant by 'poor mothering'? Poor mothercraft can scarcely be blamed for the enlarged congenital heart in Case 2 Dr Lewis's fourth clause under 'Conditions Affecting the Mother' is 'Maternal inefficiency, poor mothercraft and homcraft, lack of parental responsibility How much of this so-called 'poor mothercraft' I wonder, is due to alienation or frustration of mother instinct' by the inefficient teaching of modern scientific "rule-of-clock methods?"

I have not the least idea of how babies are wrapped or nursed in any of the hospitals under Dr Lewis's eye, but I would like to refer to my two letters concerning infant deaths in your issues of April 14 and June 2, 1945 (pp 529 784) Is it possible that when a baby is leaving an institution the parting instruction to 'keep him warm and on no account allow him to catch cold' may be the sentence of death to be executed by the relatively strong hands of the anaemic anxious and worrying mother? Lacking in "mothercraft perhaps but doing her best to carry out instructions and possibly trussing up her infant with its arms secured against the body thorax compressed and the feeble spark of life all but extinguished

I have seen no correspondence confirming the suggestion expressed in my two letters No doubt the point made is too obvious It is still argued that wrapping babies with their hands in their groins does not restrict their breathing It only needs to be tried without even fastening the shawl With arms in that position it is impossible to fully inflate the lungs, then atelectasis pulmonary congestion, bronchitis, bronchopneumonia and the onset of every other respiratory infection are favoured I also think that digestive troubles, difficulties with feeding and marasmus are further complications of this method of wrapping All are conditions from which young babies so frequently die I am told that babies are swaddled in the manner about which I have written at one of our great teaching hospitals Can it be that these experts leave some freedom of movement and do not over tighten the wrap but that the pupils who have seen no ill-effects follow have not grasped the real technique and do not realize how much force is used when winding round and tucking in the wrappers of their rigid and tidy little parcels? The necessity for this free movement allowing full expansion of the chest should be demonstrated and very emphatically insisted upon when instructing the inexperienced mother, who will have the subsequent care of the babe in her own hands Fortunately most mothers are very gentle and afraid of handling their tiny offspring so that they are less liable to swaddle them with homicidal firmness

The special care of weakly premature babies is now well understood by the modern nurse and these for a time at least will probably escape tight wrapping Possibly overheating in electric incubators is a very real danger unless a reliable

the-mostatic control is fitted. Presumably a baby suffering from artificial heart-stroke would have the symptoms of dehydration fever and the cause of death would be 'prematurity'. Too great a weight of blankets on the infant's cot may possibly be a cause of fatigue of the respiratory muscles—and death. The zealous harassed but inexperienced mother should be warned of this risk. Is the danger fully realized?

Though as already stated, I have not yet seen in print any expression of approval of my suggestion to have this matter thoroughly and conscientiously investigated obstetric specialists in centres in this country and as far afield as Australia have expressed their complete agreement with my remarks. The surprise and disappointment of being ostracized on account of these letters by some with whom I had worked most happily for many years have been compensated by the (to me) unknown

feckless, anaemic and frail little woman living under slum conditions, who had seen an extract of my letter in the lay Press, telling me that she had had no further trouble with her ailing baby after heeding the suggestion and abandoning the tight wrapping she had been taught.

Much of this may seem irrelevant as far as Dr Lewis's article is concerned but as the object of all of us is to save these precious lives I appeal once more to all doctors and nurses to satisfy themselves beyond all doubt that the infants under their care are not being slowly suffocated in the way described—I am etc

Huddersfield

S H WADDY

Periarteritis Nodosa

SIR—I was interested in Dr L. M. Shorvon's case of periarteritis nodosa (May 3 p 601). The difficulty of making this diagnosis during life lies in the diversity and the frequently changing character of the physical signs and symptoms in this condition. But it is just the great variety of the clinical picture—e.g., fever of the remittent type, tachycardia, polyneuritis, polymyositis, albuminuria and cylindruria, asthmatic attacks with bronchitis, hypertension, and leucocytosis with blood eosinophilia—which is suggestive of periarteritis nodosa. The conception of periarteritis nodosa being the result of an extreme degree of vascular allergy has found wide recognition in recent years. It therefore seems doubtful whether this condition represents a disease entity but rather belongs to the wider group of diseases caused by the anaphylactic hyperergic reactions—e.g., Loeffler's syndrome, angioneurotic oedema, tropical eosinophilia, and probably rheumatic fever. The principal difference of these conditions lies in the intensity and extent of the vascular involvement. In a recent publication of two cases of periarteritis nodosa (A. Elkeles and L. E. Glynn, *Brit J Radiol* 1944, 17, 368) we showed in serial radiographs of the chest the occurrence of transitory infiltrations in the lungs during the early stages of the disease. These were later superseded by persistent and progressive damage to the pulmonary vessels and bilateral pleural effusion. The presence of transitory as well as persistent and progressive changes in the lungs, with concomitant blood eosinophilia and the severe clinical picture made a correct diagnosis possible during life. Transitory pulmonary infiltrations and blood eosinophilia are also met with in Loeffler's syndrome but here the clinical picture is characterized by a mild course, and the lung infiltrations usually disappear completely within a few days, although in rare instances migratory pulmonary lesions may persist for several months.

In contrast to the striking radiological findings, physical signs of the lungs in Dr Shorvon's case and in our cases were scanty and even absent. That is why little attention has been paid so far to the pulmonary changes in this condition which, however, as shown by serial x-ray examination, may provide an important clue to this notoriously difficult disease—I am, etc

London W 1

A ELKELES

Heroin and Pethidine during Labour

SIR—I would like to express appreciation of the scholarly paper by Miss Josephine Barnes (April 5 p 437) on the use of pethidine in labour. Pethidine is certainly a safe drug to use and has many advantages. It has one very serious disadvantage, however, and that is that its action is unreliable. In Miss Barnes's series good analgesia was obtained in only 55% of

cases, a figure in accord with my own much smaller experience of pethidine.

There is one drug, however, which is vastly superior to pethidine, and that drug is heroin (diacetylmorphine hydrochloride). In analgesic effect heroin is much more powerful than pethidine, and its action is very much more reliable. When properly used it does not interfere with the normal course of labour and, as I have already shown in a previous communication (*Jan & Feb 1944*, p 59) it can be safely given in full doses at any time during labour.

With experience one varies the dose according to the type and frequency of the contractions and the degree of dilatation of the cervix, but as a general guide one would say that 1/6 gr (10.8 mg) should be given when the cervix is three fingers dilated and further 1/12 gr (5.4 mg) just before full dilatation. If the cervix is almost fully dilated or the second stage has already commenced when first seen one would give the full dose of 1/6 gr (10.8 mg) straight away. It is important not to give heroin too soon in the first stage or else uterine action will be damped down. In this respect heroin differs from pethidine, which can be given earlier in labour. In those cases where the contractions are weak and some degree of uterine inertia is present I prefer to give pethidine rather than heroin.

When heroin is given in adequate doses, supplementary anaesthesia at the end of the second stage is not always required. When it is deemed necessary, a little chloroform or gas and air can be administered. For certain cases, particularly breech delivery, I find pudendal block very efficacious.

There are of course other aspects of the prevention and relief of pain in labour apart from the administration of analgesic drugs and it is important not to neglect them. For example, there is the overcoming of fear and tension, and there are those measures designed to promote flexibility of the pelvic joints during pregnancy. The actual method which one employs to relieve pain in labour is probably of secondary importance. What is far more important is that everyone should master some method and apply it conscientiously. There is, unfortunately, far too much apathy and indifference among those who undertake maternity work. To make no attempt to relieve pain in labour, or to make only a half-hearted attempt, is a sign of slackness and a public confession of mediocrity—I am etc.

Troon Ayrshire

JAMES ROSS

Artificial Insemination

SIR—In the answer to a correspondent's inquiry about the technique of artificial insemination ("Any Questions," May 3 p 625) you conclude "Finally, attention should be drawn to the medico legal aspects of this procedure," and refer him to a leading article on the subject in the same issue. While conceding that the leading article was intended to cover only a special aspect of the subject, I feel strongly that the answer should have included an admonition about the psychological as well as the medico legal aspects. As your leading article points out the legal status of the procedure and its consequences are still beset by doubts, but even a lay person unacquainted with formal psychology can hardly doubt that serious psychological dangers threaten all those who accept artificial insemination.

It is the clear duty of doctors and psychologists to point out the formidable hazards to happiness and peace of mind which confront all who resort to this expedient. The vital human factors, which should outweigh all other considerations, have received a minimum of attention or have been ignored as matters of small moment compared with the technical problems involved.

It is a fact that couples who request artificial insemination constitute a cross section of psychological types. It is more over by no means easy for even an expert psychologist to predict with confidence that any couple will not eventually experience strong emotional reactions which may become increasingly intense as the years pass. The manifold and ineradicable psychological difficulties which might wreck the lives of the woman who accepts A.I.D. her husband and the "test tube" child will be evident to anyone who gives the subject a moment's thought. However eagerly she may have resorted to the method in her desire for a child the woman sooner or later is likely to experience a vague feeling of dissatisfaction with herself—what we might almost term a sense of sin, of

or unwholesomeness. In spite of herself she is almost to indulge in morbid musings about the unknown father of her child and she may tend to grow away from the husband, played no part in the deepest experience of her life. The band, whose self-esteem was dealt a shattering blow by the revelation of his sterility, cannot help but consider the child a constant reminder of his "inferiority," and in time he may come to hate it and hotly to resent the attention which his wife lavishes on it. The child, an ambiguous figure at birth, will be the most pitiful victim of these and other devastating and uncontrollable emotional consequences, which, to date, have received far too little consideration.

In the past I have administered both types of artificial emination, but as a result of experience and reflection I would not now take any case except one in which the husband was a donor. I think it essential that all doctors, whatever their views should present the psychological objections to their patients in the strongest terms—I am, etc.,

London W 1

EUSTACE CHESSEY

Complete Abortion without Initial Vaginal Bleeding

SIR—The following case is of interest on account of the rarity of abortion occurring without warning uterine bleeding.

The patient, a para-3 aged 28 was seen in her own home on account of severe upper central abdominal pain of four hours' duration. The pain was colicky in nature, did not radiate, nor was it accompanied by vomiting, but was made worse by movement and deep breathing. Her personal history revealed the fact that she had been severely constipated for eight days and that she had not had a "proper" menstrual period for three months, although there had been some staining at the usual date of her period during this time. There was no history of previous abdominal colic.

On examination she did not look ill, temperature was 98° F (36.7° C), pulse 100 and there was generalized tenderness over the abdomen most marked in the right iliac fossa but without definite guarding. The rectum was loaded with hard faecal masses. Vaginal examination showed the uterus to be enlarged consistent with a 12- to 14 week pregnancy. There was no blood on the examining fingers nor on the vulva. The urine contained no gross abnormalities nor were there any physical signs in the chest.

Two soap-and-water enemata were given with good result and some relief of pain. Conservative treatment and observation was considered advisable and suitable. Next day the pulse had settled to 80, but there was still tenderness in the right iliac fossa, and the rectum was still loaded with faeces. Two further enemata were given with good result, so that the patient was free from pain on the third day.

On the fourth day of her illness the patient experienced a recurrence of mild colicky generalized abdominal pain indicating, as she thought, the need to use the bed pan. Into the latter she passed a complete foetus of about 14-weeks size, along with a small blood clot. This blood was the only haemorrhage seen during the numerous visits paid to the patient. Recovery has been uneventful following curettage, when only a small amount of blood clot was removed—I am, etc.,

Lancs Co Antrim

H E RUTHERFORD

Child Guidance

SIR—Dr Ian Skottowe in his letter (May 3, p 616) speaks of (1) "the unnecessary confusion that there is on this subject" (2) "mental illness in children." The use of the term "mental illness" doesn't help much.

Most of the authorities are not agreed. The Association of Education Committees have recently stated that the educational psychologist should be in charge of child guidance clinics and not the psychiatrist. If we do as Dr Skottowe suggests and "leave the matter there" the education departments with the psychologist in charge of the "centre" (and the psychiatrist an indispensable lackey) will have control of the "treatment" of most maladjusted children delinquents etc. while the medical department will be expected to deal with what? Mental illness? Psychotics amounting to about 4% of children requiring psychological treatment? Or just the rejected enuretics and some encopreses?

In the meantime the Ministry of Education expects the medical department of the local authority to certify on the appropriate form the fate of educationally subnormal pupils (a definition of which is based not on the I.Q., by the way, but on the standard of achievement in the basic subjects). What sort of topsy turvy chaos will exist? Dr Skottowe may or may not know that in one of the Home Counties the educational psychologist is arranging all the child guidance clinics through the education department. If the medical department sets up "mental illness" clinics there will certainly be two administrations dealing with the children requiring psychological treatment.

I repeat my previous contention—namely, that where the school training (with the educational psychologist advising the chief education officer) has failed to prevent a child reaching a child guidance clinic or centre the child's problem is both psychological and clinical—psychological for obvious reasons which nobody denies and clinical because in most cases there is a parental problem which should not be dealt with by a lay worker. For that reason all psychological misfits which the schools cannot deal with should be in the first instance directed to the school medical department. I am forced to this conclusion not through any motives of 'will to power' for my faculty but sincerely in the belief that the educational psychologist although far ahead of the psychiatrist in the technical armamentarium and skill of his profession is nevertheless quite unfit to appreciate more than the surface of the parental problems. If by mental illness Dr Skottowe (and for that matter the Ministry of Health too) means all psychological misfits then Dr Skottowe and I have no argument between us.

I disagree altogether with his dislike of the syntax of the term "child psychiatrist." He is just allowing his imagination too much scope. Is a child lover necessarily a minor? A bird watcher an animal? Or a rabbit hutch a rabbit?—I am etc.

Kingsdon on Thames

JOHN A McCLUSKEY

* This correspondence is now closed—ED. B.M.J.

Nicotinamide and Diabetes Mellitus

SIR—I was very interested to read Dr H J Wade's article on nicotinamide and diabetes mellitus (March 29, p 414). I have been working on the subject for the past year and have published a preliminary report on thirty cases in the *Journal of the Royal Medical Association of Egypt* 1947, 30, 29. I found that 60% of the cases of diabetes mostly in the mild and moderate group and a few in the severe group do well on this form of therapy as shown by the sugar-tolerance curves. Those that do not show any or only slight response are the juvenile diabetics, and some of each of the above groups mostly the severe ones. Even in these cases the insulin requirements may be decreased.

I would like to point out that I used the same dosage as Dr Wade, but that it takes four to six weeks to show any appreciable response and up to six months to show optimum response. I suggest that Dr Wade did not follow his six cases sufficiently long and that their number is inadequate for any conclusion—I am, etc.,

Cairo Egypt

SAID M TALAAT

Safety in Electric Convulsion Therapy

SIR—The letter from Dr R A Sandison (April 26, p 579) is very important to me and, I hope to many others. It could reopen the long and somewhat acrimonious correspondence which you received about anaesthesia and it emphasizes the dangers of elaborating what should be a simple procedure. I have been forced by circumstance to be an anaesthetist and am by inclination a psychiatrist. In both of these specialties I feel that the "human" element is disappearing, and the patient is now becoming a piece of physiological apparatus.

Some time ago I read in the *Journal* of a Service woman who had died during an operation for an "interval" appendix. She had received thiopentone to prevent her being upset by a spinal anaesthetic which had to be supplemented by gas and oxygen. One was left with the impression that any feeling about the summation of all those anaesthetics having been connected with the cause of death had been satisfactorily rationalized.

Likewise in ECT I have lived with 600 epileptics for five years and if one worried about everything that could happen to them (but yet so rarely does) one would have them permanently in bed under light thiopentone and *d* tubocurarine chloride

I only want to ask this question of my psychiatric colleagues (except Dr Sandison, who is on my side) If you had to have ECT, wouldn't you like to have the button pressed *first* and an adequate routine laid on to prevent your injury and/or demise after you were 'out,' or would you, like me, probably die of fright before you could be resuscitated, when you had (1) been buckled into your canvas jacket, (2) had your straps secured, (3) had your leather headband put on, (4) received your injection/injections or any other refinement calculated to prevent your receiving an injury which may never happen if the simplest method is used, and would be better than dying of (a) fright and (b) medication, anyway?—I am, etc.,

Dartford Kent

J MACKEY CRAWFORD

Folic Acid

SIR—I have been interested in the leading article (May 3, p 604) concerning folic acid as a therapeutic agent, and perhaps I may be excused for bringing to your notice a single case of subacute combined degeneration of the cord which has recently been under my care

The patient, a male aged 55 years when I saw him first had been suffering for three months with loss of power in the legs, unsteadiness, marked sensation of cold spreading up the legs when standing, tingling, and numbness. On examination the findings were those of a spastic ataxia, the blood that of a pernicious anaemia. He could not stand without support and walked only with help and with a markedly spastic and ataxic gait. Intensive liver treatment was started on March 20 and continued for three weeks, with marked improvement in the blood state but only slightly in the nerve condition.

I then administered folic acid 10 mg daily and gave a maintenance dose of liver weekly. Within a few days a marked improvement took place and has continued since, reaching a climax to-day, when I saw him walking, using a bicycle as a partly moral and partly physical support a mile distant from his home—I am, etc.

Birkenhead

CECIL L FORDE

Shortage of Nurses

SIR—Dr R. Howell Roberts suggests (May 10, p 655), that professional examination of "orderlies" for higher rank in the three Services should be brought into line with civilian standards. Surely, Sir the boot is on the other foot! Sick berth ratings passed for higher rates in the Navy, their opposite numbers in the other Services, and the VADs who have had similar training and experience during the late war are recognized as nurses fit to be entrusted with the care of the sick in the Services.

If the General Nursing Council could forget its obsession with examination standards and its own importance it might make a real contribution to the serious national shortage of nurses by accepting these ex-Service men and women as qualified nurses and granting them State registration on their discharge from the Services, with recommendation for such registration by the relevant Service medical authorities.

No man or woman after several years of responsible nursing will consider beginning again to "train" for the State Registered Nurse examination under existing rules, but many are experienced nurses well worthy of inclusion in the Register forthwith. The General Nursing Council must get down from its high horse and face the facts—I am, etc.

SURGEON COMMANDER, R N

Congenital Malaria

SIR—Dr P G Preston's letter (March 29 p 422) impels me once more as on a similar occasion last year, to attack the complacency of reporters of alleged instances of the above alleged syndrome. As a much examined student from whom examiners require much accuracy of statement and quotation, I deplore the almost universal failure of reporters in this field to present their alleged facts, which may be facts indeed, in

anything remotely approaching a scientific or factual manner which can readily be understood and accepted.

To quote from the letter under "deploration" 'blood' was taken on three consecutive days following its birth. Were these the first three days after birth, or the 8th, 9th 10th, or the thousand and first, etc? And again "out of 700 patients examined 40 mothers were found to have malaria parasites in the placental blood, and two infants." This second phrase gives no factual information and is capable of various interpretations, among them a comical one, which is, however, relevant to my argument—i.e., that twin infants were found in the placental blood. The latter interpretation calls to attention one of the many factors which have to be considered and eliminated before a true bill can be presented for congenital malaria, that is, the possibility of post partum infection by placental or maternal blood through abrasions, the severed cord, or even the delicate mucous membranes of the infant.

As I contended on a previous occasion, few if any alleged discoverers of congenital malaria have advanced foolproof scientific evidence of their discoveries—at least, not enough to satisfy an advanced student—I am, etc.

India

STUDENT No 2

Responsibility for Drugs Supplied

SIR—I would suggest an alternative to the "disturbing and crushing alarm" expressed in the medico legal article (March 29 p 428) at the prospect of practitioners' being liable to heavy damages for the possible damage done to their patients by new preparations recommended by drug-retailing firms. Instead should we not perhaps take it as a timely warning of the bad state into which our clinical medicine to-day is drifting? Did each of us do six or more years of intensive study to be led continually 'by the nose' by laboratory chemists and the large financial considerations that are behind the drug retailing firms? Why do we experiment on our patients on the advice of attractive pamphlets that litter our breakfast tables each morning?

I would suggest that it is chiefly due to two reasons which we might well try and rectify immediately. (1) The inability of the average overworked practitioner to attend refresher courses at least every two or three years. In consequence of this he is much too much a willing victim to the commercial drug concerns in a blind effort to keep up with the times. (2) If in our student years and in the medical literature thereafter disease was analysed and studied a *little less* and a positive approach to the natural health of body and mind synthesized and considered a *little more* then perhaps our impulse to be influenced by the often ignorant demands of our patients for useless bottles of medicine and possibly harmful injections would be changed to a bold, clear resolve to attempt to change and remedy some of the many bad habits of living and eating of our time.

The cycle of a healthy soil through natural composting leading to healthy, pest free vegetation and thence to healthy, disease-free animals has already been overwhelmingly scientifically proved after the artificial manures, chemical sprays, and injections had all lamentably failed. Man is an intrinsic part of that cycle, and the sooner that we use fewer bottles of medicine, sprays, and injections and help our patients back into that natural cycle of real health that the more progressive agricultural experts have already discovered and utilized so the sooner, among the many enormous benefits to mankind, will be solved the little problem of safeguarding our pockets from harm we may do our patients, because such a state of affairs will happily no longer arise—I am, etc.

Madeira

H P KILSBY

William Blake Psychologized

SIR—It was only to be expected that, with the contemporary break-up of social organization, there should to day show itself a parallel tendency to mental dissociation, taking many forms and constituting the starting point of numerous serious psychopathies. Although personally unacquainted with William Blake's prophetic books, I am interested to read that the strange *dramatis personae* with their uncouth names in these poems represent symbolically a "disintegration" of the soul or uncon-

scious mind. It appears that a recent exponent of this poet's teaching, Mr W P Witcutt (*Blake a Psychological Study*), interprets him according to the system of C G Jung of Zurich, as a 'dissociated introvert, as one whose inner vision has become disintegrated into its "elements"—these elements then appearing as the "gigantic figures," spectral illusions,' etc., of his dreams and imaginative works.

But if this is possible of the individual's inner vision why not of his outer also? One recalls that the 'nature spirits' of folklore and the "minor deities" of polytheism in general have already been interpreted along these lines. Further according to this conception all these subsidiary divinities represent less a stage in an approach to monotheism than a lapse away from it, attributable to a slackening mental grip, a dissociation *a la* Pierre Janet. It will be interesting to note whether folklorists recognize the parallelism, the recognition should be illuminative both to them and to psychopathologists—I am, etc.,

North Queensferry, Fife

A J BROCK

Lectures from Edinburgh

SIR—Prof L J Witts has reviewed (May 3 p 602), under the above title, the third volume of the *Edinburgh Postgraduate Lectures in Medicine* which is published through a grant from the Honyman Gillespie Trust. As chairman of the committee which was responsible for the invitation to the lecturers and for the issue of these lectures in the *Edinburgh Medical Journal* from time to time and at a later date in book form, I would take exception to some of his criticisms, which show a lack of appreciation of the purpose and value of these publications. The reviewer it is true, pays a compliment to the thirty-two lectures which comprise this volume when he writes that they exemplify 'the high level of didactic teaching characteristic of the Scottish schools of medicine,' but he makes no mention of the fact that the lectures were all delivered by experts dealing with aspects of their respective subjects in which they were particularly interested and that, since they are replete with the lecturers' personal views, experience and original observations they are definite contributions to knowledge. The present volume and a fourth would have been published before now but have been held up by the paper shortage.

I may say that I do not agree with Prof Witts that the day of the published clinical lecture has passed, for personally I have derived much benefit and pleasure from the perusal of the clinical lectures published by some of our great clinicians. The clinical lecture affords, does it not, an opportunity to express and emphasize the art as contrasted with the science, an aspect of medicine which, as many clinicians will agree, often does not receive in our teaching nowadays the attention which it demands. Prof Witts makes no attempt to assess the value of the individual lectures. Indeed he finds this volume 'more difficult to read than any recently received volume.' 'It is difficult,' he writes, 'for any one reader to be interested both in the Control of Sepsis and in Delinquency, in the First Month of Life and in Prostatic Enlargement.' I agree that such diverse topics are not likely to appeal to the purist. On the other hand a volume of the kind is appreciated by the general practitioner who wishes to keep abreast of the times and by many others who attend these lectures.

I was personally responsible, and make no apology, for advising the Honyman Gillespie trustees to permit the utilization of their grant, according to the terms of which animal experiments may not be referred to, for the delivery and publication of these lectures, which illustrate some of the clinical activities of the Edinburgh School, nor shall I apologize for their subsequent publication in book form, which, I submit, fulfils a most useful purpose. Prof Witts concludes that "Only pious devotion to an *alma mater* would justify the purchase of these addresses." But even if this were so which it is not, for these volumes appeal to graduates of many other schools is not this a worthy motive? Is it not the case that both Bart's and Guy's to the staffs of which Prof Witts was I think, at one time attached, publish their *Hospital Reports*?—I am, etc.,

Edinburgh.

EDWIN BRAMWELL

POINTS FROM LETTERS

Heat and Certificates

Dr LINDSEY W BATTEN writes. Every new infringement of liberty, the almost daily 'thou shalt not,' the rare but not popular 'thou shalt,' trails after it a countervailing medical certificate. For the bureaucrat we are the indispensable mediator between him and the disillusioned elector softening and making just bearable the injustices and absurdities of his edicts, for the reluctant citizen of every social class and political party we are the dispenser of privileges, the annuler of obligations, the anaesthetizer of the pricking conscience. The pressure upon us to perform these functions is very great often it amounts to compulsion. Save in retirement there is no escape from acting as the universal unpaid arbitrator and referee in innumerable cases of *Rex v Smith*. Yet all this has no part in the Hippocratic Art, it is not for this we took to medicine, and the functions we perform are of the most dubious ultimate value either to the citizen or the State. The crowning absurdity has come in the demand for gas and electric fire certificates. Parliament has approved a law which the Government admits it cannot and will not try to enforce. Many members of Parliament have protested that it must be widely disregarded and every practitioner must know from his experience of the last four months that they are right. The thoughtless, the wasteful, the disgruntled will turn on their heaters whenever they feel cold, and no class has a monopoly of these folk. Without far clearer definition of the clinical conditions supposed to justify electric heat in England now I trust we shall all decline to give any certificate leaving Government and citizen to work out their own salvation.

"Ectopia Testis with Seminomatous Change and Torsion"

Dr A H BENNETT (Hartford, Cheshire) writes. With reference to the article 'Case of Ectopia Testis with Seminomatous Change and Torsion' which I communicated to the *Journal* with Dr D W G Shaw on Feb 15 (p 256), I have recently received from Dr John Burke, of Buffalo, New York, a copy of an article contributed by him to the *Zentralblatt für Chirurgie* 1948 65 2821, entitled "Stielgedrehtes intraabdominales Seminoma Testis." The case history is remarkably like our own, but it may be worth noting that he has furnished a quantity of bibliography, which I add, namely:

Bulkley, K., *Surg Gynec Obstet* 1913, 17, 703

Eisendrath, Daniel N., and Rolnick, Harry C. *Textbook of Urology for Students and Practitioners*, Philadelphia and London I B Lippincott 1930

Rea, Charles E., *Amer J Cancer*, 1931, 15, 2646

Young, Hugh H., and Davis, David M. *Young's Practice of Urology*, Philadelphia and London W B Saunders 1926

Association of Operating Theatre Technicians

Mr A WARNER writes. For many years in the larger hospitals in London, also in some other towns in the country, men have been employed as orderlies or theatre porters in the operating theatres.

Now a body of men with many years' experience in theatre work have formed an association under the heading of the "Association of Theatre Technicians," and many London surgeons and anaesthetists have offered them a backing, the idea being that in future anyone wishing to be employed in the capacity of a theatre technician shall have a course of training and instruction in the whole of theatre technique and will need to be thoroughly conversant with the working of the theatre its instruments, apparatus and the general procedure pertaining to the theatre. Information will gladly be given by the Hon Secretary, Mr A Warner, 56, Firwood Avenue, St Albans, Herts.

"Is it, Doc?"

Dr P K MURPHY (London, W) writes. Dr Stuart Warden's story (May 3, p 617) of his 18-year old patient who, when asked whether her bowels were regular, appealed to her mother, 'Are they, Mum?' was very, very amusing. But is it any less comic than his conclusion? We are asked to accept the incident as an overwhelmingly true summary of modern State education. Dear dear! Surely all it indicates is that no matter what system we adopt there will ever, unfortunately, be a mentally sloppy, half-baked few who cannot be relied on to know their acetabula from their elbows.

Retaining Fees

Dr P B CORBETT (Norwich) writes. At least three times this year I have been awaiting confinements which have been from two to three weeks overdue. This has been a great source of inconvenience as very important engagements have had to be abandoned. Lawyers have a refresher fee per day marked on their brief, is it not possible for us to adopt a somewhat similar course—a retaining fee for every day or week over the booked date?

Likewise in ECT I have lived with 600 epileptics for five years and if one worried about everything that could happen to them (but yet so rarely does), one would have them permanently in bed under light thiopentone and *d* tubocurarine chloride.

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The patient, a male aged 55 years when I saw him first had been suffering for three months with loss of power in the legs, unsteadiness, marked sensation of cold spreading up the legs when standing, tingling, and numbness. On examination the findings were those of a spastic ataxia, the blood that of a pernicious anaemia. He could not stand without support and walked only with help and with a markedly spastic and ataxic gait. Intensive liver treatment was started on March 20 and continued for three weeks, with marked improvement in the blood state but only slightly in the nerve condition.

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India

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Edinburgh

EDWIN BRAMWELL

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Dr LINDSEY W BAITEN writes. Every new infringement of liberty, the almost daily 'thou shalt not,' the rare but not popular 'thou shalt,' trails after it a countervailing medical certificate. For the bureaucrat we are the indispensable mediator between him and the disillusioned elector softening and making just bearable the injustices and absurdities of his edicts, for the reluctant citizen of every social class and political party we are the dispenser of privileges, the annuler of obligations, the anaesthetizer of the pricking conscience. The pressure upon us to perform these functions is very great, often it amounts to compulsion. Save in retirement there is no escape from acting as the universal unpaid arbitrator and referee in innumerable cases of Rex v. Smith. Yet all this has no part in the Hippocratic Art, it is not for this we took to medicine, and the functions we perform are of the most dubious ultimate value either to the citizen or the State. The crowning absurdity has come in the demand for gas-and-electric fire certificates. Parliament has approved a law which the Government admits it cannot and will not try to enforce. Many members of Parliament have protested that it must be widely disregarded and every practitioner must know from his experience of the last four months that they are right. The thoughtless, the wasteful, the disgruntled will turn on their heaters whenever they feel cold, and no class has a monopoly of these folk. Without far clearer definition of the clinical conditions supposed to justify electric heat in England now I trust we shall all decline to give any certificate leaving Government and citizen to work out their own salvation.

"Ectopia Testis with Seminomatous Change and Torsion"

Dr A H BENNETT (Hartford, Cheshire) writes. With reference to the article 'Case of Ectopia Testis with Seminomatous Change and Torsion' which I communicated to the *Journal* with Dr D W G Shaw on Feb 15 (p 256), I have recently received from Dr John Burke, of Buffalo, New York, a copy of an article contributed by him to the *Zentralblatt für Chirurgie* 1938, 65 2821, entitled 'Stielgedrehtes intraabdominales Seminoma Testis'. The case history is remarkably like our own, but it may be worth noting that he has furnished a quantity of bibliography, which I add, namely:

Bulkley, K, *Surg Gynec Obstet* 1913, 17, 703

Eisendrath, Daniel N, and Rolnick, Harry C. *Textbook of Urology for Students and Practitioners*, Philadelphia and London I B Lippincott 1930

Rea, Charles E, *Amer J Cancer*, 1931, 15, 2646

Young, Hugh H, and Davis, David M. *Young's Practice of Urology*, Philadelphia and London W B Saunders 1926

Association of Operating Theatre Technicians

Mr A WARNER writes. For many years in the larger hospitals in London also in some other towns in the country, men have been employed as orderlies or theatre porters in the operating theatres.

Now a body of men with many years' experience in theatre work have formed an association under the heading of the 'Association of Theatre Technicians,' and many London surgeons and anaesthetists have offered them a backing, the idea being that in future anyone wishing to be employed in the capacity of a theatre technician shall have a course of training and instruction in the whole of theatre technique and will need to be thoroughly conversant with the working of the theatre its instruments, apparatus and the general procedure pertaining to the theatre. Information will gladly be given by the Hon Secretary, Mr A Warner, 56, Firwood Avenue, St Albans, Herts.

"Is it, Doc?"

Dr P K MURPHY (London, W) writes. Dr Stuart Warden's story (May 3, p 617) of his 18-year old patient who, when asked whether her bowels were regular, appealed to her mother, "Are they, Mum?" was very, very amusing. But is it any less comic than his conclusion? We are asked to accept the incident as an overwhelmingly true summary of modern State education. Dear dear! Surely all it indicates is that no matter what system we adopt there will ever, unfortunately, be a mentally sloppy, half-baked few who cannot be relied on to know their acetabula from their elbows.

Retaining Fees

Dr P B CORBETT (Norwich) writes. At least three times this year I have been awaiting confinements which have been from two to three weeks overdue. This has been a great source of inconvenience as very important engagements have had to be abandoned. Lawyers have a refresher fee per day marked on their brief, is it not possible for us to adopt a somewhat similar course—a retaining fee for every day or week over the booked date?

Obituary

SIR FREDERICK GOWLAND HOPKINS, O.M. LL.D.
Sc.D., M.B., F.R.S., F.R.C.P.

The death of Sir Frederick Gowland Hopkins which took place at Cambridge on May 16, brings to an end the life of a notable man of science who has seen the subject he made his own become one of the most important of the biological sciences. Hopkins may be fittingly described as one of the "Fathers of Biochemistry."

Frederick Gowland Hopkins was born in 1861. His was a long life and was marked by successes in the academic world which it is given to few to attain. He was a President of the Royal Society and recipient of its Copley Medal, a Nobel



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Prizeman and virtually the founder as well as the first professor of his subject at Cambridge. His achievements were recognized by the Crown by the bestowal of a knighthood and of the Order of Merit, by many foreign as well as British universities by honorary degrees, and by the bestowal of medals and prizes by learned societies.

The reality of greatness is never easily achieved, perhaps because adversity in one form or another is a reagent necessary fully to develop the finest shades of the human character, and until at least middle life Hopkins had to struggle against heavy odds. Lack of means is a common enough obstacle in the path of a man who wants to fulfil what he knows it is in him to fulfil. But financial difficulties, even had they been severe would have probably troubled Hopkins less than they would have many other men. Though his father died in Hopkins's infancy he was brought up by his mother and uncles in a comfortable home. His schooling was brought to an end at an early age as a matter of policy, not of necessity, and he was initiated at once into the insurance business. Though he was to be among the first scientists of his age, he had no formal scientific education at all. After a relatively short career as an insurance clerk he succeeded in gaining his point that he should be allowed to embark on a scientific career. It was almost decided that he

should go to Cambridge, when a chance and most unlucky lunch time conversation between one of his uncles and a Cambridge acquaintance resulted in the abandonment of the university project and his apprenticeship to a practising analytical chemist. The decision, made in all good faith, rested not on any financial or other objection to a university career but on the supposed superior merits of the apprenticeship as a means of scientific education. The chemist, in fact, used him solely as a junior laboratory assistant. A few attendances at a course of lectures at South Kensington (the only lectures on chemistry that he was ever to hear) were followed by the winning of a gold medal. This happened to coincide with the termination of his apprenticeship and was followed by his first salaried post with another analyst. On receipt of his first cheque from this employer—£40 for six months' work—he jokingly suggested framing it; his employer took the proposal seriously and supported it with warmth. About this time Hopkins was carrying on his first independent research on butterfly pigments—partly in the scullery of his mother's home at Enfield.

It was, fortunately, not long before he came in contact with and was taken as assistant by, Dr (afterwards Sir Thomas) Stevenson, then Home Office analyst. This involved him in medico-legal work of an interesting kind. It also brought him to Guy's Hospital. Imbued with the spirit of investigation, he won the Gull studentship and was able to continue his research along with his other duties. These came to include the teaching of pre-clinical subjects, and he determined to obtain a medical qualification. To do so he must first pass the London Matriculation, which involved the study of long forgotten Latin. Since his relations would have been deeply hurt had he shown himself unwilling to spend his evenings "socially," his only opportunity for doing this extra work was during the daily train journey between Enfield and London. This, however, appears to have been no great obstacle, and in almost the shortest possible time (he was once "ploughed" in midwifery) he obtained the London M.B. in 1894, together with the Gold Medal, having taken the B.Sc. four years earlier.

The next phase of Hopkins's career was clinical. His non-extensive, if unconventionally acquired, training in chemistry naturally directed his interests towards diseases of metabolism and problems of nutrition, and he began to acquire (probably without intending to do so, for he continued his Home Office work) a not inconsiderable consulting practice. He was also associated with one of the first laboratories which provided facilities for the general practitioner. It was among the Guy's out-patients that he was impressed by the fact that patients who apparently had enough to eat could still be badly nourished.

At this point came the great change in his career. Had he remained in London he would certainly have rapidly acquired a lucrative practice. Essentially humanitarian and sympathetic he would have been happy in his contact with patients. Michael Foster, however, then Professor of Physiology, invited him to Cambridge as lecturer in chemical physiology. He accepted. His task was not an easy one. His lectures and practical classes had to be created *de novo*. No apparatus to speak of was available. Michael Foster's death deprived him of much of the support on which he had counted. The lecturer's salary was almost nominal, and though a Fellowship at Emmanuel much improved his income it necessarily exacted a rather heavy toll of teaching work outside his own subject. His subsequent election to a tutorship at Emmanuel imposed even more duties though his personal qualities endeared him to his pupils. But during this time he built up his subject in the university—not always with helpful co-operation from his immediate colleagues—and carried out his pioneer work on vitamins and on the metabolism of muscle. His lectureship had meanwhile become a readership.

In 1914 the university created for him a Chair of Biochemistry. The post carried no stipend, but Hopkins was simultaneously elected to a Fellowship at Trinity and made Praelector of that college, a post carrying a salary but no duties. This relieved him of much of the burden of extra departmental work. It was neither the first nor the last time that the university's greatest college has come to its aid, and that of learning, in such a fashion.

As was natural, many tasks were laid upon Hopkins from without. He was one of the original members of the Medical

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research Committee, and with Sir Walter Fletcher had much to do with the shaping of its policy. He served on many boards and committees. He had, however, no real taste for administrative work. First and last he was an investigator, and the strenuous times during which his department was expanding rapidly and the new laboratory was being built (funds for which, with endowment for the Chair, came from the Sir William Dunn bequest) saw also his investigations of biological oxidation mechanisms. This work, notable in itself, inspired a great volume of work not only in this country but throughout the world.

Hopkins was an inspiring teacher, especially of small classes. His policy as head of a research department was peculiarly his own. Many great experimenters focus the whole resources of their department on to the problems in which they are personally interested. Hopkins seldom had more than one or two personal assistants or collaborators; temperamentally he was not an 'organizer' of research in the usual sense of placing himself at the head of a team. On the contrary he encouraged in his department the pursuit of many different lines of work, followed sometimes by different individuals, sometimes by small groups of workers. The result has been a department where discussion and criticism, and the introduction of new techniques and new ideas, have been unusually easy. Visitors came to Hopkins's laboratory from all over the world and never went away without profit to themselves or, indeed, without benefit to Hopkins and his colleagues.

Hopkins had that one hallmark of a great man—real humility of spirit. He was completely devoid of improper pride and pomposity. Though his long life was spent in the laboratory he was always glad he had taken a medical degree. He was a member of the B.M.A. for over forty years and was President of the Section of Physiology and Pharmacology at the Annual Meeting in Cambridge in 1920.

Hopkins married in 1898 Jessie Anne Stevens, and had three children. His son-in-law, Dr E. G. Holmes, has been university lecturer in biochemistry at Cambridge since 1933.

We are indebted to Sir Henry Dale, O.M., F.R.S., for the following appreciation of Sir Gowland Hopkins's scientific work.

Even at a relatively early stage of his career Hopkins, if he looked back on what he had done and discussed what he hoped to achieve, would speak of his real aim in research as being to unravel some part of the intricate complex of linked chemical reactions, catalysed by enzyme systems, which constitute 'intermediary metabolism'—the essential chemistry of life. To such an attempt he regarded all his earlier work as preparatory, and, when opportunity gave him at length an organized department, it was in this direction that he guided the interests and ambitions of his pupils and of the many visitors who came to work under his inspiration. When Hopkins was at the beginning of his work the chemical study of the animal body and its products had become a mere branch of physiology, having some links of practical method with clinical medicine. Chiefly a chemistry of end products, it had almost lost an earlier and short-lived attraction for organic chemists and was not everywhere in great repute with physiologists. He had been conscious of the need to win respect for this 'chemical physiology,' by the achievement of results to which chemists as well as biologists must give attention before the advance towards the real objective could begin. Hopkins lived to see 'organic chemistry' returning, with rapidly growing interest and with immensely greater resources of method and theory, to its original objective of the structure and properties of the relatively stable end-products stored or excreted by animals and plants. He lived also to see the new dynamic chemistry of intermediary metabolism in the foundation and building of which his work and his influence had played such a great part, achieving recognition as the essential 'biochemistry.'

On the way to this ultimate objective Hopkins's work had dealt with a number of apparently separate problems in vital chemistry, so that his career as a research worker seems to fall into periods. In the first he was bringing to the point of publication the work on the pigments of the wings of certain butterflies and their relation to uric acid, begun so early but not published until 1895 when he was already 34 years of age. In his latest years he actually returned to this earliest of all his prob-

lems. To the same early period belongs his work on human purine metabolism, including the introduction of what remained for years the standard method for determining uric acid. Then came the period of protein and amino acid chemistry, beginning with practical methods for crystallizing certain albumins in any required quantity, and culminating in the discovery and isolation of tryptophan. This latter led to the study of the necessity of individual amino acids in a mammalian diet, and thus, apparently, to the recognition of the inadequacy, for growth and maintenance of a diet in which the organic constituents—protein, fat and carbohydrate—had been rigidly purified from traces of unknown factors. This fundamental step towards the recognition of the vitamins, now engaging the attention of such a large proportion of the world's biochemists, was mentioned by Hopkins in a lecture as early as 1907, though circumstances delayed the publication of his detailed experimental evidence till 1912, when the 'accessory food factor' or 'vitamin' conception was already in the air. Hopkins gave the first clear demonstration that it was no defect of appetite or absorption but a fundamental failure of the metabolism to deal with the adequate quantities ingested and absorbed which created the deficiency of the pure diet, and that a relatively minute addition of fresh milk completely repaired the defect. Meanwhile, in 1906, he had published with the late Sir Walter Fletcher the results of the first experiments which he made directly on a problem of intermediary metabolism—the production of lactic acid from carbohydrate in active or injured muscle, and its removal in the intact muscle by oxidation.

It is somewhat remarkable that Hopkins, having been concerned in the same period with two such fundamental researches, from each of which resulted a great new outburst of activity and progress in biochemistry, should have left almost entirely to others the direct exploration of the wide vistas thus opened. His attention, and that of the band of able and devoted pupils who began to gather round him, turned rather in the direction of the enzymatic mechanisms of oxidation in the respiration of the single cell. The isolation of the natural tripeptide glutathione and the complete identification of its structure was, perhaps, Hopkins's culminating individual contribution to this series of investigations. The elegant method which he finally found for the separation of this substance may be compared with that which he had earlier used for the isolation of tryptophan, each affording an example of his apparently instinctive choice of a selective but slightly unconventional reagent for a particular purpose. It may be noted that it was in Hopkins's Institute also that Szent-Gyorgyi later, as a visiting worker, first isolated ascorbic acid, and that it was in the neighbouring Molteno Institute—not under Hopkins's direct inspiration indeed, but not beyond the range of his stimulating influence—that Keilin identified the cytochromes. The study of the reactions of these reversibly oxidized substances and their relations to the activities of different oxidative enzymes has played a large part in the astonishingly rapid development of knowledge of the linked series of reactions involved in cellular oxidations. Another very important contribution to this advance has been made by the succession of Hopkins's pupils who have studied and differentiated the specific oxidative enzymes which can be detected in the cell bodies of living, but not actively multiplying, bacteria of different kinds. The Cambridge School of Biochemistry became, in fact, under Hopkins in his later years a world-famous centre for those investigations on intermediary metabolism towards the initiation and development of which he had been consciously striving throughout his career. He had taken no direct part in the researches, so swiftly extending to the laboratories of all countries, by which individual vitamins were recognized, identified, and produced by artificial synthesis in astonishingly rapid succession, and in a series of which the completion is not even yet in sight. It must have given him a peculiar pleasure, however, to see the specific function of one such pure vitamin after another determined and found to be that of an oxygen carrier or a coenzyme essential to some phase of the complex reactions of intermediary metabolism. For thus the discovery most frequently linked with his name in popular esteem and public recognition as that having the most directly practical application to the betterment of human and animal health, has been brought into an ever closer relation to the deeper problems which had so long held his interest and provided the true goal of his scientific ambition.

SIR ALMROTH WRIGHT

Major General Henry B H Wright CB CMG writes Yesterday I received a copy of the *Journal* dated May 10 and read your obituary notice of my brother, Sir Almroth Wright. It contains some inaccuracies which you may think worth correcting. He died at his residence, Southernwood, Farnham Common Bucks. He gave up his London house in Pembroke Square in 1940. After getting his degrees at Trinity College Dublin with the funds received from the medical travelling prize he proceeded to Germany. On his return from Germany, seeking immediate means of existence, he took a scholarship at the Inns of Court but dropped his legal studies when he passed into the home Civil Service and was appointed to a clerkship at the Admiralty. When his day's work at the Admiralty was done he spent the rest of his day at the Brown Institute, and while still a Civil Servant was awarded the Grocers' Company's research scholarship. With the means thus available he was enabled to resign his appointment in the Civil Service and go to Cambridge University for further study.

He was educated largely on funds provided by the benefactions of others and to some slight extent contributed to the education of others by sending a cheque for £2,000 last year to the funds of T C D.

Sir Thomas Houston writes While appreciating in a high degree the well merited prominence you have given in the *Journal* of May 10 in the obituary and editorial to Sir Almroth Wright the members of the profession here were somewhat disappointed that more emphasis was not laid on his connexions with Ulster. Perhaps you will allow me to add some details to what you have said in this context.

Sir Almroth was born in Richmond Yorkshire, in 1861, shortly before his father, the Rev C H H Wright an Ulsterman was appointed rector of St Mary's Parish, Belfast. During his early days he was educated at the Royal Academical Institution, Belfast and afterwards at Trinity College, Dublin. In his own province—at the Annual Meeting of the British Medical Association in Belfast in 1909—he was president of the Section of Haematology and Vaccine Therapy a section designed to do honour to his work on the blood and on vaccine therapy. In 1912 Belfast gave him the Freedom of the City, and in 1927 the Queen's University conferred on him the honorary degree of Doctor of Laws. He made several communications before the Ulster Medical Society and was an honorary fellow of that Society. The laboratory workers of Ulster owe much to the scientific work of Sir Almroth and to the stimulus of his personality and methods. They always received a warm welcome from him and his staff when they visited St Mary's Hospital. I remember on one occasion I mentioned the success of his typhoid prophylactic inoculations. He replied somewhat as follows: "I would consider it a much greater achievement if I could teach my pupils to make logical deductions and use accurate technique. I would say to them with Pasteur, 'Come away from these polemical discussions come and be taught methods.'" Lord Moran has described Sir Almroth Wright and his distinguished pupil, Sir Alexander Fleming, as "the two doctors who have saved more lives in the field than anyone else in the world."

Dr MARY ARIEL STEWART DEACON formerly of Liverpool died in Carlisle on April 18 at the age of 75. A native of Somerset Dr Deacon was educated at Cheltenham College and at the London School of Medicine for Women. She graduated MB, BS in 1899 and two years later she married Major Thomas Deacon who was then Postmaster General of the Gold Coast. She worked there as medical officer of health at Accra for some years. Then in 1916 she was appointed medical officer to the Royal Army Ordnance Depot at Aintree and continued in this appointment until 1919, when she became assistant medical officer of health for Birkenhead. She took her DPH in 1922 and was in public health work in Birkenhead for seventeen years until her retirement towards the end of 1936. She was at one time president of the Liverpool Women's Medical Association and was appointed MBE in 1918.

D M M writes Dr Deacon who was a strikingly handsome woman had a colourful courageous, and lovable personality. Her career was varied and full of incident and she made friends wherever she went. She will be remembered by countless patients and personal friends for her warm-hearted generosity and the buoyancy of her spirit.

Mr ARTHUR W DOWN founder of Down Bros in 1879 died at his home on April 2 at the age of 95. Mr Down had been a governing director of the company since 1902 and he had entered the industry as early as 1866. He was actively interested in the business up to the last few days of his life, and he will be greatly missed by the friends he made in the course of a long business career which brought him into contact with many doctors.

Medico-Legal

INSTITUTE OF ENDOCRINOLOGY

The Institute of Endocrinology Ltd, of 31, Heath Drive Hampstead, NW3, and Jacques J Harpman, an M D, of La Plata University, were fined £100 with 12 guineas costs at Hampstead Court on Wednesday, May 7, on six summonses relating to a publication of a booklet "Hormone Therapy" advertising preparations for the treatment of epilepsy, infantile paralysis and diabetes.

Mr A C Castle, prosecuting for the Pharmaceutical Society of Great Britain drew attention to the Pharmacy and Medicines Act, 1941. Under the Act, he said, it was an offence for any person, even a doctor, to advertise an article which might be used to treat a number of diseases which might be called very difficult or hopeless diseases. Under section 8 a number of such diseases were listed—in particular it mentioned diabetes, paralysis, and epilepsy. In October, 1946, a Mr John F Armstrong wrote a letter to the Institute asking for particulars of a certain treatment. He received in reply a list of ailments treated by the defendant Company. The three diseases complained of were mentioned. In the same envelope was a booklet entitled "Hormone Therapy." It was apparently a booklet intended to impress on readers the importance of glands and glands, and in particular the pituitary, the thymus, and the pancreas. Regarding those three it mentioned *inter alia* that they were respectively responsible for epilepsy, infantile paralysis, and diabetes. In another part of the pamphlet were the words "glands seldom work correctly. Restore balance by our fresh hormone preparations."

Mr Harpman was interviewed on Feb 11 by an inspector of the Pharmaceutical Society. He said he had qualified as a doctor in South Africa in 1903 and was in practice until 1931. He took his M D at La Plata University. He was 69 years of age. In 1930 he founded the Institute of Endocrinology. The booklet was published in 1935.

Mr Christmas Humphreys, defending said the Institute had done a great deal of good work. There had never previously been any complaint. From 1932 to 1939 the Institute was at Baker Street and it had an enormous practice. Over 200,000 copies of "Hormone Therapy" had been sent out. Then came the Act. The Act discussed "hopeless diseases," and it said no person should claim to treat them. "He may treat them, but may cure them, but he mustn't claim them. He mustn't advertise." The defendants had to plead guilty to claiming to do something which they probably did do. Regarding the sending of the pamphlet, Mr Humphreys continued, there are about two dozen left in existence. Somehow Mr Armstrong was sent the wrong booklet. Since then a new pamphlet had been issued. Mr Humphreys asked for leniency on the grounds of the long standing good record of the Institute and of Mr Harpman the managing director.

Failure of a Restrictive Covenant Correction

Messrs G D CANN and HALLETT Exeter, write You state in the second paragraph of your report (May 17 p 700) of the case in the High Court and Court of Appeal, *Routh and Wilson v Jones* that our client, Dr C G Jones "left the service of the partners and bought a house in Okehampton, intending to set up in practice." This is not the case and the true facts were clearly stated in the evidence before Justice Evershed and in the judgment. Our client had no intention of starting practising in Okehampton when his contract of service was determined by the partners. This house was, in fact, bought before this occurred therefore this report is not correct and we must ask you to amend it.

Medical Notes in Parliament

SCOTTISH HEALTH SERVICE BILL COMMITTEE STAGE

On May 12 the House of Lords went into Committee on the National Health Service (Scotland) Bill. On Clause 3 the Duke of MONTROSE moved to add to the purposes laid down in the Clause the provision of clinics for otological and aural aid services. Lord Rosebery and Lord Cecil of Chelwood supported this amendment.

Lord MORRISON said he agreed with the points that had been put forward. The time was overdue for a campaign throughout the country to give more prominence to this subject. More attention should be given to deafness and the Government had decided to enlist the aid of scientists to make a deaf-aid which could be relied upon and supplied at a reasonable price. Contracts had been placed for an initial supply of 50,000 instruments, of which Scotland would have a fair share. Immediately the Bill was passed preparations would be made to establish throughout Scotland centres where these deaf-aids could be serviced. It was inadvisable to put into the Bill the words which the Duke of Montrose proposed. Subsection 1 of Clause 3 placed on the Secretary of State the duty of providing hospital accommodation, medical, nursing or other services required in hospitals or clinics or services elsewhere. The term hospital included clinics and out-patient departments. Clause 3 also made it clear that the duty of the Secretary of State included the provision of appliances. This provision would be made in hospitals and also in out-patient departments, clinics, and health centres. The Clause did not specify the various kinds of aids and it was impossible to single out deafness for special mention. It would be out of the question to specify all the complaints for which aids were to be provided. There was on the statute book a special Act of Parliament dealing with the arrangements and treatment necessary for cancer—the Cancer Act of 1939—but that Act was now repealed and cancer found no mention in the present Bill because the Government concern was for the treatment of all kinds of ailments. After further discussion the amendment was negatived.

Consultation on Teaching and Research

Lord SELKIRK moved to provide in Clause 3 that the Secretary of State in making available facilities for undergraduate and postgraduate clinical teaching and research should do so after consultation with the universities and the Royal Medical Corporations. He said that in the Bill the hospitals formed a pyramid with the Secretary of State at the top. The medical schools were entirely separated. The only assured contact was on the board of management of individual hospitals or groups of hospitals. In medical education the Secretary of State should look directly to the universities to provide him with advice.

Lord MORRISON said there was nothing in the Bill to debar the universities from a direct approach to the Secretary of State on any difficulty which was not resolved at the regional level. The duty of the Secretary of State under this subsection would not be carried out by himself personally but by the regional hospital boards, acting as his agents. These boards were advised on this aspect of their work by the medical education committee which would be set up under Clause 11. That committee included university nominees. Continuous discussion should not go on with the universities on all questions but merely on questions not resolved in the ordinary way. The machinery of the medical education committee provided in the Bill was put in at the suggestion of the universities. Lord Selkirk withdrew his amendment.

On Clause 5 Lord ROSEBERY moved to provide that special accommodation previously used for patients who undertook to pay should be so set aside subject to accommodation remaining available for other patients. He said that if the amendment was not accepted there would be a mushroom growth of private nursing homes.

Lord MORRISON said that the amendment was similar to one rejected by the House of Commons. He was unable to accept it.

Voluntary Hospital Endowments

On Clause 7 Lord TWEEDSMUIR moved to provide that where property comprised in an endowment was applied to the discharge of liabilities transferred from a voluntary hospital these liabilities must be liabilities which had been incurred for a similar purpose to that for which the endowment had been given by the donor.

Lord MORRISON said this was a matter which would be dealt with by regulations and these could be annulled by either House. The amendment was withdrawn, as was an amendment moved by the Duke of MONTROSE to ensure that the Hospital Endowments Commission would sit in Edinburgh.

The Earl of ELGIN proposed that the powers of the Hospital Endowments Commission should be given for ten years instead of five. This amendment was also negatived.

Regional Boards

On Clause 12 Lord SALTOUN moved to provide that the duty placed upon every regional hospital board to submit a scheme to be exercised by boards of management in the appointment of officers should not apply to a hospital providing facilities for undergraduate and postgraduate clinical teaching. He said the amendment reflected the anxiety of the teaching hospitals that their appointments should remain in their own hands.

Lord MORRISON said the Scottish Bill did not make a sharp distinction between teaching hospitals and non-teaching hospitals. Where a hospital provided facilities for clinical teaching, that was recognized by including on the board of management nominees from the university concerned and from the teaching staff. In the key hospitals which undertook most of the teaching the senior physicians and surgeons were often consultants for areas much wider than those served by the hospitals. The procedure outlined for the appointment of persons to hold clinical posts at a hospital along with teaching posts at a university would not necessarily apply to the most senior appointments—for example, to clinical chairs at universities the holders of which were normally also in clinical charge of hospital wards. Clause 14 was so drafted that these appointments could be excluded from that procedure. The Secretary of State intended to discuss with the universities the arrangements he would make in cases of that kind. The amendment was withdrawn.

On Clause 14, Lord SELKIRK moved that any advisory appointments committee dealing with an appointment involving teaching duties should have equal university and other representation. He said the Bill only gave an assurance that there would be one university representative on the advisory committee.

Lord MORRISON said that the university element on the advisory appointments committee should be in keeping with the relevant importance of the teaching duties as compared with the whole work of the post. He was willing to meet Lord Selkirk to see whether an amendment could be put down later.

Health Centres

On Clause 15, after drafting amendments had been made, Lord SELKIRK moved to provide that a health centre should not be established solely for the provision of general dental services. Lord MORRISON replied that the Secretary of State had assured the dental profession in Scotland that the establishment of a chain of centres providing for dental treatment alone was no part of his plans. In practically every case dental provision would be associated with provision for general medical services. On this assurance the amendment was withdrawn.

On Clause 22 Lord SELKIRK said it seemed that young persons between 16 and 18 were not covered for dental treatment. Lord MORRISON replied that the kind of treatment provided for school-children would not be appropriate for these older boys and girls. The Bill provided a general dental service for the whole population.

Free Choice and Remuneration

Lord SALTOUN moved to vary the wording of Clause 34 so as to provide that regulations might make provision for protecting the right of any person who had complied with the prescribed procedure to choose and change the medical practitioner by whom he was to be attended.

Lord MORRISON said that if the House was anxious for some form of words to be included in the Bill to make it clear that a person could change his doctor a suitable amendment would be devised. The amendment proposed by Lord Saltoun had drafting defects. It was not desirable that a patient should change his doctor frequently.

Lord TWEEDSMUIR moved that regulations should include provision ensuring that the remuneration of general practitioners should be by way of capitation fee subject only to supplementary basic salary as might be prescribed by regulation. He asked whether the basic salary was to be a consolation prize for doctors who did not build up substantial lists of patients or whether it was to be paid to all practitioners at a rate commensurate with present earnings.

Lord MORRISON said it was not proposed by the Government that the salary element should be the main part of the remuneration. The argument in favour of that element was that it would reduce competition for patients and would make it easier for a young doctor to start in practice. It could be increased to attract doctors to under-doctored areas and perhaps also to take account of special experience or qualifications. It was in accord with the proposals put forward by the 1942 Interim Report of the Medical Planning Commission sponsored by the British Medical Association. In replies to the questionnaire issued to all doctors on behalf of the British Medical Association after the publication of the 1944 White Paper only 23% had favoured straightforward capitation fees. Whether basic salary need be a universal element in remuneration had still to be discussed between the Government and the medical profession. Pending those discussions it was not possible to make any further statement on the subject.

Penal Clauses

On Clause 36 Lord SELKIRK moved to add "provided that no offence shall be committed by a medical practitioner or his personal representative who sells his house by *bona fide* public auction". He submitted that verbal assurances from Ministers on this point might carry no weight.

Lord MORRISON said the amendment was unnecessary. In the House of Commons the Lord Advocate had said he could not conceive of any suggestion of prosecution over a genuine auction where the parties had no prior agreement. On the other hand the sale of a doctor's house at an inflated price might readily lend itself to illegal transactions, and the provision in the amendment would tempt people to make a private arrangement and then to cover it by a public auction. The amendment would enable a coach and horses to be driven through the Bill. Lord SELKIRK pointed out that even if the amendment was accepted the sale of a practice would still be illegal. To 'rig' an auction sale would also still remain an offence. Lord MORRISON said the auctioneer would probably not know anything about what happened. The offence might be committed far away from the auction sale. He suggested that Lord Selkirk should consult with legal advisers on whether the words *bona fide* public auction were legally watertight and act accordingly on the report stage. On this understanding Lord Selkirk withdrew his amendment and Clause 36 was agreed to. Lord Selkirk also withdrew a further amendment which sought to provide that no admission or statement made at a hearing before an executive council by a person who was the subject of an inquiry should be admissible as evidence before the tribunal. Lord MORRISON said he would consider this point before the report stage.

Lunacy and Mental Deficiency

On Clause 49 Lord MORRISON said a system was envisaged whereby the medical commissioners and also the medical officers employed by the Board of Control would at the same time hold appointments as officers of the Secretary of State. Reports by these medical men of their visits to particular institutions would be both to the Secretary of State and to the Board. In the great majority of cases these reports would be communicated also to the regional board and to the board of management concerned.

After some discussion of Clause 67 and Clause 77 Lord SELKIRK moved to amend the Second Schedule by substituting the Lord President of the Court of Session for the Secretary of State as chairman of the Hospital Endowments Commission. Lord MORRISON resisted the amendment, which was withdrawn. The Committee Stage concluded.

THIRD READING

On the motion of Lord MORRISON on May 15, drafting amendments were made in Clause 8 to make clear that the purposes to which endowments can be allocated in future by the Commission shall be purposes within the field of the hospital services. Lord MORRISON also accepted an amendment proposed by Lord ELGIN making the term of the Endowments Commission seven years instead of five. This was agreed.

On Clause 11 the House accepted an amendment proposed by Lord MORRISON requiring regional hospital boards to have wider consultations than with universities alone in framing schemes for the constitution of boards of management of hospitals or of groups of hospitals.

On Clause 14 Lord LINLITHGOW moved to provide that in any advisory appointments committee the number of persons nominated by regional hospital boards, boards of management, specialists, and universities should comprise half the total num-

ber of members. Lord MORRISON accepted the amendment, the House agreed to it. Lord MORRISON also accepted an amendment adding research on the development of medical or surgical appliances, including hearing aids, to the purposes set out in Clause 17.

On Clause 34 Lord MORRISON accepted and the House agreed to an amendment which Lord SALTOUN moved. This altered 'conferring a right on any person to choose the medical practitioner' into 'securing a right to any person to choose and change the medical practitioner'. Lord Saltoon hoped that the same privilege would be conferred in the Regulations under the English Bill.

On Clause 43 Lord MORRISON accepted and the House agreed to an amendment providing that practitioners should be informed, as soon as may be, of the substance of any charge or complaint.

Lord MORRISON then moved the Third Reading of the Bill and thanked the House for the reception given to it. He said the amendments made improved the Bill. On behalf of Mr Westwood he gave an assurance that a hospital would not be discontinued until other provision as adequate had been made for the people served by it. He explained that regional hospital boards and boards of management had powers to provide refresher courses for their own employees. It was open to the three executive authorities, the regional hospital board, the local health authority, and the executive council, to take initiative in proposing arrangements for co-ordinating services.

Lord MORRISON mentioned that Mr Westwood had recently recommended from his Medical Advisory Committee that there should be in Scotland a comprehensive laboratory covering pathology and biochemistry, as well as bacteriology. Mr Westwood accepted that recommendation and intended to act on it. Clause 18, subsection 2, enabled all the Secretary of State's functions in relation to laboratories to be discharged by a comprehensive service associated with the hospital service. Mr Westwood did not think that at the inauguration of the new service people employed in the present health services would find themselves without jobs and without compensation. In the new service there would be need of those with knowledge and experience of the existing services. The aim of the Bill was that the Board of Control should continue to be an independent body. Members of the Board would hold their appointments from the Crown. Not all the members of the Board would be officers also of the Secretary of State. Wholly independent persons otherwise unconnected with Government Departments would continue to hold part-time appointments as members of the Board.

The Bill was read a third time and returned to the Committee with amendments.

The amendments made by the House of Lords to the National Health Service (Scotland) Bill were considered by the House of Commons on Tuesday, May 20.

UNIVERSITY EDUCATION

Lord LINDSAY of Birker in the House of Lords on May 15 opened the debate on university education. He said Parliament was committed to a great increase in the university population of England. He urged the Government either to ask the University Grants Committee to appoint a subcommittee to investigate the results of an increase in the number of undergraduates or else to appoint a departmental committee of which the University Grants Committee would be representative. Great changes were imminent in university education in Great Britain as a result of the Butler Education Act. The Butler Act removed the reproach that in England secondary education was confined to a small proportion of the population.

In 1934, one in every 473 of the population of Scotland went to a university, in the United States one in every 125, in England one in every 1,013, and in Wales one in every 741. These proportions were due to historical and social factors and ought to cease. The Barlow Report had recommended that the output of trained scientific graduates in this country must at least be doubled. Then there was the additional demand for professional men, especially for doctors. To have a properly equipped health service the country must have a far greater number of trained doctors, who ought to be university trained and understand what research meant. That involved a great increase in the number of medical undergraduates. Science developed so rapidly that graduates who went in for medicine found their knowledge rapidly becoming out of date. It was well worth while bringing people back to the universities for special courses. Was the university population to be preserved by asking existing institutions to double their number and to preserve their character? The University Grants Committee had asked universities and university colleges how much it

ould add to their numbers supposing they were given money or staff and buildings. Their answers added up to 80% of the 100% required. The State would provide the money but building was held up by want of licences and universities were troubled about the question of staff. There were proposals for new institutions from Stoke-on-Trent and from York, Carlisle, Brighton, and other places. No authoritative body seriously considered these proposals. Should these new institutions be of the existing type? In existing university colleges students took their degrees from the University of London and he was not sure that the obligation to work for the degrees of that University did not fetter the initiative of the smaller institutions.

University Grants Committee

Lord Jowitt, the Lord Chancellor, said he had recently been in touch with the University Grants Committee and knew its outlook. It was a most useful piece of machinery. He conceded that the university population was too small and must be increased as soon as possible. The Barlow Report had recommended that it should be doubled in ten years and it was likely that in the next ten years it would have to be doubled again. In 1938 the country had a university population of something like 50,000. To-day it was something like 66,000, and he hoped that in 1951 it would have reached 88,000. The Chancellor of the Exchequer was prepared to find the money, but the difficulties were in finding teachers of sufficiently high ability and in the building problem. The new terms of reference of the University Grants Committee were: 'To assist, in consultation with the universities and other bodies concerned with the preparation and execution of such plans for the development of the universities as may from time to time be required in order to ensure that they are fully adequate to national needs.' These were wide terms of reference and the Lord Chancellor did not think it would be wise to appoint another committee.

Lord CERRWELL said the proper function of a university was incompatible with central supervision and control of what was taught and taught. The universities had become very dependent on Government financial support and it was necessary to safeguard their independence. He denied the statement in the Barlow Report that Oxford and Cambridge were unwilling to expand.

Lord BEVERIDGE said the Chancellor of the Exchequer had provided enough money to enable £40,000,000 worth of building to be done at the universities. The universities had gone to the licensing authorities and found that they could have only 50% or even less of what they wanted. There was a real danger that universities were compelled to apply for licences to only regional authorities. Natural scientists had the money they needed for research but social scientists did not.

Lord SIMON of Wythenshawe said Oxford and Cambridge, London, Edinburgh and Glasgow were expanding only moderately. The burden was going to fall on the regional universities and colleges.

Lord LINDSAY of Birker withdrew his motion.

Radio-active Substances Bill

Lord ADDISON speaking on May 12 on the business of the House of Lords said consultations were still going on concerning the Radio active Substances Bill. The Government wanted to be able to proceed with this Bill as an agreed measure and was anxious for a little more time. He therefore proposed to postpone the Second Reading which had been set down for the following day. Lord WOOLTON for the Opposition, concurred.

RIGHTS OF THE SUBJECT BILL

The Preservation of the Rights of the Subject Bill came before the House of Lords on May 15 when Lord READING moved its second reading. He said it was an attempt to safeguard or to restore certain rights of the subject and it had been prepared by the Liberal Party. The Party asked that it should be given a fair chance to find its way to the Statute Book. Its earlier drafts were directed to remedying the growing usurpation by the Executive of the powers of Parliament and the increasing exclusion of the Courts of Law from their supreme function of protecting the individual citizen against excessive encroachments on his right and against abuses of authority. These tendencies had been nurtured by the conditions of two long wars but there was no reason why they should be perpetuated without being curtailed by reasonable restraints. Lord SIMON said there was no question of objecting to the process by which Parliament authorized delegation to the proper authorities under proper conditions. The danger was

that under the authority so delegated the country might have what were really extra Acts of Parliament. Regulations were sometimes made which were obnoxious and contrary to the public interest. Proper safeguards were required in regard to these things. There was a dangerous tendency to assume in some quarters that a majority in the House of Commons was there simply to register decisions which had been reached by the Government of the day. He welcomed the Bill.

Suppression of Periodicals

Lord LAYTON drew attention to Clause 7 which dealt with the freedom of the Press and the suppression of newspapers. He said the Clause seemed necessary to ensure that freedom of publication was not subject to departmental interference. That issue arose last February. The periodical Press was suddenly brought into contact with a new set of officials. These officials who had never before been in contact with the Press dealt with this issue, although there existed in the Government a department whose officials had been in constant touch with the Press for seven years. The action taken showed the departmental exercise of discrimination between publications. Periodicals were stopped and newspapers were allowed to continue. Subsequently a distinction was drawn between essential newspapers and unessential newspapers. To prevent competition between the periodicals which were suspended and those which were not, the ban was made to include the production of periodicals even though they consumed no fuel at all. This was a ludicrous situation. To stop all devices which enabled the Press to appear was an ominous act. It was subsequently said that the restriction on the Press was by way of an instruction which had no legal validity but that the statutory regulation could have been issued. The grounds on which a statutory regulation could be issued were contained in the Supplies and Services (Transitional Powers) Act. He doubted whether any regulation under that Act could have been issued to impose a restriction on the Press. But if the power existed the case was made out for Clause 7 of the Bill before the House. He noted that periodicals were consuming 29.3% of their pre-war consumption of paper but the Stationery Office and Government Departments were consuming 177%.

The Willesden Case

Lord SAMUEL, speaking on Clause 12, recalled the case at Willesden where the borough council had issued notices of dismissal to medical officers and nurses for the reason that they were not members of particular associations of their profession. There had been an instant public outcry and the borough council withdrew from the position it had taken up. If the council had refused to withdraw and if a number of other local authorities had taken similar action public opinion would not have tolerated this and it would have been suppressed by legislation. When so much pressure was put on the individual that he was compelled against his will to do certain things, economic force was being applied to such a degree that essential human liberty was infringed.

The LORD CHANCELLOR said it was a thoroughly bad principle to dress up a manifesto as a Bill. That was what was being done. The Bill was ill-considered, ill-digested, and ill-drafted. To prevent the Parliamentary machine from breaking down Parliament must have an adequate arrangement for delegating legislation. On Clause 7, which dealt with the suppression of publications, he noted that the Defence Regulations contained no express power now in force to suspend a paper as such but there was power under Regulation 55 to prohibit the production of any article for the purpose of securing a sufficiency of supplies essential to the well-being of the community. If there was an inadequate amount of paper the Government might have to decide for what purpose it was to be used. The Government must continue to have that power under Regulation 55. The particular periodicals which were recently suspended were not dealt with under Regulation 55. The order was made as the result of an understanding reached with the newsprint supply companies and the Periodical Proprietors' Association. The arrangements were made as a result of an understanding reached with those bodies.

Lord LAYTON intervened to say that the newsprint supply companies took no responsibility whatever for suppression. A power of suppression which discriminated between newspapers was not really necessary for regulation purposes. If the Government had approached the Press it would have found a way of economizing fuel without suppressing any specific group of newspapers.

The LORD CHANCELLOR then adversely criticized other Clauses of the Bill. On a division the Bill was read a second time by 37 to 19.

No 18

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended May 3

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year for (a) England and Wales (London included) (b) London (administrative county) (c) Scotland (d) Eire (e) Northern Ireland

Figures of Births and Deaths and of Deaths recorded under each infectious disease are for (a) The 126 great towns in England and Wales (including London) (b) London (administrative county) (c) The 16 principal towns in Scotland (d) The 13 principal towns in Eire (e) The 10 principal towns in Northern Ireland

A dash — denotes no cases a blank space denotes disease not notifiable or no return available

Disease	1947					1946 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever Deaths	52	5	27	1	—	58	10	27	—	1
Diphtheria Deaths	186	16	40	12	2	367	32	91	34	7
Dysentery Deaths	122	8	13	—	—	212	31	61	—	—
Encephalitis lethargica acute Deaths	3	1	—	—	—	1	—	1	—	—
Erysipelas Deaths	—	—	33	11	1	—	—	40	10	6
Infective enteritis or diarrhoea under 2 years Deaths	73	6	11	18	—	55	4	12	42	3
Measles* Deaths	8 442	363	230	45	20	2 711	1056	1059	49	2
Ophthalmia neonatorum Deaths	87	5	13	1	—	98	7	14	—	—
Paratyphoid fever Deaths	1	—	—	—	—	6	—	—	—	—
Pneumonia influenza Deaths (from influenza)†	516	31	5	15	2	610	41	5	3	1
Pneumonia primary Deaths	12	2	1	1	—	14	1	2	—	—
Polio-encephalitis acute Deaths	3	—	—	—	—	2	1	—	—	—
Polio-myelitis acute Deaths	7	—	1	3	—	3	—	—	3	1
Puerperal fever Deaths	—	—	7	—	—	—	1	21	—	—
Puerperal pyrexia‡ Deaths	122	9	7	4	—	168	11	20	1	—
Relapsing fever Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever Deaths	873	78	125	24	27	945	65	161	21	32
Smallpox Deaths	1	—	—	—	—	—	—	—	—	—
Typhoid fever Deaths	1	—	2	—	—	5	1	—	—	1
Typhus fever Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough* Deaths	2 033	250	255	55	13	2 147	180	137	33	23
Deaths (0-1 year) Infant mortality rate (per 1 000 live births)	442	51	78	43	17	357	38	64	29	19
Deaths (excluding still births) Annual death rate (per 1 000 persons living)	4 577	667	645	204	119	4 600	673	591	212	149
Live births Annual rate per 1 000 persons living	9 570	1451	1222	495	274	8 581	1220	1033	471	314
Stillbirths Rate per 1 000 total births (including stillborn)	259	47	28	—	—	264	34	35	—	—

* Measles and whooping-cough are not notifiable in Scotland and the returns are therefore an approximation only

† Includes primary form for England and Wales London (administrative county) and Northern Ireland

‡ Includes puerperal fever for England and Wales and Eire

EPIDEMIOLOGICAL NOTES

Food poisoning in Coventry

On Wednesday, May 14, 12 cases of suspected food poison were notified to the Coventry public health department. It was quickly confirmed that an article of diet common to sufferers was from a consignment of "liver sausage retail fairly widely throughout the city on Tuesday, May 13. Free supplies of this commodity are delivered by the manufacturer to the Coventry area daily. In all cases symptoms were apparent within a few hours of eating the sausage. The illness was characterized by acute abdominal pains, vomiting, profuse watery diarrhoea, and in several cases there were signs of severe shock and collapse. The temperature was of moderate degree, being about 100 F (37.8°C) in cases admitted to hospital.

During the day all retailers selling the liver sausage were visited, and several samples were forwarded to the local laboratory for analysis. The manufacturers are withholding distribution of the preparation until further notice. All cases notified were followed up, and by the end of the day some 60 cases in twenty-five households had been discovered. On Thursday, May 15, other cases were notified, and investigation brought to light a further 15 cases in seven households. Reports from the laboratory now showed all samples of the liver sausage to be heavily contaminated with *Staphylococcus aureus*.

There were no fresh notifications on Friday, May 16, but retailers were visited by inspectors, and following a careful inquiry an additional 27 cases were traced in fourteen households. On May 17 eight delayed notifications were received.

During the four days May 14-17, inclusive, 111 cases were traced, and all had eaten "liver sausage" from the Tuesday consignment. Five patients were removed to the municipal hospital in a state of severe collapse, although it is certain that many of those treated at home by general practitioners were also very severely affected. Fortunately, at the time of going to press no deaths have been reported.

Smallpox

Two further cases of smallpox have appeared in connection with the outbreak at Bilston. An unvaccinated woman aged 35 was taken ill on May 9 and developed a scarlatiniform rash on May 12, on May 16 it was recognized that she was suffering from haemorrhagic smallpox and she was removed to hospital where she died the same day. The source of her infection is at present unknown. At Birmingham a medical student who visited the Bilston smallpox hospital on April 24 and was unsuccessfully revaccinated on the same day has developed a mild attack of smallpox with an atypical eruption.

A case of smallpox was removed to hospital from a Salvation Army hostel in Bermondsey, London, on May 16. This was an unvaccinated man, aged 22, who had come to London from a lodging house at Barnsley on May 6. His illness began on May 12 and the rash appeared on May 16.

Inquiries at Barnsley revealed that three residents of the lodging-house connected with the Bermondsey case were suffering from smallpox. In two men, aged 72 and 76, the onset appears to have been on May 12, and in a woman, aged 45, on May 15. All three were removed to a smallpox hospital on May 16.

Discussion of Table

In England and Wales there were increases in the incidence of measles 480 and dysentery 61 and a decrease in the notifications of acute pneumonia 131.

There were no large fluctuations in the local returns of scarlet fever and whooping cough. The only change in the incidence of diphtheria was an increase of 12 in Yorkshire West Riding. The increase in cases of measles was due to a sharp rise in a few counties, notably Yorkshire West Riding 243, Glamorgan 206, Derbyshire 135, and Lancashire 81.

The increase in the notifications of dysentery was confined to Lancashire, where the cases increased from 19 to 76. The principal centres of infection in this county were Prestwich M.B. 17, St Helens C.B. 18 and Liverpool C.B. 15.

In Scotland infectious diseases were less prevalent, and there were falls in the notifications of whooping cough 67, acute primary pneumonia 65, scarlet fever 25, and diphtheria 1. There were 4 more cases of cerebrospinal fever in the west area.

In Eire the only changes of note were decreases in the notifications of whooping-cough 19 and diphtheria 13.

In Northern Ireland a fall was recorded in the notifications of measles 16, scarlet fever 15, whooping-cough 7, diphtheria 7.

Week Ending May 10

The notifications of infectious diseases in England and Wales during the week included scarlet fever 1,002, whooping-cough 2,222, diphtheria 194, measles 10,134, acute pneumonia 561, cerebrospinal fever 74, dysentery 110, acute poliomyelitis 12, paratyphoid 3, typhoid 6, smallpox 2

Medical News

The Council of the Society of Medical Officers of Health last week gave a lunch in honour of Dr George F Buchan to mark the occasion of his retirement as Medical Officer of Health for Willesden and the conferment on him of the Honorary Fellowship of the Society. Sir Allen Daley presided. Dr Buchan was previously President and Treasurer of the Society and has been re-elected Chairman of its Council. At the lunch, Sir Allen Daley, Sir Wilson Jameson, Dr James Fenton, Sir George Elhston, and Dr Frank Gray spoke in warm terms of Dr Buchan as a man who has left his mark on public health.

Dr H V Dicks, Nuffield Professor of Psychiatry at the University of Leeds, will give a talk in the Third Programme on May 26 at 6 p.m. on "German Character Structure".

The last meeting this session of the Scottish Group of the Association of Industrial Medical Officers will be held at the Institute of Hygiene, University of Glasgow, on Wednesday May 28 at 2.45 p.m., when short papers will be read by Dr D M Watson on "Industrial Sickness Absence," and by Dr Edward Collier on "Prevention and Control of Industrial Oil Dermatitis." A business meeting will follow.

Sir Stanford Cade will deliver an address on "Recent Advances in the Treatment of Cancer" before the Medico-Chirurgical Society of Anderson's College and St Mungo's College in the Lister Theatre, Glasgow Royal Infirmary, on Friday, May 30, at 7.30 p.m.

A clinicopathological demonstration of chronic mastitis will be given in the Meyerstein Lecture Theatre of Westminster Hospital School of Medicine (Horseferry Road, S.W.), on Monday, June 2, at 5 p.m.

The eleventh International Congress of Military Medicine and Pharmacy will be held at Basle on June 2-7. As a result of the successful inter-allied meeting on war surgery held in Paris during the first world war, the first International Congress of Military Medicine met in Brussels in 1921 and founded an international committee. Between then and the second world war this organization held congresses in various parts of the world to study and discuss military medicine, but, whereas between the wars it was relatively easy to communicate across national boundaries, the situation is now much more difficult. In the recent war the countries of Western Europe became intellectually isolated from the combatants, and in addition the world-wide nature of the war raised problems that have not been adequately discussed. This conference will therefore afford an excellent opportunity for the exchange of views on military medicine, and the Secretary-General suggests that a department of medical education should be instituted within the committee, which would co-ordinate and publish together scattered documents on military medicine. His address is Le Général Médecin J Voncken, Comité International de Médecine et de Pharmacie Militaire, Liège, Belgium.

The first post-war dinner of the Edinburgh University Club of London will be held at the Café Royal on Thursday, June 5, when the Principal Sir John Fraser, Bt, FRCS(Ed.), will be the guest of honour. The Rt Hon Sir John Anderson, P.C., M.P., will preside. The annual general meeting will precede the dinner. Any member who has not received his official notice by May 29 is requested to communicate with the honorary secretary at 12, Wimpole Street, London W.1.

The third Joint Conference of Advisory Councils on Industrial Health was held at Burton-on-Trent on May 22 when the three original bodies, Leeds, Derby, and Burton-on-Trent, were represented. Reports of the year's work by the various councils were given and a discuss on took place. At a later session Dr H E Magre (Ministry of Food) opened a discussion on "Nutrition in Industry".

Dr Donald Paterson, FRCP, who has for some years practised as a paediatrician in London, returned to his home in Canada on May 17. Letters to him should be addressed temporarily c/o Royal Bank, Vancouver, B.C. Dr Paterson has been made President of the British Paediatric Association for 1947-8.

Dr Franklin Kidd, FRS, superintendent of the Low Temperature Research Station, has been appointed Director of Food Investigation Department of Scientific and Industrial Research from April 1, in succession to Dr C S Hanes, FRS.

Any Questions ?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Pethidine

Q—What are the objections to the continued use of pethidine so long as clinical improvement is maintained? Does addiction necessarily follow and what are its signs, symptoms, consequences, and treatment?

A—There are no objections to the continued use of pethidine in any given case, apart from the risk of addiction. While this risk exists, the published evidence makes it clear that it is much less than with morphine. Himmelsbach (J Pharmacol 1942, 75, 64) showed that pethidine when given *ad lib* for ten weeks to previous drug addicts caused a similar dependence to that produced by morphine. On the other hand, Batterman (Arch Intern Med 1945, 71, 345) gave effective clinical doses of pethidine for prolonged periods for relief of pain without encountering any symptoms when the drug was stopped. Excessive doses (100 mg eight times a day) caused nervousness, irritability, dryness of the mouth, and sleepiness. The symptoms which may occur on withdrawal of the drug are yawning, lacrimation, rhinorrhoea, perspiration, gooseflesh, and dilated pupils. Tolerance does not commonly occur, thus 115 patients receiving 42 to 492 doses of pethidine in 4 to 28 weeks developed no appreciable tolerance to its analgesic action, and it was not necessary to increase the dose as time passed.

Nocturnal Enuresis

Q—What can be done for two little girls aged 7 and 3 who suffer from enuresis?

A—There are so many causes of bed-wetting—from mental deficiency and physiological causes like acid urine to the boy whose sister out of jealousy used to empty the chamber in the bed after he was asleep—that no one remedy can be suggested. The most common cause is latent anxiety, which was so prevalent among evacuated children during the war. It is commonly due to a desire to return to the protection and security of infantile life. As the child gets bigger and more confident it outgrows the anxiety, and the enuresis passes. In other cases it is a form of sensuous gratification, especially in girls because of the proximity of the clitoris. In this type the enuresis ceases when normal sex feelings develop at puberty, but sometimes it may act as a check to such development. Very often it is used as an expression of resentment and of defiance. Other children wet themselves because they like the attention which accompanies it.

What is right treatment for one case is often wrong for another, and for this reason an accurate diagnosis should be made, if necessary the help of a capable child psychiatrist should be secured. Perpetual lifting, worry, and fussing over the child are likely to perpetuate the condition, therefore, in the absence of a correct diagnosis, it is best to let well alone. In some children's homes it was found that putting up a "star" above the bed as a reward was effective, but it may discourage a child who in spite of the desire for a "star," cannot help wetting the bed.

Chronic Nasal Blush

Q—What are the cause and the treatment of a deep red coloration at the end of the nose during a meal or in a hot room in a woman of 39 who is a non-smoker and is abstemious but who leads an active and worrying life in business? She makes no complaint of indigestion.

A—The vasomotor phenomena described in the question are common but ill understood. The red nose of the music-hall comedian bears witness to the popular view of its aetiology. In a related disorder—acne rosacea—evidence has been published suggesting the importance of psychological factors and the affection has been regarded as analogous to a chronic blush. In the present instance there is clearly a reflex vasodilatation,

competent stimuli being eating and a raised external temperature. There is no way of abolishing a specific reflex, although sedation will damp down such activity. No method of controlling the effector end of the reflex is known, thus the only rational therapeutic approach is by removing the stimulus. Inquiry should be made to define the stimulus more precisely; it is important to know whether specific foods are responsible. When the adequate stimuli are defined more exactly the patient will have to order her life so as to avoid them as much as possible.

Angina Pectoris

Q—A man of 54 has sudden attacks of acute pain in the region of the fourth rib just left of the sternum accompanied by transient aching down the left arm followed by numbness. Blood pressure 140/85 mm pulse unchanged, no cyanosis or pallor. In the acute stage he has a choking feeling and the mouth is dry. Heart and chest clear on x-ray examination, electrocardiogram normal, Wassermann negative. He has some hypoglycaemia but prolonged treatment with glucose has been ineffective.

A—This history is suggestive of angina pectoris, and knowledge of the factors which precipitate attacks would be of diagnostic value. If they are occasioned by effort, it would be hard to avoid the conclusion that they are anginal. It is stated that the electrocardiogram is "normal", such a finding does not exclude angina pectoris but when chest leads are used it is rare to be unable to demonstrate some abnormality. Pain of this type has been described with diaphragmatic hernia, especially of the para-oesophageal variety. It would be worth asking a radiologist to carry out an opaque meal examination with this possibility in view.

Smoking Habit Cures

Q—Are the so-called smoking habit cures reasonably effective? What is their nature and have they any ill effects?

A—Smoking habit cures are of all kinds and depend very largely for their success on the desire of the subject to be cured. The principal point in the treatment is to keep the thoughts of the patient off the topic of tobacco and to supply the accustomed stimulus to the mouth in some other manner, as by chewing ginger or gentian. Cures of this kind are at least harmless.

Malaria Recurrences

Q—For how many years may a patient who has left the Tropics continue to have recurrences of malaria?

A—Falciparum infections are usually short lived, but attacks of the other types of malaria may recur for a year or two after the primary infection. Quartan infections are the most persistent, and in rare cases recurrences have occurred many years after the initial infection. A fact to be remembered in practice is that many patients who have had malaria may describe symptoms suggesting an attack or they may attribute any malaise to malaria for years after the initial infection, but in the great majority of these cases no parasites are demonstrated. In any case, malaria is now so readily controllable that, properly handled, relapses in this country should prove no real practical disability.

Neonatal Respiration

Q—Does gaseous exchange take place in a newborn infant while pulsation continues in the cord? If so is it advisable to cut the cord in an asphyxiated infant while pulsation is present?

A—Once the foetus is born the uterus retracts so strongly that the circulation in the maternal sinuses is impeded, and it is unlikely that the transfer of much oxygen takes place through the placenta even when the cord is still pulsating. It is this which accounts for the sudden development or increase in anaemia, which is the most important stimulus for the onset of respiration, and the very occurrence of asphyxia livida is evidence of cessation of placental function. The value of any delay in cutting the cord is that it enables the child to recover as much as possible of the very considerable proportion of its blood which ordinarily circulates in the vessels of the cord and placenta.

Halitosis

Q—A healthy girl suffers from halitosis for which ear, nose and throat examination reveals no cause, the condition is improved by alkalis. Will she grow out of it? Is there an objection to taking alkalis indefinitely or is there some other efficacious treatment?

A—Foetor oris is commonly due to dental disease, no mention is made of the state of the teeth and gums. An adequate dental examination is important. The symptom is almost always due to some disorder of the upper respiratory or alimentary tract, its origin is gastric only when there is gross disease of the stomach. Further search for the cause is advisable in this case. Prolonged dosage with alkalis is not without danger, large doses may lead to renal damage.

Facial Hair in a Girl

Q—A girl aged 16 is developing a fairly marked growth of hair on her upper lip. Her periods started late and are now scanty and irregular. She is somewhat backward at school. Would hormone treatment have any effect?

A—The girl is probably suffering from either overactivity of the adrenal cortex, a masculinizing tumour of the ovary or pituitary basophilism. The most likely condition is bilateral adrenal cortical hyperplasia, and there may well be a constitutional causal factor as manifested by facial hirsuties in other near relatives. A very full investigation, including hormone assays (for example an estimation of the excretion of 17 keto steroids) and possibly pelvic examination under anaesthesia, is indicated before any decision is made as to treatment. No matter what its cause may be, the treatment of facial hirsuties by hormones is usually unsatisfactory. If, however, an androgenic tumour is found and removed, the growth of hair usually ceases.

Calcareous Deposits in Eyelids

Q—A patient aged 45 with corrected hypermetropia suffers from gravel (stones) in the upper eyelids. The lids have been scraped with either a needle or bluestone. Penicillin drops have not helped. Can you recommend any local drops or ointment or any special diet to prevent the formation of the stones or to assist in dissolving them?

A—The cause of deposition of calcareous nodules in the tarsal conjunctiva is unknown. There is no reason to believe that it is connected with refractive errors or with a chronic infective state of the conjunctiva. Neither glasses nor penicillin would, therefore, be of value. Removal of these calcareous nodules by digging them out with the point of a Graefe knife is the only known treatment of any value. Unfortunately recurrences are common, and there is nothing one can do except further surgical removal.

Menopausal Adiposity

Q—A woman without other menopausal symptoms has suddenly developed increasing adiposity. Dietary treatment and exercise are without effect. What would you suggest?

A—Adiposity may have its onset at the climacteric, and in the view of the writer it is associated with climacteric hyperplasia of the anterior pituitary and adrenal cortex in people of certain endocrine constitution. There is no specific hormone therapy. Modification of the adiposity depends upon thyroid, and mercurial diuretics.

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DENTAL CONDITION OF FIVE-YEAR-OLD CHILDREN IN INSTITUTIONS AND PRIVATE SCHOOLS COMPARED WITH L.C.C. SCHOOLS

BY

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AND

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with the assistance of Irene Allen

From time to time in the literature the dental condition of various races, social classes, types of school, and so on is compared. If the differences observed are so big that they are self-evident—as, for instance, the difference in caries incidence between children in Great Britain and children of certain native races living in their natural habitat—the criteria used in assessing these differences are for many purposes perhaps not of great importance. Should the discrepancies be less outstanding, however, it is essential that the same standards and the same age groups should be used in the examination of each race, class, or school if true comparisons are to be made. This is especially necessary if the effect of specific procedures or dietary factors is being put to the test.

It is we believe, unfortunate that the majority of workers when investigating the dental condition of groups of people, concentrate only on caries incidence and sometimes its extent, ignoring the structure of the teeth, or, if they consider it at all, recognizing only one type of defect—that to which we and our colleagues refer as gross or G hypoplasia. Thus valuable data are lost.

It is often stated that children brought up in institutions have less caries than their contemporaries living in their own homes. As we had had long experience in examining and charting the deciduous teeth of children attending public elementary schools, using the same standards throughout (Mellanby and Coumoulos, 1944, 1946, Coumoulos 1946) and had accumulated much information on the subject, we determined in 1945 to see for ourselves how the dental condition of institutional children compared with that of some other sections of the community of the same age groups. During the same period we also made a study of children living at home and attending private schools and in this paper we shall compare in some detail the findings in the 5-year-old children of these two groups with each other and with data obtained from children of similar age residing usually in their own homes and attending L.C.C. schools in the same year. Details of this last group have already been published (Mellanby and Coumoulos 1946).

In the present study we use the term 'institutions' to cover communal homes for children deprived of a normal home life for one reason or another such as destitution, illegitimacy or the death of one or both parents. Some of the institutions visited in the course of the investigation were run by municipal or education authorities, others by religious or charitable organizations. The selection was made as representative as possible and for this we have to thank Dr H. E. Magee of the Ministry of Health.

The majority of the children in the institutions were from poor or unsatisfactory homes. The private schools ranged from the small "select" type to larger ones attached to senior schools, and, so far as could be judged from information supplied, most of the children attending them came from well-to-do families. Many of the children attending the L.C.C. schools were of poor parentage, although some were of a higher social grade. The method of examination and the criteria used in the assessment of dental structure, caries, and other conditions have been described previously (Mellanby and Coumoulos, 1946, and earlier publications by M. M. and colleagues).

Results

A comparison of the findings in the three surveys under review is given in Tables I to VIII. Table I indicates that

TABLE I—Percentages of Teeth Present at Time of Inspection

Type of Tooth	Institutions	Private Schools	L.C.C. Schools
Upper			
Centrals	94.0	93.5	92.6
Laterals	97.8	99.2	98.3
Canines	99.8	100.0	99.6
1st molars	99.5	98.2	95.0
2nd molars	99.8	99.5	97.5
Lower			
Centrals	85.7	76.0	79.4
Laterals	98.5	97.4	98.0
Canines	100.0	99.9	99.9
1st molars	98.6	95.4	92.4
2nd molars	99.2	93.4	91.7
All types	97.3	95.8	94.4

comparatively few teeth were missing, either shed or extracted, from any of the groups of children. Our chief concern was with the structure of the deciduous teeth and their caries incidence and extent rather than with the state of the teeth per child, but before considering these points in detail mention may be made of the percentages of children found to be free or almost free from caries (see Mellanby and Coumoulos, 1946). Table II shows that the

TABLE II—Percentages of Children Caries free or Almost Caries free

Place of Investigation	No. of Children Examined	Caries free	Almost Caries free	Total
Institutions	325	57.2	8.9	66.1
Private schools	371	50.4	4.3	54.7
L.C.C. schools	691	24.2	3.9	28.1

institutions had a larger percentage (66.1) in this category than the private schools (54.7), which in turn showed a great advance on the L.C.C. schools (28.1).

In dealing with the individual types of teeth and with the teeth as a whole, the surface structure will be mentioned first, as we consider this to be very important in relation to their resistance to caries

Surface Structure of the Teeth

As is seen from Table III, the children attending private schools had many more teeth graded as Hy₀—that is to say of good structure (54%)—than either those attending the LCC schools (38%) or those living in institutions (32.3%). In other words, structure was by far the best in the private schools and was worst in the institutions. As would be expected, when each individual type of tooth was considered, the children at private schools

the institutional children, 10.3% of the first and 10.5% of the second molars being affected, whereas the figures for private and LCC schools ranged from 1.1 to 2.6% for the same types of teeth

The average hypoplasia figure (AHF), which relates only to M-hypoplasia (see McIlanby and Coumoulos, 1946) and gives a rough computation of the extent of this imperfection, was lowest for all types of teeth together in the private schools, but was approximately the same for the other two groups—that is, 0.6 in the private schools compared with 0.92 in the institutions and 0.91 in the LCC schools. Again, the AHF for each type of tooth was lower for the private schools group than for either of the others, which varied slightly from tooth to tooth. In all

TABLE III—Comparison of Tooth Structure in Institutions Private Schools and LCC Schools

Type of Tooth	Place of Investigation	Total No of Teeth Examined for Structure	Hy ₀	M-Hy ₁	M-Hy ₂	M-Hy ₃	G-Hy	Hy Unclassified	AHF*
Upper									
Centrals	Institutions	609	32.2	39.2	20.5	1.6	6.2	0.2	0.91
	Private schools	689	51.8	30.9	14.2	0.6	2.5	0.0	0.63
	LCC schools	1 262	25.0	36.2	26.1	6.0	6.6	0.2	1.14
Laterals	Institutions	635	32.9	53.5	8.3	0.5	4.6	0.2	0.75
	Private schools	722	64.4	26.3	6.5	0.6	1.8	0.4	0.42
	LCC schools	1 341	38.6	39.4	14.3	2.2	5.4	0.1	0.79
Canines	Institutions	647	30.0	57.2	9.1	0.5	1.4	1.9	0.79
	Private schools	735	63.8	31.2	3.3	0.3	1.0	0.5	0.39
	LCC schools	1 369	40.8	45.7	10.1	1.1	1.1	1.2	0.77
1st molars	Institutions	639	7.7	36.9	46.6	2.7	6.1	0.0	1.47
	Private schools	725	24.8	47.2	23.2	2.9	1.9	0.0	1.04
	LCC schools	1 282	8.7	39.2	42.9	6.4	2.8	0.0	1.48
2nd molars	Institutions	644	6.2	32.6	51.7	5.4	4.0	0.0	1.59
	Private schools	736	19.8	51.4	24.9	2.8	1.1	0.0	1.11
	LCC schools	1 342	5.2	39.5	45.7	8.6	1.0	0.0	1.58
Lower									
Centrals	Institutions	552	78.1	20.5	0.4	0.0	1.1	0.0	0.21
	Private schools	559	92.5	7.1	0.2	0.0	0.2	0.0	0.08
	LCC schools	1 097	85.1	14.0	0.4	0.0	0.5	0.0	0.15
Laterals	Institutions	636	66.8	31.3	0.8	0.0	1.1	0.0	0.33
	Private schools	718	87.9	11.1	0.4	0.0	0.4	0.1	0.12
	LCC schools	1 348	79.5	19.2	0.8	0.0	0.3	0.1	0.27
Canines	Institutions	647	50.1	40.2	2.2	0.0	2.3	5.3	0.48
	Private schools	736	81.8	13.7	1.6	0.0	0.7	2.2	0.18
	LCC schools	1 370	69.7	23.5	2.3	0.1	0.7	3.8	0.30
1st molars	Institutions	631	16.6	40.4	30.7	1.9	10.3	0.0	1.20
	Private schools	698	37.0	41.5	15.1	2.1	1.1	0.1	0.85
	LCC schools	1 235	22.3	39.6	32.5	3.1	2.6	0.0	1.17
2nd molars	Institutions	637	8.8	40.0	36.4	4.2	10.5	0.0	1.40
	Private schools	718	24.2	44.6	26.7	2.8	1.7	0.0	1.08
	LCC schools	1 241	7.5	37.5	45.4	6.1	1.5	0.0	1.55
Totals	Institutions	6 277	32.3	39.5	20.9	1.7	4.8	0.8	0.92
	Private schools	7 036	54.0	31.0	12.1	1.2	1.3	0.4	0.60
	LCC schools	12 887	38.0	33.6	22.0	3.5	2.3	0.6	0.91

* AHF (average hypoplasia figure) = $\frac{\text{Total hypoplasia figure}}{\text{Total no. of teeth examined for structure (excluding those with G hypoplasia or unclassified hypoplasia)}}$

were consistently at the head of the scale, and those attending LCC schools were in most cases better than those residing in institutions

The proportion of teeth showing some degree of M-hypoplasia was least in the private schools group (44.3%) and much higher in the institutions (62.1%) and LCC schools (59.1%). Comparatively few in any group showed severe M-hypoplasia (M-Hy₃), taking all types together, the private schools had 1.2%, the institutions 1.7%, and the LCC schools 3.5%

Gross hypoplasia (G-Hy) was negligible compared with M-hypoplasia. The institutions had 4.8% showing this condition compared with 6.2% with M-hypoplasia, the LCC schools 2.3% compared with 5.9%, and the private schools only 1.3% compared with 4.2%. These figures for gross hypoplasia correspond roughly to the figures usually given in the textbooks for all generally recognized hypoplasias (Pitts 1921, Ainsworth and Young, 1925). Taking individual types of teeth the highest percentages with gross hypoplasia were found in the lower molars of

groups the lower incisors had the smallest AHF and second molars the greatest—a fact which has been observed in all investigations where the same standards have been used in the assessment of structural defects in deciduous teeth

Incidence and Extent of Caries

When we turn to the subject of caries quite a different picture is presented. As is shown in Table IV, the percentage of carious teeth of all types together was some what lower in the institutions than in the private schools, in spite of the fact that the structure of the teeth was so much worse, and much lower than in the LCC schools, the respective figures being 10.5%, 14.2%, and 26.5%. In general, the same relation was evident between the three groups when each type of tooth was considered separately. As is usually found, in all three groups the lower incisors were rarely carious, only 2.1% or less in any group coming into this category, and the highest incidence occurred in the second molars, the lower teeth of this type being worse

than the upper. In the institutions 26.3%, in the private schools 34.9%, and in the LCC schools 58.8% of the lower second molars were carious.

Just as comparatively few teeth in any group were severely affected by M-hypoplasia, so few showed severe caries, only 8.3% or less of the teeth in any group being in this category (C_3). The lowest incidence of this grade was found among the institutional children—that is to say, in those with teeth of the worst structure—and the greatest incidence among those attending the LCC schools (It should be noted that this category, as in previous investigations, includes the relatively few missing canines and molars, which are assumed at the age of 5 years to have been extracted for caries—see figures in brackets in Table IV.)

In each group of children and for each type of tooth in the present survey the percentage of carious teeth increased with the severity of the M-hypoplasia, but there were some very marked differences between the groups especially in relation to the worst grades of structure ($M-Hv_2$ and $M-Hy_3$). It is seen in Table V, for instance, that 56.8% of the molars graded as $M-Hy_2$ in the private schools and 66.5% in the LCC schools were carious, whereas the corresponding figure for the institutions was only 29.8%. Similarly, for the molars graded as $M-Hy_3$ the percentages of carious teeth were 89.6 for the private schools, 92.3 for the LCC schools, and only 58.2 for the institutions. The same trend is apparent when other grades of structure and other types of teeth are considered.

TABLE IV—Caries Incidence and Extent in Institutions Private Schools and LCC Schools

Type of Tooth	Place of Investigation	Total No. of Teeth	C_0	C_1	C_2	C_3	Total Carious Teeth	ACF†
Upper								
Centrals	Institutions	611	89.7	2.3	6.2	1.8	10.7	0.20
	Private schools	694	88.8	3.0	6.5	1.7	11.2	0.21
	LCC schools	1,280	70.5	5.0	17.2	7.3	29.5	0.61
Laterals	Institutions	636	95.0	1.3	3.5	0.3	5.0	0.09
	Private schools	736	94.2	2.4	2.7	0.7	5.8	0.10
	LCC schools	1,358	85.1	3.2	8.6	3.1	14.9	0.30
Canines	Institutions	650	97.1	0.3	2.3	0.3 (0.15)*	2.9	0.06
	Private schools	742	95.8	1.6	1.9	0.7 (0.0)*	4.2	0.07
	LCC schools	1,381	92.5	1.7	4.2	1.6 (0.4)*	7.5	0.15
1st molars	Institutions	650	86.3	5.7	5.5	2.5 (0.5)*	13.7	0.24
	Private schools	742	79.8	4.7	9.7	5.8 (1.8)*	20.2	0.42
	LCC schools	1,382	61.1	8.3	17.4	13.2 (5.0)*	38.9	0.83
2nd molars	Institutions	650	74.6	13.2	10.2	2.0 (0.2)*	25.4	0.40
	Private schools	742	72.4	9.3	14.2	4.1 (0.5)*	27.6	0.50
	LCC schools	1,382	48.6	17.7	23.6	10.1 (2.5)*	51.4	0.95
Lower								
Centrals	Institutions	557	98.9	0.4	0.7	0.0	1.1	0.02
	Private schools	564	98.9	0.5	0.5	0.0	1.1	0.02
	LCC schools	1,098	98.3	0.9	0.8	0.0	1.7	0.03
Laterals	Institutions	640	99.2	0.5	0.3	0.0	0.8	0.01
	Private schools	723	99.4	0.1	0.4	0.0	0.6	0.01
	LCC schools	1,354	97.9	0.6	1.3	0.2	2.1	0.04
Canines	Institutions	650	98.9	0.3	0.6	0.2 (0.0)*	1.1	0.02
	Private schools	742	97.3	0.3	2.2	0.2 (0.1)*	2.7	0.05
	LCC schools	1,382	94.1	0.7	4.3	0.9 (0.1)*	5.9	0.12
1st molars	Institutions	650	83.5	4.2	7.2	5.1 (1.4)*	16.5	0.34
	Private schools	742	69.9	4.5	14.6	11.1 (4.6)*	30.1	0.67
	LCC schools	1,382	51.4	7.2	21.1	20.3 (7.6)*	48.6	1.10
2nd molars	Institutions	650	73.7	10.2	9.2	7.0 (0.8)*	26.3	0.49
	Private schools	742	65.1	11.5	14.3	9.1 (1.6)*	34.9	0.65
	LCC schools	1,382	41.2	15.1	19.5	24.1 (8.3)*	58.8	1.27
All types	Institutions	6,344	89.5	3.9	4.6	1.9 (0.3)*	10.5	0.19
	Private schools	7,169	85.8	3.9	6.9	3.5 (0.9)*	14.2	0.28
	LCC schools	13,381	73.5	6.2	12.0	8.3 (2.5)*	26.5	0.55

* Caries-affected figures include missing canines and molars which are assumed to have been extracted for caries.

Figures in brackets show these teeth as percentages.

† ACF (average caries figure) = $\frac{\text{Total caries figure}}{\text{Total no. of teeth (including extractions)}}$

The average caries figure (ACF) which indicates the extent of caries was lowest for all types of teeth together in the institutional group (0.19) and highest in the LCC schools group (0.55) with the figure for private schools (0.28) in an intermediate position but nearer to the institutional than the LCC schools figure.

Thus it is seen that whereas the structure of the teeth was definitely the best in the children attending private schools and worst in those living in institutions there was less caries in the teeth of the institutional children than in the private schools group. The LCC group had most caries much more than either of the other two, in spite of the fact that the structure of their teeth was better than that of the institutional children although not nearly as good as that of the private school group.

Relationship between Structure of Teeth and their Susceptibility to Caries

As would be expected from previous investigations (McLanby 1923, 1934; McLanby and Coumoulos 1946)

The similarities and discrepancies between the findings for the three groups of children are perhaps more clearly seen if they are set out as shown below. (The figures given here are for all types of teeth together and not, as in Table V, for individual types.)

No caries was found in

Inst	Private Schools	LCC Schools
99.7%	98.7%	98.1%
95.2%	84.4%	83.2%
72.2%	48.6%	40.9%
45.8%	13.8%	15.3%

Severe caries was found in

Inst	Private Schools	LCC Schools
0.0%	0.0%	0.1%
0.3%	1.8%	1.2%
3.7%	9.3%	12.0%
8.4%	40.2%	41.0%

of teeth of good structure (Hv_1)
of teeth slightly defective in structure ($M-Hv_1$)
of teeth defective in structure ($M-Hy$)
of teeth very defective in structure ($M-Hy_3$)

of teeth of good structure
of teeth slightly defective in structure
of teeth defective in structure
of teeth very defective in structure

From these figures the gradual decrease in percentage of teeth free from caries and increase in percentage with extensive disease as the structure deteriorates is apparent in each group, but there is a great difference between the institutional group and the other two in the proportion of non-carious and severely carious teeth associated with the more severe grades of structural defect (M-Hy₂ and M-Hy₃). The possible significance of these findings will be discussed later.

in the LCC schools. The extraction rate was highest (9.6%) in the LCC schools, next highest in the private schools (6.3%), and lowest (2.9%) in the institutions.

Staining of Surface Enamel or of Films on the Enamel

A record was made of the incidence of superficial staining of the teeth, so often seen in children, and it was found in all three groups (see Table VIII) that in those children with some or all of their teeth showing black or dark-brown

TABLE V—Incidence of Caries in Teeth with Varying Grades of Structure

Grade of Structure	Place of Investigation	Incisors		Canines		Molars	
		Total No Examined	Carious	Total No Examined	Carious	Total No Examined	Carious
Hy ₁	Institutions	1 261	0.5	518	0.0	250	0.4
	Private schools	1 970	0.8	1 071	0.8	758	3.0
	LCC schools	2 837	1.2	1,514	1.1	550	7.0
M-Hy ₁	Institutions	891	2.7	630	2.1	956	8.6
	Private schools	523	8.8	330	6.4	1 330	20.6
	LCC schools	1,399	11.2	947	8.0	1,987	25.0
M-Hy ₂	Institutions	185	21.6	73	13.7	1 057	29.8
	Private schools	149	30.2	36	38.9	669	56.8
	LCC schools	536	39.2	169	29.6	2 127	69.5
M-Hy ₃	Institutions	13	38.5	3	0.0	91	58.2
	Private schools	8	75.0	2	0.0	77	89.6
	LCC schools	105	81.0	16	68.9	335	92.3
G-Hy	Institutions	80	38.8	24	0.0	197	19.8
	Private schools	34	38.2	12	0.0	42	35.1
	LCC schools	165	62.4	24	20.8	101	52.5

NOTE—(a) This table does not include the few teeth shown under the heading Hy unclassified in Table III. (b) In some grades of structure the numbers of teeth are relatively small and the percentage differences between the groups may thus be exaggerated.

The proportion of carious teeth among those classified as grossly hypoplastic (G-Hy) varies considerably, but is not generally nearly as high as that for the M-Hy₃ group (see Table V).

Arrest of the Carious Process and Treatment of Teeth

In charting the incidence of arrest, only teeth in which the carious area had become definitely hard, though not necessarily smooth and polished, were recorded as showing this phenomenon. Partial arrest was ignored. Under these conditions the percentages of carious teeth showing arrest of the disease were about the same in the institutions and LCC schools, but lower in the private schools, as is seen in Table VI. On the other hand, there was, as Table VII

shows, there was less caries than in those with no stain or with green stain. Most caries occurred in children who had some green stain. The relation between these stains and the incidence of caries has been discussed by a few

TABLE VIII—Amount of Caries in Relation to Superficial Staining of Teeth

Children with	Percentage of Carious Teeth			ACF		
	Inst	Private Schools	LCC Schools	Inst	Private School	LCC Schools
No stain	11.5	12.9	23.1	0.21	0.25	0.48
Black and dark brown stains	5.7	2.9	15.4	0.11	0.05	0.39
Green stain	20.2	22.5	33.0	0.39	0.46	0.69

other workers, including Pedersen (1946), who also observed that children with black stains were on the average less affected with dental caries than children without such stains on their teeth, and that those with green or yellow stains seemed to be more susceptible to the disease.

Discussion

An account has been given of the dental condition of the deciduous teeth of three groups of 5-year-old children examined in 1945, one group residing in institutions and the other two living at home and attending private schools and LCC schools.

The first fact observed in this survey was that in the institutions 66.1% and in the private schools 54.7% of the children were free or almost free from caries, whereas in the LCC schools the proportion in this category was of quite another order—namely, 28.1%. It was clear, therefore, either that there was some much more powerful protective factor against caries at work in the children in institutional and private schools than in those at the LCC schools—and if this was so it appeared to be even more potent in the first than in the second of these groups—or that in the children attending LCC schools there was some more powerful caries-producing factor in action.

TABLE VI—Teeth Showing Arrest (Spontaneous Healing?) of the Carious Process

Place of Investigation	No of Carious Teeth Present	% of Carious Teeth Present Showing Arrest	Showing Arrest	
			If Filled Teeth are Omitted	If Filled Teeth and those Treated with Silver Nitrate are Omitted
Institutions	645	20.6	21.7	21.9
Private schools	955	15.4	19.2	19.7
LCC schools	3 203	21.5	22.1	22.8

TABLE VII—Carious Teeth Extracted Treated by Silver Nitrate or Filled

Place of Investigation	Total No of Carious Teeth (Including Extractions)	Treatment			Total Percentage of Carious Teeth Treated
		Extraction	Silver Nitrate*	% Filled*	
Institutions	664	2.9	1.1	4.7	8.6
Private schools	1 019	6.3	1.8	18.5	26.6
LCC schools	3,545	9.6	2.8	2.4	14.8

* The figures in these columns would have been slightly higher if the extracted teeth had been excluded from the total numbers in the second column.

shows, far more treatment, especially that taking the form of fillings among the children attending private schools than among the other two groups. 18.5% of carious teeth being filled, as against 4.7% in the institutions and 2.4%

Before discussing the possible reasons for these differences between the groups further details must be considered. When the teeth themselves, as opposed to the dentition as a whole, are taken into account, and when structure is pitted against caries, some interesting facts come to light. For instance, in the institutions 32.3% of the teeth were of good structure (Hy₀), in the private schools 54%, and in the LCC schools 38%. The relationship between the groups was quite different when the incidence of caries was considered, since in the institutions 10.5% of the teeth were carious, in the private schools 14.2%, and in the LCC schools 26.5%. Thus, whereas by far the best dental structure was found in the private schools and the worst in the institutions, the latter had the lowest incidence of caries. In the LCC schools the structure of the teeth was rather better than in the institutions, but the caries incidence was very much higher than that of either of the other two groups.

Moreover, though in each group of children the better the structure the less the caries, yet for any given grade of structural defect there were fewer teeth with caries among the institutional children than among those in the other groups. For instance, in examining the molars it was found that

In grade M Hy₁

8.6%	were carious in the institutions
20.6%	" " " " private schools
25.0%	" " " " LCC schools

In grade M Hy

29.8%	were carious in the institutions
56.8%	" " " " private schools
66.5%	" " " " LCC schools

In grade M Hy₂

58.2%	were carious in the institutions
89.6%	" " " " private schools
92.3%	" " " " LCC schools

Similar differences between the groups could be quoted for other types of teeth.

The incidence of arrest of the carious process was rather lower in the private schools than in either of the other groups, where the results were about the same.

In view of the hypothesis, based on previous investigations by one of us and confirmed by colleagues, that the better the structure of the teeth the more likely they are to resist attack by caries, these results were clearly in the nature of a challenge, since it was found, in short, that (a) in each of the three groups the ordinary rule held—namely, there was a direct relation between structure and incidence of caries—but (b) comparing the three groups of children one with another the opposite conditions appeared to exist, for the children in the institutions, with the worst structure, had the least caries.

In comparing first the institutional and the private school children, there are two outstanding facts to be explained in the somewhat anomalous results of the survey. (1) Why was the structure of the teeth of the private school children better than that of the institutional children? and (2) Why in the teeth of the institutional children, which were worse formed, was there less caries than in the better-formed teeth of the private school children? It is necessary in this case to work on the basis of what is known, and, as previously mentioned, the two points that have been established are (a) that diets of high calcifying qualities in the pre-eruptive stage—that is, in pregnancy and lactation of the mother and in the early life of the child—produce better-formed teeth than diets poorer in this respect, and (b) that these same diets when given after eruption suppress, to some extent at least, the development of dental caries and tend to arrest the disease if present. Thus we have some of

the same factors at work in the pre-eruptive and the post-eruptive stages, but in the pre-eruptive period the effect of the diet is to control the structure of the teeth and in the post-eruptive to influence the development and course of dental caries. The problem, however, is not as simple as it looks because, clearly, the better-formed teeth resulting from the high calcifying diet of the pre-eruptive period will in themselves be more resistant to dental caries than badly formed teeth when both are exposed to the same post-eruptive diet. The teeth under examination in this work are the deciduous set, and since their calcification begins at about the twentieth week of foetal life and eruption is more or less complete when the child is about 2 years old, it is during this period that the type of feeding must control the actual structure of the teeth. Since, however, the lower incisors begin to be erupted at the age of 6 months the period from six months onwards must also be regarded as a post-eruptive age for an increasing number of deciduous teeth. After about two years the environmental effects would be wholly post-eruptive, while before six months the effect can be regarded as wholly pre-eruptive.

To explain the better-formed teeth of the private school children as compared with those of the institutional children, it is necessary to show that the diet of the former in pre-natal and early life was better from the point of view of calcifying properties than that of the institutional children during the same period of development. While actual proof cannot be given, we do not doubt that this is in fact the case, though the levelling up of the nation's dietaries that has taken place during recent years and particularly during the war, has probably made this difference less than it used to be. Indeed, if this were to-day only a question of the well-to-do mother *versus* the poor mother, increased facilities for getting protective foods, either free or at a cheap rate, are now so great that big differences might not be expected. The children, however, who become the responsibility of an institution are recruited largely from unsatisfactory homes where the mothers are often less well informed and more neglectful of their children, either from force of circumstances or because the children are unwanted. It is to be expected therefore, that so long as they continue to live under such conditions the children will be less well fed from the point of view under discussion than their contemporaries in better circumstances who will ultimately attend private schools.

As a class the well-to-do mothers are more intent on following medical advice during pregnancy and lactation than the mothers of the institutional children, and this advice nowadays usually includes an injunction to drink plenty of milk and to add cod-liver oil and other sources of vitamin D to the diet. Again the children of the former, when weaned, are more likely to be fed in early life according to the same principles. From all points of view, therefore, it might be expected that the teeth of the private school children would be of better structure than those of the institutional children. When, however, we turn to the post-eruptive stage matters are not the same. As the children of the well-to-do mother grow older there is a tendency for them to become more pampered and for dietary preferences to be considered. If for instance such an item as milk or eggs is disliked it may be omitted and the diet generally becomes of lower nutritional and calcifying quality. Sometimes, too, the daily dose of cod-liver oil or other preparation may be missed solely because parents or nurses do not like it or because they are careless in giving it to the children. In other words, the post-eruptive is often not so good as the pre-eruptive dietetic condition of children of this class. When, however, we consider the institutional children the matter is different.

in entry to an institution relatively neglected children come under conditions where feeding arrangements are regular and the diet is generally of a high quality from a nutritional standpoint—and incidentally from the point of view of calcification, as visits to institutions will confirm. This is due largely to the steadily increasing interest in the welfare of these children during recent years, but partly to wartime stringency. It is known that priority supplies, including milk, eggs, and cod-liver oil for institutional children, are regularly obtained. Moreover, it is almost certain that they are consumed, since individual likes and dislikes, which tend to disrupt the feeding arrangements of children of well-to-do mothers cannot be considered in a large community.

Such a state of affairs as that outlined above would in our opinion account largely for the otherwise anomalous findings in the institutions and private schools.

So far as could be judged from evidence kindly supplied by teachers in the various schools and by health visitors, the children attending L.C.C. schools would, on the average, be in a position in regard to diet intermediate between those at the private schools and those in institutions during the period of tooth development, although nearer the latter than the former, but in the post-eruptive years they would probably tend, because of the financial status of their parents and for other reasons, to be in a somewhat worse position than the private school children, though from the standpoint of this survey they would be subject to similar disabilities in regard to dietary likes and dislikes. If this were so, it would explain the fact that the structure of the deciduous teeth of these children was not nearly as good as that of the private school group, though somewhat better than that of the institutional children, and that their caries incidence was greater than that of either of the other two groups.

In this discussion only those environmental conditions—and especially the calcifying qualities of the diet—which have been established by experiment as influencing dental structure and incidence of caries have been considered. They seem to explain the facts as described. At the same time there are certainly other factors at work influencing the incidence of caries, about which we have no certain knowledge. It is said that fluorine is an important anti-caries factor, and, in England, Maldon is cited as a typical example. Here the fluorine content of the water is high and there is stated to be little dental caries compared with that in other parts of the country. In 1945 one of us (Counmoulos, 1946) found only 11.2% of deciduous teeth carious in 5-year-old children attending public elementary schools in that district—about the same proportion as was found in the present survey in the institutional children, few if any of whom were born or reared in Maldon. Again, the percentage of carious teeth in the private school group was not very much higher than that of the Maldon group. In the Maldon teeth, as in the three groups reported here, there was a direct relation between caries and M-hypoplasia, suggesting that the small amount of caries was again largely the result of the good structure rather than the influence of the fluorine in the water, although it seems that fluorine probably plays some part in the sequence of events.

Other possible factors affecting the initiation or prevention of caries, such as the effect of carbohydrates, the question of dental treatment, and the influence of tooth-brushes, have been considered in earlier publications (Mellanby and Counmoulos, 1944, 1946) dealing with the incidence of dental caries among school-children and will not be discussed here, as such discussion would at present lead only to negative conclusions. Still, the condition of the teeth of the institutional children as regards caries is,

in view of their defective structure, remarkable, and if there are secrets yet to be discovered which can fully explain these results, as there almost certainly are, every effort should be made to reveal them.

Summary

A description is given and a comparison is made of the dental condition in 1945 of three groups of 5 year old children: one residing in institutions and the others living at home and attending private schools and L.C.C. schools.

The proportion of children free or almost free from caries was greatest in the institutions, somewhat less in the private schools, and very much less in the L.C.C. schools.

Examination of the individual teeth revealed that, whereas the dental structure was by far the best in the children attending private schools and worst in those living in institutions, caries incidence and extent were lower in the latter than in the former. In the L.C.C. school group the structure of the teeth was slightly better than in the institutional group but far worse than in the private school group and the incidence and the extent of caries were the highest of all.

Although there was a direct relation between the structure of the teeth and the incidence and extent of caries among children of each group—that is to say the better the structure the less the caries—this did not hold between children of the different groups: thus in the institutional group teeth of a given grade of structural defect had much less caries than teeth of the same structure in either of the other two groups.

The incidence of arrest of the carious process was approximately the same in the institutions and L.C.C. schools and rather lower in the private schools.

In each group of children black or dark-brown superficial staining of the teeth appeared to be associated with a lower incidence, and green staining with a higher incidence, than the absence of stain.

Possible reasons for the striking contrasts between the groups of children in regard to their dental structure and caries incidence and extent are discussed, and it is suggested that the calcifying properties of the respective diets at different periods both pre-eruptive and post-eruptive, are an important key to the situation.

Surveys of this kind are possible only with the good will and co-operation of many people. We should therefore like to acknowledge our great indebtedness to the following, among others: (1) the proprietors, head teachers, and assistants of the private schools, who were always very kind and helpful in every way, and (2) the superintendents, matrons, and teachers in the institutions, who were ready not only to assist us directly, but in addition, to provide much information for which we asked. Our thanks also are due to Dr H. E. Magee, who kindly arranged our visits to the institutions, and to Mrs M. Kellev for her help generously given at all times.

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Mr Hardman, Parliamentary Secretary to the Ministry of Education, announced in the House of Commons recently that the Foundation of Education Research was being asked to undertake an inquiry into the effects on children of various forms of punishment and rewards. Mr Hardman made this statement in reply to a question by Mr P. Freeman (Newport Lab.), who raised the question of corporal punishment of children in State schools. Mr Hardman stated that his Ministry had not advocated the use of corporal punishment, but public opinion had to be convinced that without it discipline could be maintained, and he personally deplored its continuance as a means of discipline. It is to be hoped that the committee of inquiry will include among its members representatives of the school medical service and of medical psychology, and that they will examine evidence from countries where corporal punishment is prohibited in schools.

A PENICILLIN-TREATED SERIES OF CASES OF OSTEOMYELITIS IN CHILDHOOD

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It is now well recognized that the use of penicillin in staphylococcal infections of the bones and joints of children has produced a most striking improvement in results. There is still, however, no agreement as to the dosage desirable or as to the surgical intervention which may be necessary in addition. In consequence the following account of work at the Hospital for Sick Children, Great Ormond Street, may be of interest, especially as in certain ways the treatment given has differed from that generally advised. The series described in the first two groups is a consecutive one without selection of any kind. In the third group, selection of cases is essential to the treatment advocated. An analysis of the cases is given in Tables I-III.

Group I Acute Osteomyelitis (31 cases)

Pathology

Age distribution—Sixteen were infants less than 1 year old, the others ranged up to 12 years. **Site of infection**—The lesions were in the long bones in 23 cases, other sites being the external cuneiform, the frontal bone, the sternum, and the maxilla—a curiously common site in infants. **Complications prior to penicillin treatment**—In four cases the infection spread from the bone to a neighbouring joint, causing a purulent arthritis. Soft-tissue abscesses occurred in 12 and septicaemia in three cases. Pneumonia preceded bone disease in three cases, otitis media and mastoiditis occurred in two cases, and femoral thrombosis in one case. **Duration of disease before admission**—Nineteen cases were of less than one week's standing, 8 up to four weeks, and 3 up to eight weeks.

Bacteriology—Coagulase-positive *Staphylococcus aureus* was grown from the blood stream in two cases, and from abscesses or joints in 12 cases. Haemolytic streptococcus was isolated from blood culture in one case and from abscesses or joints in three cases. Coagulase-negative *Staph. albus* was grown from an abscess in one case. All the micro-organisms isolated from these cases were highly penicillin-sensitive. In Case 5, however, a strain of haemolytic streptococcus, Lancefield group A, was ten times less sensitive than the standard Oxford strain of *Staph. aureus*. The child has made a complete recovery on the standard dosage of penicillin.

Radiology—Changes in the x-ray picture are not to be expected before the tenth to fourteenth day. Their extent varies greatly, mainly according to the time at which penicillin treatment is begun. As changes may be very slight, radiographs of the sound limb are essential for comparison. The earliest detectable change is loss of definition of the trabeculi or rarefaction of the affected bone. This may be accompanied or followed by the laying down of thin streaks of new bone outside the normal line of the periosteum. The changes may proceed no further and the bone return

to normal. On the other hand, very severe degrees of bony disorganization were seen, including in six cases the formation of apparent sequestra (see cases 8, 9, 12, 14, 17, 26). The severity of the radiological changes was out of all proportion to the clinical appearances and bacteriological findings. One point which has particularly impressed us is how these appearances will clear up completely without drastic surgery. It seems to us that these early radiological changes show disorganization of calcium deposition in a living bone rather than the actual death of that bone. There is need for further study of this most interesting point. In only one case (14) was a sequestrum removed. This was a particularly well defined and large one which occurred in the tibia after an infected intramedullary infusion. It was therefore not a typical case of osteomyelitis.

It should be noted, as regards both radiological and bacteriological evidence, that the abortive action of penicillin is so great that a diagnosis made on purely clinical grounds may never be confirmed in any other way.

Treatment

Penicillin Therapy—Treatment was begun immediately after collection of bacteriological specimens without waiting for reports. The dosage was 1,000 units per lb (454 g) body weight per twenty-four hours, given by intramuscular injection every four hours. In two cases this amount was doubled with no difference in the result. We consider that the safest course is to continue this treatment for at least three weeks, although in many of our cases it lasted for no more than a fortnight. Occasionally sterilization of the bone lesion may take nearly three weeks.

Surgical Treatment—An affected limb was immobilized in plaster in such a way that inspection of the affected region and aspiration could be easily performed. Immobilization was not prolonged much beyond the period of penicillin treatment, and movement was encouraged as soon as it was painless even in cases with marked radiological changes. In arthritis of the shoulder-joint the arm was merely bandaged to the side. Where our treatment differed from that generally followed was in 13 cases in which pus formed outside the infected bone. In all of these the pus was aspirated at intervals governed by the rate of re-forming pus. In most cases the aspiration was daily for the first few days, and after that at longer intervals when fluctuation could be detected. When pus was aspirated it was always replaced by injecting penicillin in a dose of 2,000 to 5,000 units. It is possible that this injection is unnecessary, but we feel that it can do no harm, and it appears reasonable to suppose that it may sterilize the cavity more rapidly than systemic penicillin alone.

In all cases—we must admit at first to our considerable surprise—pus finally ceased to form and healing was complete without sinus formation. The advantages of this conservative treatment are very great. It avoids that disastrous change in the outlook of the case which occurs when a single infection, controllable because penicillin-sensitive, becomes complicated by non-sensitive organisms. These secondary infections may come from anywhere, but two sources are impossible to eliminate when there is an open wound. The first is the skin, in which resistant organisms tend to develop under penicillin treatment. The second is the bowel, containing coliform bacilli, faecal streptococci and other insusceptible bacteria. Contamination from minute quantities of faecal material is unavoidable in certain situations, particularly in infants.

Results

Immediate clinical results were most striking. Many of these children were admitted in great pain, with high

TABLE I—Acute Osteomyelitis

Case No	Age	Bone Lesions	Symptoms and Signs	Complications	Time Ill	Follow up Time	Bacteriology		Surgical Treatment	Penicillin				Functional Result	Radiology
							Blood Cult	Local		Systemic	Local	Total Dose (units)	Time		
1	5 mths	R femur neck	Pain on movement of R hip	Diarrhoea and vomiting	11 days	1 yr	Neg	None	Lorenz plaster Hip	30 days	None	540 000	30 days	Perfect	Large cavity upper end R femur. Now normal
2	4 wks	R femur neck	T 102° F (38.9°C) Fractured, hot swelling R leg for 3 days	Soft tissue abscess	3 days	2 yrs		Staph aur coag pos	Aspirations 6 times	6 days	None	54 000	6 days		Periosteal elevation. Now normal
3	2½ yrs	L femur neck	Diarrhoea 2 weeks	None	3 days	1 yr		None	None	14 days	None	420 000	14 days		Periosteal elevation. Now normal
4	6 wks	R femur neck	T 100.4° F (38.5°C) Tender swelling below R knee R ankle	Soft tissue abscess	6 days	19 mths		Staph aur coag pos	Immobilization	9 days	None	360 000	9 days		Considerable bone destruction and periostitis of shaft. Now solid new bone
5	7 wks	Head of L humerus	Inflamed Pseudopneumonia L arm 4 weeks T 99° F (37.2°C)	Arthritis L shoulder	4 wks	13 mths		Haem strep Group A	Aspirations of joint 8 times	14 days	None	168 000	14 days		1 rosin head of humerus. Now delay of epiphyses development
6	6 yrs	L tibia lower end	T 104° F (40°C) Very ill Tender L ankle Limp	None	2 days	18 mths		None	Immobilization	10 days	None	400 000	10 days		Periosteal elevation Bone destruction. Now normal
7	10 wks	L tibia mid lower end	T 100° F (37.8°C) L leg hot, tender, swollen	Abscess R side of chest	1 wk	22 mths				13 days		156 000	13 days		Periostitis and bone destruction. Now normal
8	9 yrs	L tibia lower end	T 102° F (38.9°C) Swelling Diarrhoea Pain L leg	Soft tissue abscess	6 days	14 mths		Staph aur coag pos	Immobilization Aspirations 11 times	24 days		2 116 000	24 days		Periosteal elevation. Much bone destr of shaft Sequelae not evident
9	7 yrs	L tibia upper end	Pain L leg Feverish		2 wks	18 mths	None		Immobilization Aspiration	14 days	None	420 000	14 days		Regeneration Carrying L tibia up and Sequelae. Much improvement
10	2½ yrs	L femur neck	T 105° F (40.6°C) Swelling Rigors Semicoma Pain L leg	Femoral thrombosis	4 days	2½ yrs		None	Immobilization	8 days		320 000	8 days		Slight periosteal elevation. Now normal
11	10 mths	L ankle	Cold 2 weeks Hot swollen very tender L ankle T 102° F	R otitis media septicaemia	1 day	13 mths	Staph aur coag pos		Immobilization	21 days		630 000	21 days		No disease of bone seen
12	3 mths	L tibia	Cellulitis after marrow drip for D & V and pyelitis General condition poor T 102° F	Cellulitis pneumonia septicaemia	1 mth	2½ yrs		Staph aur coag pos	Immobilization Abscess incised	8 days		112 000	8 days		Central bone cavity. Periostitis. Small sequestrum. Now normal. No difference L and R
13	7 mths	M. tibia	Swollen face & L eye 4 days Discharge from mouth T 104° F (40°C) Diarrhoea	Local abscess	4 days	19 mths	Neg		Aspirations twice	15 days		264 000	15 days		No definite bone change at this age
14	9 mths	Both tibiae	Tibial marrow drips for pyelitis and D & V Very ill	Soft tissue abscess Fracture	10 days	22 mths			Immobilization Sequestrectomy	32 days	None	600 000	32 days		Periostitis Bone necrosis tibia. Now sequestrum L
15	11 mths	L femur neck	T 104° F Swinging Tender L thigh Frequent	Supp arthritis L hip Septicaemia	5 days	17 mths	Haem strep Group A	Haem strep Group A	Immobilization Aspirations 9 times Bone drilled	14 days		420 000	14 days	Ankylosis L hip	L epiphysis not visible Bone necrosis neck of femur. Now L hip joint ankylosed
16	2½ yrs	R ext. cuneiform L tibia lower end	Dorsum R foot swollen, tender Pain L leg Hot tender swelling L leg & ankle T 102.6° F (39.2°C)	None	7 days	15 mths	None	None	Immobilization	11 days	None	260 000	11 days	Perfect	Bone destruction R ext cuneiform. Now normal
17	2½ yrs	L femur neck	T 101.2° F (38.4°C) Aching pain L fibula Bronchitis Rigors Diarrhoea Very bad pain & tender swelling L ankle	Soft tissue abscess	5 days	1 yr	Neg	Staph aur coag pos	Immobilization Aspirations 9 times	35 days		2 100 000	35 days		Considerable bone destr with sequestration & periostitis. Now sclerosis
18	7 mths	R ulna	Fusiform swelling R ulna T 102° F	None	3 days	14 mths		None	Immobilization	10 days	None	300 000	10 days		Sequestrum now longer seen Widening upper end of R ulna. Now no abnormality
19	7 mths	R ankle	R ankle swollen tender T 101.2° F (38.4°C)		1 day	1 yr		Staph aur coag pos	Immobilization	11 days		200 000	11 days		No definite bone disease
20	11 yrs	L fibula			6 wks	13 mths	None			8 days		490 000	8 days		Periosteal thickening L fibula
21	10 yrs	L tibia lower end			3 days	7 mths	Neg	Neg	Immobilization Aspiration	21 days		1 280 000	21 days		Periosteal elevation and loss of bone structure. Small cavity in shaft. Now slight sclerosis

TABLE I—*Acute Osteomyelitis (continued)*

Case No	Age	Bone Lesions	Symptoms and Signs	Complications	Time Ill	Follow-up Time	Bacteriology		Surgical Treatment	Penicillin		Functional Result	Radiology
							Blood Cult	Local		Systemic	Local		
										Time	Total Dose (units)	Time	Total Dose (units)
22	9 mths	Maxilla	T 104° F Fluctuant swelling hard palate Discharge L eye	Abscess of palate	2 days	0	None	Staph aure coag pos	Abscess incised	14 days	250 000		None
23	6 yrs	Frontal bone	Tender swelling of face and forehead Headache	Otitis media	2 wks	5 mths		None	None	16 days	576 000		
24	5 yrs	L tibia	Swelling L foot at 1 week Swelling over sternum	Abscess over sternum	4 wks	7 mths		Staph aure coag pos	Aspirations twice	21 days	250 000	2 days	2 000
25	3 mths	Sternum	Discharge L eye and nostril Swelling L palate Listless	Cellulitis of face	2 days	9 mths		None	Abscess incised	15 days	450 000		None
26	4 yrs	L humerus	Pain swelling L shoulder Very ill T 102° F Rigors	None	1 wk	9 mths	Neg	None	Immobilization	9 days	540 000		Cavity upper end L humerus Suspected sequestration Now normal
27	11½ yrs	L tibia	Very tender swelling L lower leg		2 mths	7 mths	None			21 days	1 500 000		Perosteal new bone & small cavity Now sclerosed Small round transitory cavities and new bone formation Now no evidence of bone destruction or sequestration
28	2 yrs	R tibia	Swelling R leg after measles T 100° F		6 wks	8 mths		Neg	Immobilization Aspiration	21 days	630 000		No definite bone lesion at this age Osteitis of epiphysis L tibia Now normal
29	4 mths	Navilla	Discharge from eye nostril and palate	Boils on hard palate	4 days	10 mths	Neg	Staph aure coag pos	None	13 days	195 000		Defect upper end L humerus Subluxation of L hip
30	4½ yrs	L tibia epiphysis	Painful swelling L knee T 100° F	Supp arthritis L knee after otitis media and puer monarthral L hip	4 days	1 yr	None	Haem strep	Immobilization Aspiration	10 days	600 000	1 day	4 000
31	5 wks	L humerus upper end (head) L femur (head)	Tooth extracted at 1 week Then septic gum 1 week later L hip and shoulder swollen Septic umbilicus Diarrhoea Snuffles	Supp arthritis L shoulder Subluxation (con genital) of L hip	3 wks	10 mths	Neg	Staph albus coag neg	Abduction & extension of legs L arm splinted Aspirations 3 times	21 days	250 000	6 days	12 000

TABLE II—*Acute Suppurative Arthritis*

Case No	Age	Bone Lesions	Symptoms and Signs	Complications	Time Ill	Follow-up Time	Bacteriology		Surgical Treatment	Penicillin		Functional Result	Radiology
							Blood Cult	Local		Systemic	Local		
										Time	Total Dose (units)	Time	Total Dose (units)
32	18 days	?	Loss of movement R arm for 1 week R shoulder red swollen T 99.6° F (37.5° C)	Supp arthritis R shoulder Pneumonia Septicemia	1 wk	21 mths	Staph aure coag pos	Staph aure coag pos	Aspirations 15 times	10 days	81 000	18 days	28 000
33	5 wks	?	Swelling R shoulder 7 after misplaced capitation inf T 103° F (39.4° C)	Supp arthritis R shoulder	1 dy	23 mths	Neg		Immobilization Aspirations 4 times	5 days	15 000	7 days	12 000
34	10 yrs	?	T 104.2° F (40.1° C) Abdominal pain and vomiting Swelling R elbow	Supp arthritis R elbow mastoiditis	5 days	11 mths	None	Haem strep	Immobilization Aspirations twice	16 days	960 000	2 days	40 000
35	2 yrs	?	Meningococcal meningitis Joints swelled up during penicillin treatment	Supp arthritis R knee and both elbows	1 wk	6 mths	"	Neg	Immobilization Aspirations 3 times	16 days	480 000	1 day	15 000

Widening of joint space No bone disease Now normal epiphysis
No bone lesion

TABLE III—Chronic Osteomyelitis

Case No	Age	Bone Lesions	Symptoms and Signs	Complications	Time Ill	Follow up Time	Bacteriology		Penicillin				Functional Result	Radiology
							Blood Cult	Local	Systemic	Local	Systemic	Systemic		
									Time	Total Dose (units)	Time	Total Dose (units)		
36	11 wks	L 7th and 8th ribs	Discharging sinus in chest for 4 weeks. No constitutional upset	Discharging sinus	4 wks	14 mths	Neg	Staph aureus coagulans	14 days	200 000	14 days	10 000 at op	Perfect	Bone destruction L 7th and 8th ribs. Now 8th rib regenerated. No evidence of bone destruction
37	4 mths	R 10th rib	Big abscess on back T 10 th F. Six days penicillin only. No bone lesion, then sinus formation followed		5 wks	20 mths	.		13 days	210 000	13 days	3 000 at op		Bone destruction R 10th rib. Now some regeneration
38	10 yrs	R os calcis	Limp for 6 mths. Swelling R heel and pain	None	6 mths	14 mths			10 days	640 000	10 days	10 000 at op	Perfect	Bone destruction R os calcis and sequestration. Now considerable regeneration
39	1½ yrs	L 6th rib	At 4 mths abscess L breast opened. Discharged for 2 mths. Now painful fluctuant swelling below L nipple for 2 wks	Abscess	14 mths	9 mths			11 days	330 000	11 days	10 000 at op	Perfect	Bone destruction L 6th rib. Now considerable regeneration
40	5 yrs	L ilium and L tibia	Acute osteomyelitis L tibia 2 yrs ago treated with penicillin and active surgery 1 month later pneumothorax & abscess L hip treated surgically. No penicillin. Progressed to chronic osteomyelitis	Pneumothorax abscesses and sinuses	2 yrs	2½ yrs	None	(1) Tibia explored in acute stage (2) Abscess L hip incised (3) Brodie's abscess scooped (4) Sinuses explored of L ilium	10 days	1 600 000	10 days	None	Wound healed by first intention	Centrally L tibia; bone destruction L ilium. Hip subluxation. Now Tibia atrophy at distal end. Active abscess. Defect of crest healed. Left hip joint disorganized

temperatures, and some in a comatose state which before penicillin was a sign of grave danger to life. Within forty-eight hours, as a rule, the children were happy again, playing, sleeping, and eating well. Soft-tissue swellings, without the formation of pus, usually subsided in four or five days.

Bacteriological Results—The blood when infected was sterilized in four to seven days. The cavities of abscesses and infected joints were sterile in less than three weeks in all cases.

Functional results were perfect in all cases but one. Full movement and power in the affected limbs were obtained in from five weeks to five months, according to the severity of the condition. There have been no recurrences and metastases of the kind so common formerly. The one unsatisfactory case points a moral, as the treatment advised was not properly applied. Case 15 received at first only a seven-day course of penicillin, and the hip, though suspected, was not aspirated. After transient improvement the blood culture became positive again and the child gravely ill. Aspiration of the joint with a full course of penicillin cured the infection, but the hip was damaged beyond recovery and is now ankylosed.

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Treatment—All these four cases were treated by conventional methods of aspiration and replacement by penicillin. A point of interest was the use in two cases of two needles, saline solution being injected through one to thin out unduly thick pus, which escaped by the other. There was no attempt at prolonged fixation or extension, the child being allowed to use the limb when it wanted to.

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Treatment—The infected bone was exposed and completely removed, taking with it a margin of healthy bone. All granulations were carefully scraped away and penicillin in solution or powder instilled. The wound was then sewn up completely, with the idea of avoiding contamination by penicillin-resistant organisms. Firm pressure was applied to it by means of an "elastoplast" dressing, and it was left untouched for a fortnight. There was no attempt to obliterate the cavity of the wound if this was difficult to do, the idea being to get healing by organization of a blood-clot sterilized by penicillin. Healing of this kind was obtained

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REFRIGERATION ANAESTHESIA

BY

E. S. R. HUGHES, MD, MS, FRCS

Refrigeration anaesthesia for limb amputations was introduced into the Royal Melbourne Hospital towards the end of 1944. Since then 25 lower-limb amputations have been performed with the aid of this technique, and they are here reported. With one exception all the amputations have been through the lower third of the thigh. It is not possible to reduce results fairly to statistical form owing to the diverse nature of the patients' condition. In the table the predominant constitutional factor has been indicated as either "atherosclerosis" or "diabetes mellitus". Some of the former group have had accompanying cardiac failure, renal failure, or cerebral degeneration, some of the latter group have been admitted in a coma or semicoma, and all have had atherosclerosis to a varying degree.

The local condition that required amputation has varied, most frequently it was progressive gangrene of the foot or gangrene complicated by severe pain or infection. In addition there were two cases of popliteal thrombosis accompanied by severe pain, two cases of gross infection of ulcers of the leg causing deterioration of the general condition of the patient despite conservative measures, two cases with epithelioma of the leg, one of which was severely infected and had metastatic glands in the groin, and the other equally badly infected and complicated by a pathological compound fracture of the tibia and fibula, finally, there was one case of a mangled foot in a shocked patient aged 69 years.

Technique

The simplest technique has been used throughout this series; the more elaborate and costly apparatus employed by some clinics abroad has not been available.

The Ice—The ice has been procured from a city firm in 50-lb (22.68-kg) bags. It is already crushed when delivered, though sometimes the pieces have to be broken further before use. When packing a limb it was found that ice obtained on the previous day and kept at room temperature overnight was easier to handle than that obtained on the same day, because the sharp edges had become rounded off.

The Apparatus—Two methods have been used to retain the ice in position: a wooden box 40 by 10 by 10 in (100 by 25 by 25 cm) lined with galvanized-iron sheeting and drained at one corner, or two Mackintoshes held in position by long stout calico bandages or by a reversed single-limb cradle. Two bags of ice are required initially, and one or two daily for maintenance in cases of prolonged refrigeration.

The Procedure

There are three main sources of infection—the patient, the ice, and the surgeon and his staff. The ice cannot be sterilized, but by adopting the usual procedures with the patient and the operating team the danger of infection is lessened. The limb and pubic region are shaved and the patient is placed on a canvas sheet. The abdomen and affected leg are given the routine pre-operative preparation and covered with sterile towels, the limb is then ready for the application of the tourniquet and placing in the ice.

The tourniquet is not an essential requirement at any stage of the procedure and may be dispensed with altogether. A tourniquet—of soft rubber pressure-tubing—has been used here for reasons given below. The tourniquet is first sterilized either by autoclaving or by boiling. The former method is preferable as a firmer grip may be obtained on the dry tourniquet. After the operator has scrubbed and the limb has been elevated, the sterile tourniquet is applied as tightly as possible just above the site of proposed amputation. It may be held with a reef knot, with sterile Kocher's clamps or with sponge forceps. Occasionally the tourniquet has snapped some time after the application, hence it is wise to inspect it regularly.

TABLE III—Chronic Osteomyelitis

Case No.	Age	Bone Lesions	Symptoms and Signs	Complications	Time Ill	Follow up Time	Bacteriology		Surgical Treatment	Penicillin				Functional Result	Radiology
							Blood Cult	Local		Systemic	Local	Total Dose (units)	Time		
36	11 wks	L 7th and 8th ribs	Discharging sinus in chest for 4 weeks. No constitutional upset	Discharging sinus	4 wks	14 mths	Neg	Staph aureus cong pos	Resection 8th rib Primary suture	200 000	14 days	10 000 at op	10 days	Perfect	Bone destruction L 7th and 8th ribs. Now 8th rib resected. No evidence of bone destruction
37	4 mths	R 10th rib	Bug abscess on back T 10 th F Six days penicillin only. No bone lesion then Sinus formation followed	None	5 wks	20 mths			Large sequestrum removed Primary suture	210 000	13 days	3 000 at op			Bone destruction R 10th rib. Now some regeneration
38	10 yrs	R os calcis	Lump for 6 mths. Swelling R heel and pain	None	6 mths	14 mths			Sequestrum removed Primary suture & cyliether tied in	640 000	10 days	10 000 at op	10 days	Perfect	Bone destruction R os calcis and sequestration. Now considerable regeneration
39	1½ yrs	L 6th rib	At 4 mths abscess L breast opened. Discharged for 2 mths. Now painful fluctuant swelling below L nipple for 2 wks	Abscess	14 mths	9 mths			Excision of L 6th rib	330 000	11 days	10 000 at op		Wound healed by first intention	Bone destruction L 6th rib. Now considerable regeneration
40	5 yrs	L ilium and L tibia	Acute osteomyelitis L tibia 2 yrs ago treated with penicillin and active surgery 1 month later pneumothorax & abscess L hip treated surgically no penicillin. Progressed to chronic osteomyelitis	Pneumothorax abscesses and sinuses	2 yrs	2½ yrs	None		(1) Tibia explored in acute stage (2) Abscess L hip incised (3) Brodie's abscess scooped (4) Sinuses explored Partial excision of L ilium	1 600 000	10 days	None	10 days	Wound healed by first intention. Walking at op	Contralateral L tibia. Bone destruction L ilium. Hip atrophy of distal humerus. No active disease. Healed. Pelvic crest healed. Left hip joint disorganized
						10 mths				675 000	19 days	200 000 at op			

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Refrigeration anaesthesia for limb amputations was introduced into the Royal Melbourne Hospital towards the end of 1944. Since then 25 lower-limb amputations have been performed with the aid of this technique, and they are here reported. With one exception all the amputations have been through the lower third of the thigh. It is not possible to reduce results fairly to statistical form owing to the diverse nature of the patients' condition. In the table the predominant constitutional factor has been indicated as either "atherosclerosis" or "diabetes mellitus". Some of the former group have had accompanying cardiac failure, renal failure, or cerebral degeneration, some of the latter group have been admitted in a coma or semicoma, and all have had atherosclerosis to a varying degree.

The local condition that required amputation has varied, most frequently it was progressive gangrene of the foot or gangrene complicated by severe pain or infection. In addition there were two cases of popliteal thrombosis accompanied by severe pain, two cases of gross infection of ulcers of the leg causing deterioration of the general condition of the patient despite conservative measures, two cases with epithelioma of the leg, one of which was severely infected and had metastatic glands in the groin, and the other equally badly infected and complicated by a pathological compound fracture of the tibia and fibula, finally, there was one case of a mangled foot in a shocked patient aged 69 years.

Technique

The simplest technique has been used throughout this series; the more elaborate and costly apparatus employed by some clinics abroad has not been available.

The Ice—The ice has been procured from a city firm in 50-lb (22.68-kg) bags. It is already crushed when delivered, though sometimes the pieces have to be broken further before use. When packing a limb it was found that ice obtained on the previous day and kept at room temperature overnight was easier to handle than that obtained on the same day, because the sharp edges had become rounded off.

The Apparatus—Two methods have been used to retain the ice in position: a wooden box 40 by 10 by 10 in (100 by 25 by 25 cm) lined with galvanized-iron sheeting and drained at one corner, or two mackintoshes held in position by long stout calico bandages or by a reversed single limb cradle. Two bags of ice are required initially, and one or two daily for maintenance in cases of prolonged refrigeration.

The Procedure

There are three main sources of infection—the patient, the ice, and the surgeon and his staff. The ice cannot be sterilized, but by adopting the usual procedures with the patient and the operating team the danger of infection is lessened. The limb and pubic region are shaved and the patient is placed on a canvas sheet. The abdomen and affected leg are given the routine pre-operative preparation and covered with sterile towels, the limb is then ready for the application of the tourniquet and placing in the ice.

The tourniquet is not an essential requirement at any stage of the procedure and may be dispensed with altogether. A tourniquet—of soft rubber pressure tubing—has been used here for reasons given below. The tourniquet is first sterilized either by autoclaving or by boiling. The former method is preferable as a firmer grip may be obtained on the dry tourniquet. After the operator has scrubbed and the limb has been elevated, the sterile tourniquet is applied as tightly as possible just above the site of proposed amputation. It may be held with a reef knot, with sterile Kocher's clamps or with sponge forceps. Occasionally the tourniquet has snapped some time after the application, hence it is wise to inspect it regularly.

A bed of crushed ice about 4 in (10 cm) deep is made, extending from above the tourniquet site to beyond the foot. To ease the pain of the tourniquet application it is advisable to keep the leg encased in ice for a period of an hour before hand, in such circumstances the leg is lifted clear of the ice the tourniquet is applied, and the leg is lowered again and covered with ice. The head of the bed is raised on blocks to assist drainage of the ice. The patient is made comfortable and the rest of the body is kept warm. The period of time for which the limb is refrigerated depends on the relation of the local lesion to the general condition of the patient, if the former be the cause of depression of the latter, then by cooling the lesion to the approximate level of 5°C at which level metabolism is minimal, it becomes physiologically disconnected

operating table with the ice still in position, the surgeon and his team have scrubbed and are ready. A large canvas accommodated on a wheeled stand is moved to the foot of the table. The leg is elevated above the ice and the little swept into the canvas bag. The towels around the leg are removed, the area is given a final preparation by the surgeon and the operation proceeds as in cases with the usual forms of anaesthesia. To secure complete haemostasis the tourniquet is left in position until the surgeon orders its removal. There is no need to hurry through the operation, as good anaesthesia persists for an hour or more.

Certain special features of the post-operative period may be noted. The absence of any primary shock despite the fact that the patient remains fully conscious of his surroundings permits

Details of 25 Limb Amputations in which Refrigeration Anaesthesia was used

Case No	Age	Sex	General Condition	Local Condition	Remarks	Duration of Refrigeration	Result
1	60	M	Atherosclerosis	Gangrenous foot continued spread	Auricular fibrillation	3 hours	Discharged 4 months after operation. Gas gangrene second post-operative day.
2	83	M		Gangrenous foot severe infection	—	6 days	Discharged 5 weeks after operation. Convalescence uneventful.
3	78	M		Huge infected ulcer of leg	Amputation of other leg 6 years previously	4	Death 12 days after operation. Bronchopneumonia.
4	70	M		Gangrenous foot intractable pain	Cerebral degeneration	3	Discharged 8 weeks after operation. Mild secondary shock wound infection.
5	85	M		Gangrenous foot intractable pain	—	3 hours	Death 5 days after operation. Severe secondary shock followed by bronchopneumonia.
6	67	F		Grossly infected ulcers of leg	Nephrectomy 10 years before. Poor renal function.	10 days	Death 8 days after operation. Renal failure.
7	65	M		Gangrenous foot severe infection	—	7	Death 17 days after operation. Severe septic stump.
8	88	M		Gangrenous foot continued spread	Cardiac failure	7	Death 8 days after operation. Renal failure.
9	78	M		Gangrenous foot intractable pain	Paralysis agitans	6	Death 24 hours after operation. Cause undetermined.
10	73	M		Popliteal thrombosis	Advanced cardiac failure	7	Death 14 days after operation. Cardiac failure bronchopneumonia.
11	78	F	Diabetes mellitus	Gangrenous foot severe infection and pain	—	8	Death 2 days after operation. Bronchopneumonia.
12	74	F		Gangrenous foot continued spread	—	4	Discharged 4 weeks after operation. Convalescence uneventful.
13	73	F	Atherosclerosis	Epithelioma of leg severe infection	—	3 hours	Discharged 4 weeks after operation. Convalescence uneventful.
14	63	F		Gangrenous foot severe infection	Diabetes mellitus suspected	3	Death 9 weeks after operation. Cardiac failure, stump healed.
15	80	F	Diabetes mellitus	Gangrenous foot severe infection	—	3 days	Discharged 8 weeks after operation. Mild secondary shock and wound infection.
16	78	F		Gangrenous foot continued spread	Carcinoma of common bile duct and metastasis in liver jaundice	3 hours	Death 4 weeks after operation. Stump healed.
17	56	F		Gangrenous foot severe infection	Coma	3	Death 6 days after operation. Remained moribund bronchopneumonia.
18	68	F		Popliteal thrombosis	—	3	Discharged 5 weeks after operation. Convalescence uneventful.
19	73	F	Atherosclerosis	Gangrenous foot intractable pain	Cerebral degeneration	3	Death 3 weeks after operation. Cerebral thrombosis stump healed.
20	69	F	Diabetes mellitus	Gangrenous foot severe infection	Semicoma	9 days	Discharged 6 weeks after operation. Convalescence uneventful.
21	74	F	Atherosclerosis	Epithelioma of leg severe infection	Marked debility	3 hours	Discharged 8 weeks after operation. Convalescence uneventful.
22	76	F		Gangrenous foot severe infection and pain	—	2 days	Discharged 5 weeks after operation. Convalescence uneventful.
23	59	F	Diabetes mellitus	Gangrenous foot severe infection	Semicoma	3	To be discharged. Convalescence uneventful.
24	75	F		Gangrenous foot severe infection	—	24 hours	To be discharged. Convalescence uneventful.
25	69	M	Atherosclerosis	Mangled foot	Shock	3	Discharged 10 weeks after operation. Wound infection.

from the body. Therefore if the patient is suffering from severe pain or from toxæmia the affected area of the limb is refrigerated for several days without a tourniquet several hours before the operation, as in all other cases the refrigerated area is extended by increasing the amount of ice to just above the tourniquet level. The minimum time for which a limb may be safely refrigerated before operation varies from two to three hours.

It is not essential to give any pre-operative medication, but those who are apprehensive may have injections of morphine—1/8–1/4 gr (8–16 mg). In those cases of this series requiring such sedation the drug was given before the application of the tourniquet. The complete relief from a severe and persistent pain in the foot has been a most noticeable feature of refrigeration.

Transport to the theatre with the ice in position has not been difficult, as the patient and the ice-container have previously been placed above canvas. The patient is lifted on to the

him to continue his meals without interruption. Systemic sulphonamide therapy has been used in all cases post-operatively and has been a useful measure in avoiding or lessening local and pulmonary infections. A careful watch is maintained on the chest, a cold wet bed, so often seen in the pre-operative period, predisposes to infection. After amputation the stump may be kept cool with ice bags. This has not been done in the present series for two reasons: first, the results have seemed satisfactory without such cooling; secondly, a dry bed after operation is essential. A thick layer of cotton wool acts as a moderately satisfactory insulating dressing. Stitches have been removed from the wounds at the same time as after operation under the usual anaesthetics.

Complications

Shock—Primary shock did not occur, but secondary shock was not absolutely prevented, though it was minimized. It would probably have been still further decreased

f the post-operative cooling had been satisfactory in all cases. But it was found that ice without waterproof bags was difficult to handle even by the experienced individual, and post-operative cooling so often meant an icy-cold wet bed, with all its attendant disadvantages, that this step was omitted.

Bronchopneumonia—This was the cause of death of five patients. Wet sheets and blankets, caused by leakage from the ice despite elaborate precautions, were an important contributory factor. The most certain method of prevention is the use of ice-bags or electrically controlled apparatus in place of the bare ice. The ability of the patient to move about and sit upright in bed from the outset and to continue with nourishment has partially neutralized the effects of this unfortunate complicating wet bed.

Local Complications—Surrounding the limbs with ice has not caused pain. The tourniquet occasioned temporary discomfort in some who had not been previously cooled at the site of application. In all cases the operation has been performed painlessly, and post-operative pain in the stump has not been a feature. No delay was observed in the healing of the stump except when infection supervened. There was no evidence of any sloughing of the flaps despite amputation below a tourniquet in this series (Perlow, 1944). The incidence of infection in this series actually appeared to be lessened, so conforming with published results. In the first case gas-gangrene developed, but at the same time there was a case of similar infection in hospital which was also a sequel of an amputation, but not a refrigeration amputation. Refrigeration has not increased this form of infection despite fears to the contrary (Kirtz, 1944). Cultures were made from ten consecutive specimens of ice, but in no case were pathogenic bacilli isolated aerobically or anaerobically.

Miscellaneous Complications—Two cases are noted in the Table as resulting in death from renal failure. At necropsy both cases showed advanced renal disease of long duration. No ill effects were observed from the use of the tourniquet or cold temperatures. There were no cases of thrombosis or embolism, nor were there any cold sensitive stumps as might perhaps have been anticipated. The skin of the amputated leg sometimes showed slight scaling when refrigeration had been prolonged for some days, but only the most superficial of the epidermal layers were involved.

Discussion

Since the first large-scale trial of refrigeration anaesthesia in America in 1941 (Crossman *et al.* 1942) many independent clinical reports have been published abroad with a uniform expression of satisfaction at the reduction of mortality in poor-risk cases (Batalha, 1946, Cayford and Pretty, 1945, Hinchey, 1944, Lobachev, 1946, McElvenny, 1942, Massie, 1944, Mock and Mock, 1943, O'Neil, 1944, Richards, 1944, Yudin, 1945a, 1945b).

The very foundation of the technique is the application of cold temperatures with or without a tourniquet, and since these have been regarded with suspicion and disapproval a brief discussion is necessary.

The temperatures used in refrigeration anaesthesia are not freezing temperatures. They are never less than 0° C. The skin, by virtue of its capacity for supercooling, does not freeze unless the temperature is below -22° C (Lewis and Love, 1926, Lewis, 1941). Admittedly moisture on the skin reduces the degree of supercooling, but freezing never occurs at 0° C. Cooling the skin to 0° C, or even supercooling to a considerable extent, very rarely causes injury (Lewis and Love, 1926). Temperatures resulting in frost-bite are much lower than those used in refrigeration

anaesthesia (Lewis, 1941, Greene, 1941). Immersion-foot lesions have been reported in survivors adrift for several days in warm sea-water (White and Scoville, 1945). In these circumstances, however, the circulation and general resistance are depressed by starvation, exposure, and possibly other injuries. Cramped or dependent positions, tight clothing, or other local factors embarrass the circulation still further. Finally, the deleterious effects of moisture in the causation of thermal damage are implied in the term "immersion". In refrigeration anaesthesia the general condition is maintained throughout so far as is practicable, the circulation within the limb is either completely stopped or is maintained at maximum efficiency, the unfavourable effects of moisture have not been observed with cracked ice draining freely.

The tourniquet is not essential for adequate anaesthesia (Cayford and Pretty, 1945), but its employment is advised for the following reasons. (a) When the inflow of warm blood is stopped the tissues can be chilled thoroughly and rapidly. Radical lowering of the temperature in a limb is practically only obtainable with a tourniquet, unless there is gross pathological obstruction of the arteries. With the thorough reduction of the temperature that is possible with a tourniquet all protoplasmic activity is abolished, primary shock is non-existent in amputations on such limbs. (b) When the return flow of cold blood is stopped reflex vasoconstriction is prevented in various parts of the body. This might be harmful in cases of Buerger's disease and other conditions resulting in ischaemia to a part (Neller and Schmidt, 1944).

But the tourniquet is regarded with misgivings and its prolonged application with concern. The correctly applied tourniquet, however, is not as dangerous as believed (Allen, 1945c). The tourniquet that serves best is good soft rubber tubing (Allen, 1944), hard inelastic materials create trouble either through looseness or through crushing. In the leg, unlike the thin upper limb, very strong tension seems to cause no harm. The time factor has been greatly misjudged by surgeons in the past. Hinman (1945) has reviewed the factors that limit the duration of application. The most important of these are anoxia in the tissues distal to the tourniquet and shock on its removal. But the cold temperatures reduce to a minimum the oxygen requirements, and amputation of the distal tissues largely avoids the danger of shock (Allen, 1938, 1939, 1944, 1945a, 1945b, Allen *et al.*, 1942a, 1942b, 1943, Brooks and Duncan, 1940, Wilson and Roome, 1936).

The most convincing evidence, both experimental and practical, supports refrigeration as a valuable form of anaesthesia and as a sure means of excluding a constitutional depressant (Mock, 1946). However, I do not agree with those who claim that all patients to be subjected to amputation should be so anaesthetized (Crossman and Allen, 1946). Anaesthetists in England have attained a remarkably high standard, and few patients suffer from anaesthetics skilfully administered. Nevertheless it is submitted that there are certain bad-risk cases in which life can be saved by resort to this technique.

Summary

Twenty five consecutive cases of amputation under refrigeration anaesthesia are reported. The details of individual cases are provided in the Table.

The method used in this series is described. The simplest technique has been used.

Bronchopneumonia was the most frequent complication.

Recent opinions concerning the effects of cold temperatures and tourniquet application are discussed.

It is submitted that this method be reserved for certain bad risk cases.

I wish to express my gratitude to the Royal Melbourne Hospital Committee for permission to publish this series and to Mr J B Turner and Mr Paul Jones for allowing me to study their cases

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PRIMARY MALARIA IN LONDON CHILDREN

REPORT OF TWO CASES

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Two cases of primary malaria in London children have been discovered in one out-patient clinic within the space of a few months. They are reported now as a reminder of the necessity for keeping this diagnosis in mind when confronted with cases of unexplained fever in children who have never been out of this country

Case 1

A girl aged 6 attended the Victoria Hospital for Children as an out patient on May 9, 1946, with a history of loss of appetite and a heavy head cold for one week, nocturnal delirium for 48 hours, and vomiting fever, and headache for 24 hours. At the time of examination a severe rigor was taking place the oral temperature was 102° F (38.9° C), but there were no other abnormal physical signs. She was admitted to hospital immediately. Her temperature remained about 100° F (37.8° C) for the first 48 hours after admission, then fell to normal for 12 hours and thereafter showed spikes of 100°–104° F (37.8–40° C) on alternate days each rise occurred between 1 and 8 p.m. and was preceded by a rigor lasting about half an hour. She complained of frontal headache and became confused at the height of each paroxysm. Between attacks her temperature was normal and she was alert and well. At first all investigations including three thin blood films, proved negative. The spleen tip became palpable on May 24. Quinine sul-

phate, 15 gr (1 g) daily, was started empirically the same day and the pyrexia ceased at once. Quinine was discontinued after 10 days but on June 6 coincident with another rigor and a pyrexia of 104° F, many benign tertian ring forms were demonstrated for the first time in a thin blood film. Quinine bihydrochloride, 12 gr (0.8 g) daily, with pamaquin, 15 mg daily, was given for another ten days. Progress was uneventful apart from one sharp rise of temperature on June 12. A blood film on the 14th showed many red cells containing Schüffners dots, but no parasites were seen then or thereafter. The spleen could not be felt after June 10. After two more courses of quinine, the patient returned home on Aug 15 and remained symptom-free until Dec 10, when her original symptoms were repeated. On Dec 17 she was readmitted to hospital. A course of quinine and pamaquin was administered, and she has since continued free from symptoms.

Her past medical history revealed nothing of importance. The father, a Cypriot, came to England from Cyprus 15 years ago, and is now a waiter in London. The mother has never been out of England. Both parents and two siblings are well. No history of malaria was ascertained. There has been no contact with any relative from overseas. The patient remained in Worcestershire from infancy until September, 1945 (during the war there was a large American military camp near her dwelling place) went to Welling, Kent, for six months, and then moved to Pimlico, where the family now live.

The medical officer of health for the City of Westminster states that in the past year, apart from relapsed cases in military personnel treated in hospital, no other case of malaria has been reported to him.

Case 2

A boy aged 2 was seen as an out-patient at the Victoria Hospital for Children on Sept 26, 1946, with three weeks' history of a daily shivering attack between 1 and 5 p.m., not missing a single day. During these he was stated to be at first cold, blue, and shivering then burning hot, then sweating and, finally, half an hour later, quite well again, the whole attack lasting about three hours. There was no vomiting.

He was admitted to hospital immediately, and was afebrile. He was a well nourished child of 28 lb (12.7 kg), with shadowing under the eyes and a yellowish pallor of the skin. The spleen was palpable two fingerbreadths below the costal margin. There were no other abnormal physical signs. At 3 p.m. of the day of admission and on the day following he had a rigor the temperature rising to 103° F (39.4° C). A large number of benign tertian malarial ring forms were seen in a thin blood film on Sept 27. A blood count showed red cells, 3,000,000 per c mm, haemoglobin, 42%, white cells, 8,400 (polymorphs 50% lymphocytes, 45%, monocytes, 3%). He responded well to oral quinine and has had no recurrence since being discharged home on Oct 23.

The patient is an only child. The parents are separated neither has ever been abroad. The father was in the R.A.F. and was under investigation in 1941 for unexplained fever, he still has occasional fever, but has refused to allow examination of a blood film. Father and child were in close contact during the first six months of 1946. Apart from a grandfather who had malaria in 1918 without subsequent relapse, there is no known contact with a malarial case. His only previous illness was bronchitis. He was born in Scarborough and was taken to London when 2 weeks old, to Bristol when he was 6 weeks and back to London in October, 1945. Since then he has lived in Chelsea, apart from a visit in August 1946 to the Isle of Sheppey, where the whole family were severely bitten by mosquitoes.

The medical officer of health for Chelsea states that no other case of primary malaria has been reported in his area during 1946 and the medical officer of health for the Isle of Sheppey gives the same report. Anopheline mosquitoes however are known to be present in the Isle of Sheppey.

Discussion

Unfortunately the source of infection is not absolutely clear in either case. It seems unlikely that primary malaria would remain symptomless for more than a week or two in a child in England. Therefore infection must have occurred

within a few weeks of the first symptoms, unless the attacks were relapses of an undetected primary infection months or years before. In neither history is there any suggestive record of undiagnosed fever. Case 1 had moved from Kent to London eight weeks before developing symptoms. The only known contact with potentially malarial subjects ended six months before that, when she left the neighbourhood of the American military camp, but no symptoms were noticed during or shortly after that period. It is most probable that she was bitten in Welling, Kent, by an anopheline mosquito infected by a Service case from overseas.

Case 2 must similarly have contracted the infection either in the Isle of Sheppey in August or in Chelsea thereafter. While in the Isle of Sheppey he was known to have been bitten by mosquitoes, which could have been anopheline. It is possible that his father's bouts of fever are malarial, although he was never overseas, and, while unlikely, it would also be possible during a month's holiday for infection to be transferred to the child. The mother was also bitten, but apparently was not infected. It is more probable that the anophelines in the Isle of Sheppey acquired malaria parasites from a local resident infected overseas during the war. It is most unlikely that the infection in either case was contracted in London, where the density of population would lead to the recognition of more than one or two cases if infected mosquitoes existed in any area.

Although *Anopheles maculipennis* is widely distributed in Great Britain, indigenous malaria during this century has been confined almost entirely to the south-east seaboard of England and to the Thames Valley (Min Hith Memo, 1943). Towards the end of the 1914-18 war numerous cases of malaria occurred among children and adults who had never left this country. In 1919, 300 cases of indigenous malaria were notified, since then the numbers have fallen fairly steadily (7 cases in 1945), the largest number occurring in north-east Kent. In addition to the two cases described above, Dr P. G. Stock informs us that five other cases of indigenous malaria (all adults) were notified during 1946, including two from Oxford (Stevens and Blackman, 1946) and one from Kent. There is no record of primary malaria having been contracted in London for over 25 years.

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Medical Memoranda

Peptic Ulceration in Identical Twins

The literature relating to peptic ulceration in identical twins was reviewed by Riecker (1946) when he reported the occurrence of duodenal ulceration in 20-year-old identical female twins. He found no reference to any such cases before 1935, but since then Schindler (1935) has recorded the occurrence of gastric ulcer in 39-year-old identical twin brothers, and von Mentzingen (1935) and McHardy and Browne (1944) have reported cases of duodenal ulceration in 20-year-old identical female twins and 28-year-old identical male twins. The family history was not included in McHardy and Browne's report, but in the other three peptic ulceration was present in one or other parent.

A fifth case of peptic ulceration in 30-year-old identical male twins can now be added to the series. These twins were born on Sept. 8, 1916. The onset of symptoms in Case 1 was followed within a month by the death of the other from repeated haematemesis. When they were first examined there was no history of any gastro-intestinal disorders in either

parent or in the remaining nine siblings (six females, aged 34, 33, 26, 24, 21, and 19 years, and three males, aged 28, 23, and 18 years), all of whom were alive and well. Since then the two youngest members of the family have both complained of indigestion, and at the time of writing there is radiological evidence of duodenal ulcer in the youngest male. The evidence that these twins were identical is based on the fact that they were identical in appearance and that there was only one placenta.

CASE 1

The patient, a leading aircraftman, aged 30, had been in the R.A.F. for 4½ years, and was in medical category A1. He was admitted to hospital in Antwerp under my care on Oct. 1, 1946, with a six weeks history of abdominal pain. Following the death of his identical twin on Sept. 9, 1946, he became acutely depressed and anxious, and immediately experienced a pronounced intensification of his pre-existing symptoms. The pain was localized to the right upper quadrant of his abdomen, and did not radiate to any other site. It occurred at irregular intervals throughout each day, and not at any definite time after meals, and lasted on the average for one half to one hour. Of late it had become worse when hungry, being then relieved by food, and had awakened him between 2 and 4 a.m. The pain bore no relation to the quality of food taken, and was not associated with either nausea or vomiting. His appetite was poor, but he was not afraid to eat. He did not think that he had lost weight. He had taken no alkalis. At the time of onset of symptoms he passed three or four fluid stools daily for three days, but he had no fever, and, so far as he knew, the stools contained neither blood nor mucus. He had had no serious illnesses in the past. His occupation entailed regular meal-times. He smoked 10 to 15 cigarettes a day, and during the last few weeks had consumed some 6 to 7 pints (3.4 to 4 litres) of beer daily.

On examination he was co-operative and intelligent, yet he appeared tired and apathetic. The only abnormalities present were that all his premolars and molars were deficient, though no denture was worn, and examination revealed some localized rigidity and tenderness below the right costal margin, extending 1½ to 5 in (3.8 to 12.5 cm) from the midline. The red cell count was 4,130,000 per c.mm., haemoglobin, 92% (Haldane), and colour index, 1.11. The benzidine test for occult blood was positive on three consecutive examinations. A test meal showed a highly acid resting juice, with a rapid rise in the total and free acidity, and the presence of starch indicated a delay in emptying. A barium meal examination (Capt. W. N. Thompson) revealed that the stomach was orthotonic, with a moderate increase in the mucosal relief. The duodenum showed retraction (Åkerlund) deformity with a small crater on the antero-lateral wall of the cap.

CASE 2

The twin brother of Case 1 was admitted to the Royal Salop Infirmary, Shrewsbury, on Sept. 6, 1946, having recently been released from the R.A.F. after 3½ years service in the Middle East. For the last four or five years he had suffered from indigestion and attacks of mid-abdominal pain after meals. These attacks lasted on the average for six to seven weeks, and were then followed by long periods of complete freedom. During the 24 hours preceding admission he had complained of indigestion, had vomited food only on four occasions and had developed diarrhoea, passing jet-black stools.

On admission he felt very weak and thirsty. His mucous membranes were pale and his tongue moderately dry. The pulse rate was 112, and the blood pressure 115/70. There was an apical systolic murmur. The liver and spleen were not palpable. On Sept. 9 he vomited 57 oz (1.6 litre) of material which had the appearance of "coffee grounds," and he also had a large melaena. In spite of transfusions he died the same day. The cause of death was given as "haematemesis and melaena from a duodenal ulcer." Consent was not given for a necropsy.

I wish to thank Dr. A. D. Rope for allowing me to use the notes of one of his cases (Case 2), and Col. W. I. FitzGerald-Powell, late R.A.M.C., for permission to publish this report.

A. G. FREEMAN, MRCS, LRCP,
Late Captain R.A.M.C.

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The Australian Government has started a campaign against tuberculosis and appointed Dr. Harry Wenderly as Director of Tuberculosis. The Commonwealth Government has granted £250,000 for payment to sufferers from the disease and their dependants.

Reviews

FORENSIC MEDICINE

Rättsmedicin (Forensic medicine) By Einar Sjövall, J.D. M.D. (Pp 182, paper cover, 11 Swedish crowns, bound, 144 crowns, in Swedish) Stockholm Wahlstrom and Widstrand 1946

The author of this book is professor emeritus at Lund University and has over thirty years experience of his specialty. He has written not a textbook but a general survey of the scope problems, and methods of forensic medicine primarily for the legal profession. Though a knowledge of anatomy, physiology, and pathology is necessary for a full understanding of the specialty, he presents it in a simple manner, and medical students who like to get a bird's-eye view of a subject before reading standard textbooks will find it invaluable.

The book is distinguished by the author's high conception of forensic medicine in the service of justice, by his concentrating on the solution of problems by scientific methods, and by his freedom from the prudery and attitude of moral superiority occasionally seen in teachers of this subject. The topics discussed include professional secrecy, determination of the fact and time of death, identification, sudden death from natural causes and after treatment by quacks, the results of various forms of violence, death from physical agents, poisoning, sexual offences, abortion, and infanticide. There are no pictorial illustrations, but their absence is compensated for by numerous case-records, which are models of brevity and relevance. The author stresses the value of full collaboration between the medical expert and the police authorities, and draws attention to the importance of post-mortem examinations, since they often result in the exoneration of suspected persons.

Considerations arising from this book are that medical students might well confine themselves to learning general principles, much of the detailed knowledge now required for examinations being left for postgraduate study, that teachers of law and forensic medicine should regularly collaborate in the teaching of both medical and law students, and that one function of full-time professors of this specialty should be scholarly criticism of the law. An English translation of the book adapted to English law would be valuable.

R WHITEHEAD

INTRODUCTIONS TO FEVERS

The Acute Infectious Fevers. An Introduction for Students and Practitioners. By Alexander Joe M.D. F.R.C.P.ed., D.P.H., D.T.M.&H. (Pp 276, 64 illustrations 18s) London J and A Churchill 1947

Infectious Diseases. With Chapters on Venereal Diseases. By A. B. Christie M.D., D.P.H. (Pp 324 12s 6d) London Faber and Faber

Each of these new books on infectious disease serves a useful purpose—the first as a reliable handbook for students and practitioners, the other as the complete textbook for the nurse.

Clearly Dr. Joe has followed in the footsteps of his predecessor, Claude Ker, for his book is essentially an account of the clinical material that he has himself observed. This makes it more interesting and avoids the modern tendency to give a 'card-index' review of a subject, which, although valuable for reference, fails to satisfy the general reader.

The clinical descriptions are good though perhaps because of the personal emphasis we may dispute some of the interpretations. We should have liked to see for example, a more detailed account from the clinician's viewpoint of the streptococcal group of diseases. The author advises the early administration of antitoxin in the treatment of scarlet fever, but should he not stress that it can have little effect upon complications caused by direct extension of the infection from the throat? The use of serum in cases of septic scarlet fever seems illogical, for here we are dealing almost entirely with local streptococcal invasiveness. Again passive immunization with scarlet fever antitoxin may be of benefit in masking the effects of the erythrogenic component of the streptococcus, but tonsillitis may continue to spread among the immunized and so keep

active the streptococcal transference until passive immunity has waned. We are also surprised to find bronchopneumonia listed as the main serious lung complication in whooping-cough. Segmental or lobar absorption collapse undoubtedly accounts for many of the so-called pneumonias and is the more dangerous because of its possible after-effects. Further, a remarkable number of the lung complications are tuberculous in origin and the older clinicians' conception of this disease as a frequent sequela of whooping-cough is still regarded as true. However, these are merely differences of emphasis. The author presents an excellent survey of the common fevers which should prove popular with students. The practitioner will find that this handy volume fulfils his clinical needs and that it is useful for rapid reference.

In Dr. Christie's book we have at last a good fevers textbook specially written for nurses. Though a nurse could scarcely be expected to know all of it for her State examination, it would be an excellent reference book for the student wishing to supplement her lectures. For the health visitor's course it is the only book of its kind dealing with all the infectious diseases that she will meet, and it includes valuable chapters on public health practice and the social aspects of fevers and venereal diseases. It is highly recommended.

T ANDERSON

NEW THEORY OF JAUNDICE

Les Icteres. Moyens d'Exploration. Symptomes. Physiologie. Pathologie. Therapeutique. By I. Pavel. Second edition (Pp 189, illustrated. No price given) Bucharest I. Pavel 1944

In this book, which in format and style is typical of the French school, Dr. Pavel, of Bucharest, gives his views, developed over 20 years of clinical observation, on the origin, classification, and treatment of jaundice. He discusses chiefly cases of jaundice due neither to organic obstruction nor to haemolysis and refers only briefly to the latter types. He thinks current theories of bilirubin formation and excretion do not satisfactorily explain the frequent lack of correlation between liver damage and jaundice and provide no simple interpretation of the results of the direct and indirect van den Bergh reaction. He would expect the "direct bilirubin" reaction to be diminished and not increased in liver cell damage if this form of the pigment is indeed a product of normal liver-cell function. He suggests that bilirubin does not pass through the liver cell but is excreted into the bile canaliculi by the Kupffer cells, which change it from the "indirect" to the "direct" form. The liver cell aids biliary flow in concentrating the bile by resorption of water and creating a relative negative pressure in the bile channels. The appearance of jaundice in cirrhosis with jaundice would depend on the relative functional integrity of the liver cells and Kupffer cells.

The author believes that the cause of jaundice not due to haemolysis or organic obstruction most commonly originates in the duodenum. Investigating these cases by intubation and radiology he concludes that they are mostly due to a functional spasm of the sphincter of Oddi or to a catarrhal inflammation involving the duodenum, biliary passages, and pancreas. The interpretation of the tests is subjective and, one might add, uncritical, so that the conclusions, which partly revive Virchow's theory, have not been widely accepted. Dr. Pavel gives interesting case histories in support of his views, illustrating in particular the supposed role of emotional and nervous factors in the production of jaundice and the beneficial results of his taken surgical intervention. Putting his theories into practice he recommends purgation and duodenal lavage to rid the body of toxic products formed in the duodenum, especially from proteins, which, with the exception of milk, are excluded from the diet in the treatment of catarrhal jaundice. If these and other measures fail, he recommends operative intervention to re-establish biliary drainage.

The author's arguments are sometimes difficult to follow, but his evidence appears insufficient to substantiate his theories. The difficulty of interpreting an empirical test like the van den Bergh reaction hardly justifies the construction of a new theory but argues rather for not attaching too much importance to the type of van den Bergh reaction. It cannot be denied that spasm of the sphincter of Oddi and catarrh of the biliary passages are possible causes of jaundice, but we cannot ignore the evidence

that so called catarrhal jaundice is a virus infection of the liver, and aspiration biopsy has shown that the jaundice is, in fact, related to liver-cell damage

PAUL FOURMAN

GOOD EARTH

Thoughts on Feeding By Lionel J. Picton, OBE (Pp 265, illustrated 12s 6d) London Faber and Faber

In much of this book the author stresses the value of foods grown with the aid of natural manures and compost. The loss of nutrients in the urine and faeces of our great urban populations is undoubtedly a major disturbance of the cycle of Nature. It is not easy to see how it can be prevented in the near future, yet any biologist must think that, like the impoverishment of our mineral and timber resources, it is one of the limiting factors of Western civilization and must sooner or later be ended. Some of the ideas which Dr Picton advances and which are associated particularly with the names of Sir Albert Howard and Lady Eve Balfour are, to say the least, highly controversial. It certainly would not be true to say of the animal creation that insects and fungi do not cause disease, or that protection by means of sprays, powders, and so on is unscientific and unsound. Surely no malariologist would subscribe to such a doctrine, and malaria is one of the most serious diseases of mankind. It is therefore difficult to believe that these "basic principles" can be true of disease in plants or that the abolition of chemical fertilizers and parasiticides would promote animal and plant health. The more widely supported view is that only a judicious combination of humus and chemicals can attain this end. In any event, a civilization whose manure is wholly organic has been a stark impossibility for many years. Evidence for these statements is given in many publications, such as David Lilienthal's book, *TVA on the Tennessee Valley* scheme or Donald Hopkins's *Chemicals, Humus and the Soil*.

Nevertheless, we entirely agree with much else that Dr Picton says. We of the younger generation sometimes forget the immense advance in knowledge of nutrition made during the professional life of men like Dr Picton. It needed the Boer War to reveal the deterioration in national vigour brought about by a diet of tea, white bread, and jam, and the 1914-18 war to start the first large scale measures to redress it. The importance of the protective foods, the vitamins, and the trace elements—discussed by Dr Picton with a wealth of historical instance and personal experience—is still too little known to the general public. Coal and agriculture are to be the two main factors in our readjustment to the post-war world, and it is therefore fitting that a group of doctors practising between the coalfields of South Lancashire and the rich grass lands of Cheshire should have signed the medical testament on which Dr Picton's book is to some extent a commentary. We wish them success in their proselytizing, advising them only to be sure to base their preaching on sound evidence.

L. J. WITTS

STUDENTS' HANDBOOK

Aids to Medical Diagnosis By G. E. Frederick Sutton, M.D. Sixth edition (Pp 308, 46 figures 6s) London Baillière, Tindall and Cox 1946

There can be few volumes which contain so much information in so small a compass as does this popular little book. The teaching is factual and sound, matters of controversy and speculation are rightly excluded, all sections have been brought up to date, and a chapter on the electroencephalogram has been added. The student will find it valuable in the medical out-patient department and afterwards. Dr Sutton is to be congratulated on writing so compactly and compendiously on elementary medical diagnosis and on avoiding the irrelevances which commonly disfigure such works.

R. BODLEY SCOTT

Dentistry: An Agency of Health Service (Geoffrey Cumberlege Oxford University Press 8s 6d), edited by M. W. Carr, DDS, contains articles by various American authors on the development of dentistry as a profession on dental education and practice and suggestions for research. Though one cannot always agree with the opinions expressed, the book is of interest and value to those who are concerned with the public health and preventive aspects of dentistry.

BOOKS RECEIVED

[Review is not precluded by notice here of books recently received]

War, Sadism and Pacifism By Edward Glover, M.D. (Pp 292 9s 6d) London George Allen and Unwin 1947

An approach to the problems of war and pacifism by a psychoanalyst

Diseases of the Heart and Kidney By J. C. Banerjee, M.B., M.R.C.P., and P. K. Chatterjee, M.B., M.R.C.P. (Pp 184 Rs 8) Calcutta U. N. Duhr 1947

A clinical account of cardiovascular and renal diseases, intended for medical students and general practitioners

Transactions of the American Therapeutic Society Vol XLIII 1943 (Pp 98 No price) The American Therapeutic Society 1944

Papers on various subjects, including heparin, the treatment of tuberculosis, and vitamin C in peripheral vascular failure

The British Journal Photographic Almanac (Pp 444 5s) London Henry Greenwood 1947

Contains instructions for many photographic processes and an article on medical photography

The Treatment of Impotence By Joseph Loewenstein, M.D. (Pp 48 5s) London Hamish Hamilton 1947

The author describes his conditioning apparatus and includes a number of case histories in which it was used successfully

Sick Children: Diagnosis and Treatment By Donald Paterson, M.D. F.R.C.P. 6th ed (Pp 455 16s) London Cassell 1947

This edition includes the latest views on haemorrhagic disease of the newborn and erythroblastosis foetalis, and there is new material on the sulphonamides and penicillin

The Student's Handbook of Surgical Operations By Sir Frederick Treves 8th ed revised by C. P. G. Winkley, C.B. D.Sc., F.R.C.S., F.R.S.C. (Pp 374 15s) London Cassell 1947

Fifty new illustrations have been included in this edition and new portions on the chest and heart and on neurosurgery added

An Introduction to Physical Education By Eugene W. Nixon and Frederick W. Cozens 3rd ed (Pp 251 14s) Philadelphia and London W. B. Saunders 1947

The authors describe the history, aims, and methods of physical education as well as the qualifications required for teaching it

Cu Inry's Pharmacology and Therapeutics 13th ed revised by Arthur Grollman, A.B., Ph.D., M.D., F.A.C.P., and Donald Slaughter, B.S., M.D. (Pp 868 45s) London J. and A. Churchill 1947

This edition incorporates recent advances in chemotherapy, endocrinology, and vitamin therapy

Practical Physiological Chemistry By Philip B. Hawk, Ph.D., Bernard L. Oser, Ph.D., and William H. Summerson, Ph.D. 12th ed (Pp 1,323 50s) London J. and A. Churchill 1947

New sections have been introduced on the polarograph, isotopes, sulphonamides and antibiotics, photometric analysis, and the composition of foods

Leitfaden für Zuckerkrankhe By Dr Georg R. Constam (Pp 126 12 50 Swiss francs) Basle Benno Schwabe 1947

Instruction for the diabetic, intended for the layman

Die Milzpunktion By Sven Moeschlin (Pp 205 30 Swiss francs) Basle Benno Schwabe 1947

A monograph on the technique of splenic puncture and the evidence to be obtained from it

Les Parathyroïdes Humaines Contribution à l'Étude des Hyperplasies et des Adénomes By Markus Wernli and Ch. Berdy Chamsi (Pp 144 10 Swiss francs) Basle Benno Schwabe 1947

A study of parathyroid hyperplasias and their effects

Zur Chemotherapie der Sulfone gegen Tuberkulose By O. Acklin, E. Rossi and M. Schmid (Pp 25 2 Swiss francs) Basle Benno Schwabe 1946

A monograph on sulphone chemotherapy in tuberculosis with an account of experiments on guinea pigs

Nova et Vetera

JOHN AND WILLIAM HUNTER

New Aspects of John and William Hunter By Jane M Oppenheimer I Everard Home and the Destruction of the John Hunter Manuscripts II William Hunter and his Contemporaries Foreword by Fenwick Beckman M.D. (Pp 188 25s) London William Heinemann Medical Books 1946

This charmingly written and delightfully produced little book is made up of two lesser books. In both Miss Oppenheimer has produced so many unobserved relationships of known facts that she must be treated as a historical discoverer in her own limited field—namely, that English social scene in which medical education in England took its modern shape.

The first booklet is on 'Everard Home and the Destruction of the John Hunter Manuscripts'. Home, though not a man of great mental power was intellectually restless. He was weak, worldly, and vain, but had social powers and was a competent and highly successful surgeon. His name is attached to scores of papers in the Philosophical Transactions of the Royal Society. The merit of those that have any is that they are obviously products of the *bottega* of his brother in law, John Hunter, whose assistant he was. Home would have no mention in the history of science and retain only a minor reference in the history of medicine but for one act of supreme infamy which has given him a place among the immortals. None who has looked into John Hunter's career and work will doubt that the nature and achievement of his genius are peculiarly difficult to set forth and that they still await adequate interpretation. The task has been made incomparably harder by Everard, who deliberately destroyed John's records. The damage that he did to them is greater than that done by Nazi bombs, which destroyed only Hunter's museum. Home working as a fifth column from within, did his best to filch Hunter's thoughts. He was incapable of presenting them himself, and his theft meant in effect the loss of many of them.

Miss Oppenheimer an admirable advocate well informed and skilful, charitable and understanding seeks to defend the wretched Home. Her fascinating red herrings, some of a new pattern, drawn across the slimy path of Home do not prevent us smelling the rat that dwells with the skeleton in Home's cupboard. Home has been tried in the court of history and found guilty of lying, faking, meanly robbing a dead man, and basely destroying precious scientific records. Despite his advocate's eloquent and able presentation of extenuating circumstances the appeal will we believe fail with the candid reader. He will not however, find that he lacks either entertainment or instruction in hearing the appeal for the defence. He may care to hear again one witness the devoted, self sacrificing servant of Hunter, William Clift, who had lived for six years on 7s a week to preserve Hunter's collection and to that end had freely given out of his poverty.

'Sir Everard began by telling me. Clift told the Select Committee on Medical Education, that an accident had very nearly occurred at his house that it had been nearly on fire and that the firemen insisted upon taking possession. They saw the flames coming out of the chimney. He did not wish to admit them, but they insisted. I asked him how it happened, and then he told me that it was in burning those manuscripts of Mr Hunter.'

I said to him, I hope, Sir Everard, you have not destroyed those ten volumes relating to the gallery?

He said, Yes.

And Mr Hunter's lectures?

Yes.

And then I mentioned perhaps 20 others, that I had a very perfect recollection of. I felt that all those hopes that I had entertained were entirely frustrated and destroyed. I considered that my life had been spent in the service of that collection, and I hoped to have lived to see those papers beneficially employed. When I had made inquiry respecting the principal of them, and he told me they were all gone, I said to him, 'Well, Sir Everard there is only one thing more to do.'

He said, What is that?

I said 'To burn the collection.' I knew that that week Sir Everard had received back from the printer the last proof of his second volume of *Lectures on Comparative Anatomy* and that he had used those papers very largely in the composition of that work.

So long as men condemn things that are low and mean the name of Home will be remembered.

When the final appraisal is made of John's greatness it must be largely through the six great quarto volumes of *Lectures on Comparative Anatomy* (1814-28) that Home published in his own name. We cannot allow it an extenuating circumstance that Home should insert in that work statements that he owed much to Hunter. That was so but it was common knowledge and Home had no means of concealing it. The point is that all the treasures in that great series of observations are Hunter's not Home's, and that Home had the effrontery to attach his name and portrait to them.

Miss Oppenheimer's other section, 'William Hunter and his Contemporaries', is a very different type of work. It is a subtle, readable, and informative psychological study. How came it that one so far seeing public spirited, and generous as the courtly and highly experienced William Hunter could be in social matters so small, in politics so much of a weathercock in science so jealous? The essence of Miss Oppenheimer's answer is contained in the word 'frustration'. William's nobler ambitions were never allowed to fructify. He was a very successful man in the world's eyes but not in his own. Yet time has reversed the decision of his contemporaries that paid more regard to his personal qualities than to his public spirit. Medical education at long last has been forced to take the path that he had laid down for it and for which he was prepared to sacrifice his fortune.

That their English contemporaries failed to appreciate the vision and generosity of the two great-hearted Scots brethren was a loss to England which we feel to this very day. Miss Oppenheimer discusses them wisely and well.

FINE MEDICAL LIBRARY DISPERSED

The friends of Prof F C Pybus of Newcastle, have long admired the collection of ancient medical books which he has amassed by the labour of many years, and they have learnt with mixed feelings that his library was dispersed on March 19 at Messrs Sothebys, of Bond Street—regret that it should be scattered tempered perhaps with satisfaction that an opportunity of filling gaps in other collections should have been afforded. Prof Pybus had many desirable rarities of the sixteenth and seventeenth centuries, but he by no means neglected the eighteenth and nineteenth. Only a few of the more outstanding items from the catalogue can be particularized here.

The sale began with two books by Aetius of Amida published at Venice in 1534 and Basle in 1535 respectively. Aetius's *De Corporis Humani Partium* Venice, 1552, followed after some eighteenth-century lots later on were to be found Celsus *Medicinae Libri VIII* Venice 1528. William Cowper's *Anatomy* first edition Oxford 1698. Columbus Realdus, *De Re Anatomica* Paris, 1562. two Galens, Paris, 1528 and Basle, 1538, respectively. William Harvey's *De Generatione Animalium* first edition, London 1651, the first English translation of the same work, London, 1653. three copies of his *Anatomical Exercitationes Concerning the Motion of the Heart and Blood* 1660 1673, and 1673, Hippocrates *Opera Omnia* 1526 and 1546, several of John and William Hunter's works. a first edition of Jenner's *Inquiry into Cowpox* 1798. Peter Lowe, *Art of Chyrurgery* 1654, Mercurialis 1569 and 1572. Jacobus Pacinus, *De Tenuis Humoris Febrem Faciente ante Purgationem per Artem Incrassatione* (what a title!), Venice 1558. Paulus Aegineta, Basle, 1538. *De Puerporum Morbis*—a Sebastiano Austrio, Lyons, 1549, J Y Simpson's *Notes on the Inhalation of Sulphuric Ether in the Practice of Midwifery* Edinburgh, 1847. Israel Spachius on midwifery, Strassburg 1597. three Sydenhams of 1668, 1676, and 1685, Vegetus Renatus, *Artus Veterinariae* Basle 1528. Vesalius *De Humani Corporis* Basle 1555 and three of Thomas Willis's works 1668, 1672, and 1682.

The United States Public Health Service is to carry out research on BCG vaccine (BCG was discussed in a leading article in the *Journal* July 27, 1946, p 125.) Techniques of preparation and standardization will be developed. The vaccine will not yet be commercially available in the United States. New York State is to produce and test BCG vaccine. Dr Konrad Birkhaug the Norwegian authority, has been engaged to work for the State Health Department.

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MEASURES OF MORTALITY AND MORBIDITY

For defining the principal current problems in the fields of public health, preventive medicine, social medicine, and epidemiology—call these closely related subjects what we will—and for being in a position, as the immediate practical corollary, to take appropriate steps to cope with these problems, the first and fundamental requirement is an efficient system of recording the mortality and morbidity experience of the population. Without these vital statistics, with all their well-known imperfections and sometimes serious difficulties of interpretation, we are largely working in the dark, with no yardstick by which to measure progress (or lack of progress) and no certain indication of the weak points in the communal health upon which it would be wise to concentrate.

From the viewpoint of mortality we in Great Britain are finely served with the annual reports of the Registrars-General dating back over more than a hundred years and based upon the registrations of death. By such means, for instance, we can study, over a long or short period, the progressive saving of infant and child life, noting also, with considerably less complacency, the local and regional contrasts that still remain. Or, with an ageing population, we can consider the problems that are likely to face the new Health Service as time passes. With causes of death, fundamental though they are, we are on far more difficult ground. Fashions in nomenclature come and go, standards of diagnosis are improved, methods of certification and of tabulation change. The resultant figures are often difficult to interpret, and it would be fair to say that the vital statistics may throw up more problems than they solve. A current instance is the increasing registered mortality from cancer of the lung. Is it real, in the sense that persons to-day are more likely to die of it than were the previous generation, or is it merely an artificial rise due to improved methods of defining the primary site of the growth and thus the true cause of death? The statistics themselves will not answer the question, but they produce an important problem for thought and one worth the development of a means of inquiry. Such evidence and problems of the national mortality experience, and of its age, sex, and geographical components, the Registrar-General of England and Wales has placed before us annually in his tabulation of the mortality and fertility records (Parts I and II, Medical and Civil Tables) and in his analysis of and valuable commentary upon them (the Text volume). With the war the sequence was inevitably broken and though some of the basic tables for the war years have been issued the Text volume has lagged behind. To catch up arrears the Registrar-General has now issued a combined volume for

the years 1938 and 1939,¹ and in a further one he will cover the six years 1940 to 1945.

The present volume, although it relates to those curiously far-off years preceding the war, has much of interest in it. In particular, much space is devoted to the situation then with regard to fertility, for under the Population (Statistics) Act of 1938 the Registrar-General has been able to obtain at the birth of a child confidential information about the age of the mother, her previous fertility, and the duration of the marriage. Apart from the great importance of these details in relation to the population problem they have a bearing upon such medical questions as the association between infertility and disease and the effects of maternal age and birth order upon the stillbirth rate. This rate, for instance, was falling slowly just before the war and more rapidly during the war. Its frequency is generally at its highest among first-born children, drops to its lowest level for the second child, and then increases with the number of previous children. For children of a similar birth order it generally increases progressively with advancing age of the mother. Changes in the total crude rate, covering, as it does, mothers of all ages and births of all orders, may be due therefore not solely to environmental factors, such as better pre-natal care and better diet, but to a changing pattern in fertility—perhaps fewer births of the higher orders or fewer in older women, in whom the stillbirth risk is at its highest, or more first-order births. These new figures will allow the favourable trend of the last few years to be dissected and more clearly interpreted. Unlike Scotland, we have at present no record of the causes to which the stillbirths are attributed, a defect which it would seem worth while correcting in spite of the essential imperfections of the data.

For infants born alive some curious sex ratios in mortality are shown. In 1939, for instance, the male rate for the whole of the first year of life was 28% higher than the female rate. On the first day of life the male excess is 20%, it rises to 33% in the remainder of the first week, falls back to 20% for the second to fourth weeks, then rises steeply to 43% in the second and third months, and thereafter declines to 28, 27, and 13% in the ensuing three-month periods. Mortality of illegitimate infants was approximately twice that of legitimate infants on the first day of life and in the second and third months, but rather less in excess at other points of the year. The general trend of infant and child mortality can be illustrated by conversion of the death rates into life-table form. At the death rates of 1871–80 of every 100 boys and girls born alive 73 and 76 would have survived to their fifth birthday, before the first world war, 1910–12, the figures had risen to 83 and 85, and before the second, 1938–9, to 93 and 94. Comparable figures for survival from birth to age 15 are, approximately, 70 boys and 72 girls in 1871–80, 80 and 83 in 1910–12, 92 and 93 in 1939. In 1939 a striking new feature of early child mortality was the phenomenally low mortality from measles, scarlet fever, and bronchitis and pneumonia. In contrast to these gains, and indeed to those at most other ages, the death rates of males at ages 50–65 have shown

¹ The Registrar General's Statistical Review of England and Wales for 1938-39 (New Annual Series Nos 18 and 19) Text H.M.S.O. 4s 6d net post free

little change since 1923, a feature which is due to a large and continuing rise in the deaths assigned to degenerative heart disease. In seeking an explanation of this rise the Registrar-General suggests that it may be significant that men of this age group in 1939 were aged 25-44 in 1914-18, when many of them were subjected to abnormal stresses.

While we have, therefore, no dearth of material to study and analyse in the field of mortality, it is equally clear that stone dead, though it may have no fellow, is unlikely to be an all-sufficient guide. During the war (and since) we were constantly told that the health of the nation was never better. But in this respect mortality indices are not wholly convincing, we need information on, at least, the incidence of major and, if possible, minor illnesses, and cannot concentrate only on those that have a fatal result. Beyond, however, the notifiable diseases and some information from national health insurance records we had but few data. It was to meet this need that the Government's Social Survey organization, on behalf of the Ministry of Health, started a continuous survey of the prevalence of sickness. Using a small but randomly chosen sample of some 2,000 to 3,000 persons per month—each time in a varying set of districts—and by the home-visiting of each by trained investigators, it has endeavoured not only to construct a general picture of the incidence of illness but to accumulate sufficient data to demonstrate the nature and frequency of ailments and injuries at different ages, between the sexes, and in relation to geographical and social variables. The survey is, of course, entirely on a voluntary basis, there is neither "snooping" nor compulsion, but it is reported that out of some 81,000 people interviewed up to December last year only about 0.5% refused to take part. Some results of this work have been published from time to time in the *Monthly Bulletin of the Ministry of Health and Public Health Laboratory Service* and in the recent report of the CMO on the health of the nation in the war years, but there has so far been lacking a sufficiently detailed account of the Survey's scope and methods to allow interested workers to judge fully of its value and limitations. That lack has now been partially corrected by the preparation, by Patrick Slater, of a report on the Survey of Sickness, October, 1943, to December, 1945. It is only partially corrected, for unfortunately this report is not on sale, and a copy can be seen only by arrangement with the Director of the Social Survey.² When paper supplies are less restricted it is to be hoped that this and other reports of the Social Survey will be made available both to the public and to workers in allied fields—in other words, not only for the information of the former but also for the use and criticisms of the latter.

Apart from a description and discussion of the details of methodology the present report gives results which have not previously been published. The illness and injury rates are analysed by age groups. The former, as one would expect, tends to rise fairly steadily as age increases, but the latter shows a relatively high rate at ages 16-24, a fall to a minimum at 35-39, and then a fairly steady increase up to 55-59, with, perhaps, a fall in the final age group 60-64.

In urban areas the injury and illness rates are both higher than those in the rural areas, with rising income sickness falls, but liability to injury shows no clear change, there is apparently no association between the incidence of illness and injury and the number of persons per room. The obvious objection to these simple comparisons is that only one feature is being examined at a time. For instance, the comparison of the rates of sickness at different levels of overcrowding or for different income levels may be affected by different age constitutions in the populations at risk. Standardized rates are required, and though the author in defence says that "the intention here is merely to provide an impartial exhibition of the diversity in the data—to suggest problems rather than solutions"—it is not obvious that such crude rates can fulfil even the former aim. Other data collected in these inquiries allow an estimate to be made of the extent to which medical opinion is consulted in sickness or in injury.

The main value of this still experimental work clearly lies in its capacity to reveal periodic changes in the public health, thus linking up with and adding to the death records. But to fulfil this purpose adequately it must be published, and in future, the Report states, such figures will be included in the Quarterly Return of the Registrar General. A specimen return is included in the present report, and potential users are invited to comment and stress their needs. In addition, it may be noted, special inquiries—e.g., into the incidence of deafness—can sometimes be usefully tacked on to the routine health survey. The organization is there, and we have made a useful start towards getting one measure of the sickness rates prevailing from time to time.

THE VOLE BACILLUS

The revival of projects for active immunization against tuberculosis by means of BCG vaccine requires that the comparative merits of a vaccine containing the vole acid fast bacillus should also be considered. It is therefore useful to have an account of everything which is known about the properties of this organism, including previously unpublished information about the immediate effects of inoculating human beings with living vaccine made from it. This account is given by A. Q. Wells, the discoverer of the vole bacillus, in a recently published monograph entitled "The Murine Type of Tubercle Bacillus".¹ The decision to regard the organism as a third distinct mammalian type of *Mycobacterium tuberculosis* is clearly correct, although for the time being it is likely to retain its original, brief, and more familiar name.

Wells identified this bacillus as the cause of a widespread disease in wild voles in 1937. The most striking feature was the formation of chalky subcutaneous masses, over which the skin was liable to ulcerate, containing enormous numbers of acid-fast bacilli, lymph nodes were extensively involved, undergoing caseation, and lesions sometimes occurred in the lungs, liver, and spleen. Animals so affected were trapped in widely separated

² Survey of Sickness to be seen by arrangement with Mr L. Moss, Director Social Survey 39-41 Nottingham Place W1 (Wellbeck 8536).

¹ Med Res Cncl Sp Rep Ser No 259 1946 published March 1947

areas, including Oxfordshire, Wales, and Scotland. The further information about this disease now published includes several points of interest. It has been identified in three other species—the bank vole, the wood mouse, and the shrew. It has been shown to be an exceedingly chronic condition, an advanced stage of which has little apparent effect on the animal's activity. It is indeed so chronic that there is "no evidence that the expectation of life for a tuberculous vole is any less than for an uninfected vole." Study of the possible routes of infection has shown that cannibalism is likely to be a major factor. The contamination of water, and to a less extent mere cage contact, where food may be contaminated by an infected animal, will also produce the disease.

The vole bacillus is distinct morphologically and culturally from other types of *Myco tuberculosis*. It is indistinguishable serologically from the human and bovine types, as is here clearly shown by agglutinin absorption tests also embracing the avian type, *Myco phlei*, and *Myco smegmatis*. A tuberculin prepared from it gave reactions almost equal to those produced by standard tuberculin in guinea-pigs infected with "mammalian" tubercle bacilli (presumably human or bovine). Its pathogenicity, however, is strikingly distinct. Although a large dose intraperitoneally may cause progressive and fatal disease in the guinea pig, subcutaneous injection of anything less than the very large dose of 5 mg produces only a local lesion. That such infection, in either guinea-pigs or calves, produces a high degree of resistance to subsequent inoculation with virulent tubercle bacilli is of course the main fact to which the discovery of this organism owes its practical interest. The early observations by Wells himself, by the late Stanley Griffith, and their colleagues, strongly suggested that the degree of this resistance is greater than that produced by BCG. This work had to be abandoned early in the war, and the guinea-pigs in Wells's and Brooke's main experiment were killed only about three months after their inoculation with virulent bacilli. At this stage there seems to be no doubt that the extent of disease was much less in the vole bacillus than in the BCG group. Experimental study was not entirely abandoned during the war. K. Birkhaug² now recounts the smuggling of cultures from Oxford into Norway which enabled him to repeat the Oxford experiment, with the difference that the animals were allowed to survive indefinitely. Whereas all controls died in little over 200 days, nearly all the immunized lived for 300 to 600 days, but the difference in survival time between the vole bacillus and the BCG group was not significant. The last word has evidently yet to be said on this subject, but in any assessment of the relative merits of the two vaccines another property must be given due weight. BCG is a bovine bacillus of artificially lowered virulence and its stability from this standpoint is uncertain. Some fear the possibility of spontaneous enhancement, more likely perhaps is a greater degree of degradation with loss of immunizing efficiency. The vole bacillus, on the other hand, is naturally avirulent for other animals, and requires only to be maintained in its normal host to preserve its present characters.

The most advanced stage of Wells's work, here described for the first time, is the inoculation of human subjects with living cultures of the vole bacillus. Subcutaneous injection of a dose varying from 0.025 to 1 mg was practised in 51 subjects, most of whom developed slowly healing ulcers at the site of injection, there was no involvement of lymph nodes or sign of any other ill effects. The multiple puncture method, now considered the best method of inoculation with BCG, was employed in 69 subjects, and produced a varying number of papules which remained visible for one to three months. All these subjects, originally tuberculin-negative, acquired tuberculin sensitivity except two given the smallest dose by the latter method. This procedure is therefore safe, effective as judged by the acquisition of tuberculin sensitivity, and free from the drawback of producing an open lesion and a subsequent unsightly scar if the multiple puncture method is used. How vital a stage has thus been passed in the development of what may be a valuable method of immunization needs no emphasis.

RUTIN IN CAPILLARY FRAGILITY

It will be remembered that in 1936 Szent-Gyorgyi prepared a substance from lemons and from paprika called citrin. This was able to restore normal capillary fragility in guinea-pigs when an increased fragility had been produced experimentally. Now citrin is an impure mixture of two flavone glycosides—hesperidin and eriodictyol. When these glycosides were obtained in crystalline form they were found to be physiologically inert, and the active compound of the crude citrin, called by some Vitamin P, has never been discovered. Probably the active substance is rutin, which has a close chemical relationship to hesperidin, being a crystalline glycoside of quercetin and a derivative of flavone. Rutin is obtained from the leaves and flowers of buckwheat, tomato stems, yellow pansies, and many other flowers and leaves.

Rutin appears to be of value for different purposes, the most important of which is to prevent haemorrhage in patients with hypertension. It is also beneficial in hereditary haemorrhagic telangiectasis, or Rendu-Osler-Weber disease, of which Kushlan¹ has recently reviewed 1,000 cases in 175 families. The danger of increased capillary fragility in hypertension is suggested by the observations of Griffith and Lindauer,² who examined 265 patients. They determined the capillary fragility by Göthlin's method, which is to mark an area 6 cm diameter in each antecubital space and to note all blemishes which might be confused with petechiae, to apply a blood pressure cuff to each arm and maintain a pressure of 35 mm Hg for 15 minutes, to lower the pressure and count all petechiae, using a lens of 5 D, one hour later, to repeat, using a pressure of 50 mm. The number of petechiae appearing after 35 mm pressure is doubled, and to it is added the number appearing after the higher pressure. A normal figure is 8 or less, while 13 or more indicates increased fragility. Of the 265 hypertensive patients 218 had normal capillary fragility, while in 44 it was raised. The incidence of apoplexy in those with normal fragility was only 4%, whereas it was 25% in those with increased fragility. Similarly, retinal haemorrhages were present in 2% only of the normal group, but in 21% of those with increased fragility. These figures make it

² *Amer Rev Tuberc* 1946 53 411

¹ *Gastroenterology* 1946 7 199
² *Amer Heart J* 1944 28 758

clear that capillary fragility is important. By the use of rutin capillary fragility is restored to normal in a high proportion of patients. It is given in doses of 20 mg to 40 mg by mouth three times a day. Griffith, Couch, and Lindauer³ describe a return to normal in 8 patients out of 11 in two months.

In Kushlan's cases of haemorrhagic telangiectasis already mentioned the action of rutin is much more rapid. In a typical case with a family history of the condition, nose bleeding and skin lesions began in childhood. Gastro-intestinal haemorrhages began in the fourth decade. The most recent haemorrhage created a grave situation in spite of five blood transfusions. At this point Kushlan gave rutin, 40 mg three times daily. There was a remarkable change in twenty-four hours. Daily epistaxis and bleeding from the gums ceased for the first time since childhood, and did not recur.

Shanno⁴ has also described 35 cases of which 24 had hypertension, 13 of these had increased fragility which was restored to normal within twelve weeks. He also describes two patients with pulmonary haemorrhage of undetermined origin, their capillary fragility was abnormally great, when they were given rutin the bleeding stopped and the fragility became normal. It is worth noting that the rutin used by Shanno was prepared by the East Regional Research Laboratory of the U.S. Department of Agriculture by alcoholic percolation of buckwheat, it was not prepared by a commercial firm. Rutin has been given daily for as long as sixteen months without producing harmful effects.

PENICILLIN IN OSTEOMYELITIS

Staphylococcal infection in its more severe forms was given first claim on the exiguous supplies of penicillin available in the earliest therapeutic trials ever made. Acute osteomyelitis in children consequently figured largely in the original series of patients treated at Oxford, and their successful outcome was a large part of the foundation for the brilliant hopes which have since been fulfilled. Another early series was described in this *Journal* by I. M. Robertson⁵, it consisted of 7 patients, all of whom recovered completely except one whose treatment was not begun until thirty-one days after the onset. Except in one other case orthodox surgical measures were employed in addition to penicillin treatment. In experience which has accumulated since these early days bone lesions have been classed somewhat apart from all others in their response to chemotherapy: it has become abundantly clear that a focus of infection in dead bone cannot be dealt with by any methods short of radical surgery. At what stage of acute haematogenous osteomyelitis does the extent of bony necrosis become such that removal of the affected area will alone serve to eradicate the infection?

An encouraging answer to this question may be deduced from the experience of T. Twistington Higgins and his colleagues at the Hospital for Sick Children, Great Ormond Street, described in their paper on page 757. In this series of 31 cases of acute osteomyelitis 19 were of less than seven days' duration, the remainder two, three, and four weeks' or even more, all nevertheless responded to treatment on very conservative lines. Open operation was entirely avoided. Collections of pus were simply aspirated and replaced with penicillin solution. The great advantage of this procedure, as the authors point out, is that it eliminates the danger of secondary infection. When this occurs

it is often due to penicillin-resistant bacteria, with the consequence that chemotherapy cannot thenceforward exert its full effect. It also enables locally injected penicillin solution to be retained and thus to exert a prolonged and powerful effect in the neighbourhood of the lesion itself. The same treatment is indicated for suppurative arthritis and was employed successfully in 4 other cases described in this paper. The dosage of penicillin given intramuscularly was very modest by present-day standards, being strictly related to body weight, and based on an adult dosage of about 150,000 units per day. The only failure in this series appears to have been due to stopping intramuscular penicillin too soon: it should be continued for at least two and preferably three weeks. From the fact that in only 2 out of 19 of these cases so tested was the blood culture positive, these may be judged to have been on the whole examples of a less severe type of osteomyelitis. It is nevertheless gratifying that such excellent results were obtained by simple and conservative methods. No doubt the earlier treatment is begun the more confidently can such a result be expected, and it must be recognized as a grave mistake to wait for unequivocal radiographic evidence of a bone lesion before beginning treatment.

COMPARATIVE MORTALITY INDEX

A comparison of crude mortality rates between one period and another or between different areas at the same period is always likely to be misleading, because of differences in the sex and age constitution of the population. This difficulty can be overcome by the method of standardization. In our official statistics the census population of 1901 has been taken as the standard, but during the past forty years the proportion of the population aged 65 and over has increased to twice the corresponding figure for 1901. The fall in the birth rate and the decreased mortality in childhood are the two factors primarily responsible for a steady change in age distribution which has caused the standardized death rate to diverge more and more from the crude rate. In 1901 the crude and the standardized death rate were both 16.9 per 1,000, and they declined steadily until by 1938 the former was 11.6 and the latter 8.5. Although the standardized rate is a fictitious rate and is only useful for comparative purposes—for which reason it was designed—it does convey an impression that the death rate has fallen to a very low level, an impression which is unreal. The standardized death rate has been below 10 per 1,000 since 1932. To obtain an actual rate as low as this it would be necessary for the average length of life to be over 10 years, which is not yet the case.

The unreality of the standardized death rate has led to much discussion, and various alternatives have been suggested. Yule's "equivalent average death rate" has been used in the text of the Registrar General's *Statistical Review*. It employs the arithmetic mean of the death rate in thirteen quinquennial age groups between 0 and 65. The result is that which would be given by a standard population with the same numbers in each age group, but since it ignores ages over 65 it does not solve the present difficulty and is not a suitable substitute for the standardized death rate. A more recent census population figure might be used as the standard, as has been done in Scotland, where the 1931 census population is used, but beside breaking the continuity of the series of rates this could be only a temporary expedient. The population is so rapidly changing in age structure, and a further revision would be necessary in a decade or so.

A new method of comparing mortality, the Comparative Mortality Index, devised by the General Register Office

³ *Proc. Soc. exp. Biol. N.Y.* 1944 55 228

⁴ *Amer. J. med. Sci.* 1946 211 539

⁵ *British Medical Journal* 1944 1, 519

and introduced into the *Statistical Review* for 1941 (Part 1, Appendix) has been reviewed by Stocks¹. This index is a ratio and avoids a rate per 1,000. It differs from the usual method of standardizing in using a mean population for any two years for which a comparison is to be made and has therefore, an age and sex structure intermediate between the two years. To avoid the labour involved in comparing every pair of years separately, 1938 has been taken as the "base year," and the ratio of mortality for every other year to the mortality of 1938 has been calculated. By this means a comparison of the many hundreds of possible pairs of years can be simplified by an indirect approach. Instead of applying the death rates to a population midway between the two years the Comparative Mortality Index can be obtained by dividing one ratio related to 1938 by the other ratio, also related to 1938. The resulting ratio is not identical with that found by the direct method, but the difference is immaterial. Comparing 1941 with 1931, the direct approach gives a value of 0.884 for females, the ratio between the C.M.I.s with 1938 as a base is 1.043/1.183, which is 0.882. The C.M.I.s decline steadily but not so steeply as standardized death rates. Thus the ratio of the standardized death rate of 1891 to 1938 is 2.352, while the ratio for the C.M.I.s is 2.175.

In 1901 population was chosen as a standard because it included relatively few infants and old people, it formed a standard exceptionally favourable to low mortality, and its use yielded comparatively low standardized rates. The choice of 1938 as the base year for C.M.I.s was made because it was the last year undisturbed by war, for many causes it has the lowest rate of mortality up to that date, and it represents the best standard reached in pre-war conditions. After a new census it may be convenient to change to the census year as base.

RADIO-ACTIVITY IN CANCER DIAGNOSIS

The possibility of using radio-active forms of chemical elements to indicate abnormalities in the local circulation or in the absorption of the element concerned has been recognized for a number of years. Marinelli and Goldschmidt, for example, drew attention² to one case of melanoma and two cases of mycosis fungoides in which the selective absorption of radio-phosphorus was demonstrated. Cancer cells absorb a relatively large amount of newly ingested or injected phosphorus, and this fact has been related to growth requirements. Low-Beer, Glenn Bell, McCorkle, and Stone now report³ from the University of California Hospital 25 cases of actual or suspected carcinoma of the breast in which the intravenous administration of a small dose of radio active phosphate, followed by external measurement of radio-activity with a bell-jar type of Geiger-Muller counter at intervals of two, four, six, and twenty-four hours after injection, was used to give a diagnostic indication of the nature of the tumour. Of these 25 cases, 5 are described as "obviously" malignant on clinical examination, and a further 11 were proved by post-operative microscopical examination to be malignant. In all these cases the external "count" obtained was not less than 25% greater than that obtained with the counter above either the other breast or other normal tissues. In the remaining 9 cases, in which the excess (if any) was less than 25%, 8 tumours proved to be benign, and the last was a mucoid carcinoma with relatively few cells. It would

appear, therefore, that in the particular series of cases described an effective diagnostic indication was obtained. One very serious limitation must, however, be noted. Because the "radiation" from radio-phosphorus is entirely of the "beta" type—that is, consists of electrons—tissue absorption is relatively rapid. The method, accordingly, must be limited to tumours which are reasonably near the surface of the body. Moreover, the question naturally arises whether the admittedly arbitrary 25% criterion will prove satisfactory, in view of the obvious connexion between the depth of the tumour and the strength of the surface radio-activity. The authors themselves suggest that their test should not alone be accepted as an adequate indication for or against operation until a larger series of cases has been investigated. The main immediate interest of their findings is as an illustration of the type of progress which may be expected as radio-active isotopes become more widely available.

CELLOPHANE WRAPPING FOR ANEURYSMS

The surgical treatment of aortic aneurysms is still an open field, and no really satisfactory method of relief has been evolved in spite of many ingenious efforts. Wiring had a phase of popularity and is still occasionally used. Colt's umbrellae was a great improvement on coiled wire and still remains perhaps the best method, but shares the disadvantage of the other wiring methods that it is limited in its use to the saccular type of aneurysm, which is much less common than the fusiform type. Babcock¹ advised anastomosis of the common carotid artery and the internal jugular vein in an attempt to lower the pressure in the aorta, but his method has never found favour. Various methods have also been suggested and used to produce external compression of the vessel wall or to promote fibrosis and contraction of the lumen. Many of these are too traumatic and dangerous, but the use of a cellophane wrapping for this purpose seems kinder and promises better results.

Poppe and De Oliveira² point out that cellophane has been used both to produce fibrous tissue reaction and also to prevent a fibroblastic response. In this last connexion for instance, it has been successfully used in neurosurgery. This apparent paradox is explained by their investigations into the response to different varieties of cellophane which they placed around the abdominal aorta of dogs. Some varieties were almost inert, but polythene cellophane was found to produce a marked fibrous reaction so that the wall of the aorta after two and a half months was thickened to six times its normal size and its lumen was reduced to about one-third of the normal diameter.

They report the use of polythene cellophane wrapping in four cases of aneurysm of the thoracic aorta. In three of the cases insufficient time had elapsed to provide any conclusions, but in the fourth case the patient, up to the time of reporting, three months after the operation, had been completely relieved of the severe pain of which he had been complaining. They have also used a polythene film successfully for the ligation of a recanalized ductus arteriosus in a case of subacute bacterial endocarditis in which ordinary dissection and ligation would have been impossibly dangerous.

Their account of cellophane wrapping is in the nature of a preliminary report, but it seems to offer a successful method of gradual fibrosis and obliteration of aneurysms and large vessels. Accounts of further experiences will be awaited with interest.

¹ Monthly Bulletin of the Ministry of Health and the Emergency Public Health Service, July 1946.

² Radiology 1942 39 454.

³ Ibid 1946 47 492.

¹ Amer J Surg, 1912 16 401.
² J thorac Surg, 1946 15 186.

HUMAN WATER REQUIREMENTS

An interesting paper by Dr Kenneth Mellanby entitled *Human Water Requirements* was read at a recent meeting of the Nutrition Panel of the Society of Chemical Industry. Dr Mellanby began by pointing out that the earliest forms of life existed in the sea, being bathed in a salt solution. There was some evidence that the composition of sea water was different then from what it was to day, and salt concentration in protoplasm seemed to indicate this. Thus primitive organisms were able to get rid of their waste nitrogen in the form of ammonia, which rapidly diffused in the surrounding water. When organisms evolved to a terrestrial existence they were at once in a position in which desiccation took place and they developed a more or less watertight covering and got rid of their waste nitrogen in a form less toxic than ammonia. The insect had its watertight cuticle and the bird its feathers, which cut down moisture loss from the skin surface, and both had a nitrogen end product in the form of relatively insoluble purines which required little water. Man had not evolved a watertight body surface and he excreted his nitrogen in the relatively non toxic form of urea, which required a certain amount of water.

Water Content of Man

Dr Mellanby gave the following figures for the water content of an average (70 kg) man

	Percentage of Body Weight	Litres
Intracellular (actual protoplasm of cells)	40-50	35
Extracellular { Tissue fluid	12-15	11
{ Plasma	4-5	3
		49

It was usually found that the production of 'metabolic' water and the loss of water by evaporation in the lungs ran parallel. The individual at rest lost little from the lungs and produced little 'metabolic' water. The amount of water required to prevent loss of body weight under experimental conditions was known, but whether this was sufficient for optimum health was another question. Loss of water from lungs and skin and by faeces could not be greatly modified. Experiments indicated that unless a person had a total water intake from drink and food of over 1 litre a day desiccation would take place, becoming progressively worse and eventually ending in death. In some MRC experiments during the war volunteers went from Tuesday evening to Saturday morning with no water and with a dry diet. With no fluid intake the urine output was 0.5 litre a day. As the experiment proceeded the salt content in the urine fell to 1 g per day. Abnormalities began to show themselves on the third day of the experiment. As for sensation thirst was not so evident as might have been expected, irritability and a disinclination for food were shown. The giving of 4 oz (114 ml) of water a day had no noticeable effect on urine output, it was more tantalizing than anything else. A little more effect was apparent with 8 oz (227 ml), which gave a rinse-out, but not until 1 litre was given was any real effect obtained. With no water intake desiccation depended on loss of weight. The results of German experiments in concentration camps showed that death took place usually after a fortnight but these had to be taken with reserve, for the subjects were not co-operative. For example they were found licking the swabs after the floor had been cleaned. In temperate climates death would probably take place in ten days if no water were drunk.

Camel and Desert Mouse

The amount of water lost from the lungs varied with the temperature and humidity of the air. Sweat production in a body at rest under temperate conditions was 20 ml an hour, with exercise in hot dry air it might amount theoretically to 2100 ml a day. At temperatures of over 97°F (36.1°C) death was more likely to result from heat stroke than from desiccation. It had been suggested that under conditions of desiccation it was better to eat fat because of the amount

of metabolic water which this produced. The camel stored fat in its hump and the desert mouse in its tail. But it was necessary to consider also the amount of oxygen required to oxidize fats and carbohydrates respectively. To breathe the additional oxygen required for oxidation of fats involved more water loss from the lungs, and this loss would outweigh the extra 'metabolic' water produced by oxidizing fats. The reason why desert animals stored fat was because it was the only food they could store conveniently. Dr Mellanby concluded that man must have a water intake of 500 ml over his water output in order to excrete and therefore to get rid of his harmful waste metabolites.

THE PUBLIC HEALTH

ANNUAL REPORT FOR 1945

Sir Wilson Jameson's report on the work of the medical department of the Ministry of Health during 1945 was published last week.¹ For the first time the Chief Medical Officer's report is combined with a report dealing with the more administrative and less strictly medical work of the Ministry of Health. There is much to be said for this combining of two reports which have previously appeared separately, but there is the difficulty that all vital and health statistics cover the calendar year whereas administrative figures must be related to the financial year.

An interesting feature of this report is a note on the Comparative Mortality Index (C.M.I.) Dr Stocks's work on the C.M.I., which now takes the place of the standardized death rate in the reports of the Registrar General, is the subject of an annotation in this issue at p 772.

Vital Statistics

The birth rate, which had reached 17.7 per thousand living in 1944, the highest rate since 1926, declined to 15.9 live births, which reached the low total of 580,000 in 1933, increasing to 621,000 in 1938, and to a peak of 751,000 in 1944 declined to a total for 1945 of 679,937.

The death rate was 11.4 as against 11.6 in 1944 and the civilian death rate which included violent deaths of civilians due to the operations of war, was 12.6 per thousand compared with an average rate of 12.7 for the three preceding years. The principal causes of death were much the same as in previous years. Diseases of the heart and circulatory system an old age took first place—33.1%, followed by cancer (15.2%), bronchitis, pneumonia, etc (11.4%), and vascular intracranial lesions (10.7%). These figures show again a slight increase in the proportions and numbers of deaths due to diseases most prevalent in old age. This reflects the fact that persons over 65 in 1945 comprised 10% of the population as compared with 9% in 1939.

Infant mortality was 46.0 per thousand related live births a rate slightly above the 45.4 of 1944 but well below that of any preceding year. Stillbirths comprised 28 per thousand of all births in 1945—the same proportion as that for 1944.

Comparing the corrected notifications with those for 1944 the incidence of scarlet fever decreased by one-fifth. The same applied to diphtheria, and whooping cough among children age 1-5 declined by 30%. There were more than three times as many cases of measles at ages under 5 and a fourfold increase in acute poliomyelitis among infants under one year. Dysentery notifications increased by 28% and cerebrospinal fever notifications declined by 9%.

General Epidemiology

Deaths due to influenza (2,686) were the lowest recorded for thirty years. Deaths due to diphtheria (722) were less than one quarter of those in 1938. By the end of 1945 it was estimated that 58% of the children in England and Wales had been immunized a figure said to correspond with that reached in the USA in 1936. There were 40,000 more cases of measles than in any previous year since notification began in 1940. There were, however, only 729 deaths among the

¹ Report of the Ministry of Health for the Year Ended 31st March 1946, including the Report of the Chief Medical Officer on the State of the Public Health for the year ended 31st December 1945. London: H.M.S.O. 35 (1)

46,796 notifications, giving the extraordinarily low fatality rate of 0.16%. The average fatality rate for measles used to be reckoned at 4%.

The 62,691 cases of whooping-cough had a fatality rate of 0.09%. The year saw a continuance of the relative freedom from typhoid fever (301 cases with 47 deaths), but there was a gain in the notifications of dysentery (16,278). *Sh. sonnei* was the cause of 87% of cases and the remainder were due to eight or nine types of *Sh. flexneri*. There were 12 cases of amoebic dysentery, all from overseas.

Some 434 outbreaks of food poisoning were investigated and 189 of them were apparently due to salmonella infection. The danger of consuming duck eggs not sterilized by thorough cooking was again apparent. Attention was drawn to this point in a recent leading article in the *Journal* (April 5, p. 456). In other outbreaks dried egg, meat pies, brawn, pressed beef, ice cream, and raw milk were responsible for conveying a variety of organisms.

During the year there were 515 imported and 7 indigenous cases of malaria. All the latter were benign tertian cases and the insect vector was *A. maculipennis*.

The downward trend of tuberculosis mortality has been resumed after a rise during the middle years of the war. Eighteen mass radiography units operating during the year examined some 800,000 people. Between 3 and 4 per thousand were shown to have active pulmonary tuberculosis previously unsuspected.

The incidence of early syphilis and gonorrhoea increased appreciably. In both diseases the increase was more marked in males. Thus in early syphilis the percentage increases in males and females were 18.9 and 12.0, the corresponding figures for gonorrhoea were 32.4 and 14.3. Congenital syphilis in infants under one year decreased from 345 in 1944 to 326. The number of persons attending clinics for examination and found not to be suffering from venereal disease was 84,954. The total of cases of V.D. dealt with for the first time at any centre was 50,143 as against 43,849 in 1944.

Maternity and Child Welfare

Despite the high pressure on available beds, the shortage of nursing and other staff, and difficult conditions generally, the maternal mortality rate continued to decline and reached the lowest level ever recorded—180 per thousand total births, compared with 192 in 1944. If deaths following abortions are excluded the rate was 147 per thousand total births. In addition that portion of the rate (0.24 compared with 0.28 in 1944) attributable to deaths from infection during childbirth and the puerperium was the lowest ever recorded.

What used to be called "the uptake" now appears as "the acceptance-rate" of vitamin supplements for expectant mothers and children. In the country as a whole only 25% of the cod-liver oil available was used by the mothers, and approximately 42% of the orange juice.

Food and Nutrition

Surveys of the clinical state of nutrition of various groups of the population continued during the year and "no definite evidence of existing deficiency disease was observed in any person." Vitamin feeding tests in Stoke on Trent and Salford were completed and like similar tests conducted previously, show that "in school children and in adults with diets of average wartime quality, the addition of supplements of vitamin A, B₁, nicotinic acid, riboflavin, ascorbic acid, or calciferol is not needed."

Hospital Surveys

Of special interest in this report is the review of the ten hospital surveys of 1945.

The many defects of our hospital system were not fully appreciated before the war. The surveys reveal a serious deficiency in beds (not numerically stated in all the reports, but estimated by the writer of the Nuffield Trust publication at not less than 40%) and the obsolescence of a high proportion of the existing hospital buildings. Many of these are crowded on inadequate and noisy sites in the centre of towns with poor accommodation for nursing and domestic staffs, and little or no room for expansion. Such structural defects must wait until much of the still more urgent need to build houses has been met.

The shortage and maldistribution of specialists is a second principal defect, which needs time, care, and keen foresight to rectify. Akin to this is the need for more special centres, which have proved so invaluable in the Emergency Medical Services.

Attention is also drawn to "the reproach of masses of undiagnosed and untreated cases of chronic type which litter our public assistance institutions."

Other sections of the report are concerned with rehabilitation, hospital planning and construction, and hospital catering. Medical man power is discussed at some length and there are separate sections on the Insurance Regional Medical Service, the dental services, and the nursing services. The serious shortage of nursing and domestic staff continued to react unfavourably on the efficiency of almost all classes of hospitals.

HEALTH COMMITTEES

Need for Co-ordination

The Minister of Health has again emphasized the need for the close and continued co-ordination of the local health authorities' services, under Part III of the National Health Service Act, 1946, with the general medical services and with the hospital and specialist services. A recent circular (94/47 of May 22) states: "Such co-ordination cannot be achieved unless the health committee includes proper representation of the medical profession in the area, and the appropriate body to consult for this purpose is the local medical committee referred to in section 32 of the Act." Pending the election and recognition of new local medical committees, the Minister hopes that local authorities will consult existing medical committees which he has already recognized for the purpose of medical appointments to local executive councils. Regulations relating to these executive councils were put forward recently (*Journal* May 24, p. 731).

Some local authorities have not yet constituted a health committee in accordance with the provisions of Part II of the Fourth Schedule to the Act. The circular reiterates that all matters relating to the discharge of the functions of local health authorities must be referred to the health committee and such committees must be properly constituted before effective progress can be made. The setting up of a health committee should not be deferred until executive councils and hospital management committees are in being and able to suggest representatives who can be co-opted. These additions to the initial membership of the health committee can be made at any time. In those areas where an *ad hoc* committee has been working out plans, it would be in order for the local health authority to appoint the members of this committee to be the health committee for the time being. Modifications of membership, if thought desirable, could then be made later.

GIFT FROM THE AMERICAN COLLEGE OF SURGEONS

The President of the American College of Surgeons Dr. Irvin Abell, has sent Sir Alfred Webb Johnson a cheque bringing the total contribution of that College to the restoration of the English College to over £10,000, and a brochure recording the names and addresses of the Fellows of the American College who have contributed to this memorable gift is being prepared. It may be recalled that the Great Mace of the American College was given by the consulting surgeons of the British Army in memory of mutual work and good fellowship in the war of 1914-18.

In the course of his letter to Sir Alfred Webb-Johnson, Dr. Abell writes: "From its founding in 1913 the American College of Surgeons has been benefited by its cordial relations with the Royal College of Surgeons of England, after which it was in many respects patterned. Sir Rickman Godlee, a nephew of Lord Lister, was president of the English College in 1913, and he personally represented his organization at the inaugural convocation of the American College of Surgeons, presented an official message of greeting, good wishes and hope, and was received into Honorary Fellowship in the newborn College. Since that eventful occasion many mutual interests have

strengthened the bonds between the two organizations and their individual members

The American College will make a presentation of a desk and lectern for the lecture theatre of the English College during the Congress of the International Society of Surgery to be held in London in September of this year

THE OLD PEOPLE

Mr B Seeborn Rowntree, chairman of the Nuffield Foundation Committee of Inquiry into the Problems of Ageing and the Care of Old People, addressed the British Federation of Social Workers in London the other day. Mr Rowntree told his audience that there are five and a half million old people (that is, people of pensionable age—men over 65 and women over 60). They represent 12.5% of the population, and in fifty years time it is estimated that they may represent 19%. Of these old people at least 95% live independently in private homes, only 63,000 live in institutions controlled by local authorities—mostly, of course, though not entirely, public assistance institutions—and an unknown number live in homes run by voluntary agencies. The problem concerns the 95% who live in private homes, alone, or with their families or with strangers. The Nuffield Committee has made a survey in certain sample towns—Wolverhampton, Oldham, two London boroughs (St Pancras and Wandsworth), and the Rhondda Valley. An earlier social survey of York, of wider scope, has also added to the information.

On the whole the housing of old people is not worse than that of other people of their social class, but a good many are badly housed. In Wolverhampton, for example, in the homes of the old people which were surveyed, the closets were out of doors in one third of the cases, a thing which may mean no particular hardship in the case of the young and vigorous, but is a very real hardship for the old and infirm, especially in the winter months. In Wolverhampton, Oldham, and York nearly 8% of the men and 15% of the women live alone, and in the two London boroughs 18% of the men and 29% of the women. In the Rhondda Valley there is a much stronger family feeling, and the number of old people who live alone is very small.

In mentioning the special needs of old people Mr Rowntree placed first a greatly increased provision of nursing care. In the Rhondda Valley there is one district nurse for a population of 30,000. Another great need is the institution of clubs to mitigate the loneliness of old people, especially the old men. No district in the country ought to be without its old people's club. Finally he emphasized the need for communal homes to accommodate some such number as 30 or 35 old people. The greatest evil of old age is not infirmity but loneliness. A special committee of the British Medical Association is considering the care and treatment of the elderly and infirm and its report will no doubt include this aspect as well as others.

SOCIAL MEDICINE AT OXFORD

The Institute of Social Medicine at Oxford has issued its second annual report. The staff of the Institute now numbers 17, under the directorship of Prof John A Ryle. The principal departments are the clinical and radiographic sections and the section of vital statistics. A child health survey is continuing one aspect of it is a study of congenital defects and, more particularly, cardiac murmurs recorded during the first year of life. The radiographic anatomy of the infant heart in general is being studied. Progress has also been made in the analysis of records of the growth and maturation of bone. Among the findings observed is the fact that in the first year of life the growth in the length of the bones is equal in the two sexes, but growth in width is much greater in the male. Maturation in the female is in advance of that in the male. Furthermore, it has been shown that there is in general some correlation between growth in one part of the body and growth in another, but the correlations between measurements in different parts of the same region are no closer than between those in different

regions of the body. It has been possible to draw a clear distinction between local and general factors influencing bone growth and maturation.

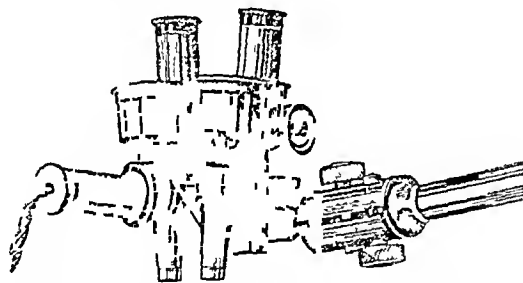
Another activity has been a close study of the many variations in the radiographic anatomy of the child's chest in the first year of life. About 3% of healthy children have been found to show a large mass projecting into one or both lung fields. Its nature has not yet been determined with certainty, but it probably represents the thymus gland. An analysis has been made of the spines of cretins with particular reference to the wedge deformities of the vertebrae at the dorso-lumbar junction. These deformities have also been noted in several other conditions, showing that they are not specifically related to cretinism, and are almost certainly the result of either weak musculature or structural weakness in bone. The primary cause of the deformity seems to be the flexed intrauterine position. A study of fifty consecutive cases of newborn babies revealed that similar but less marked changes might be present in normal children at birth and more recently a series of examinations of foetal spines has shown that the same deformity may be observed as early as the sixteenth week.

Other investigations concern peptic ulcer in industry, fluorine hazards, goitre, and iodine prophylaxis, and the stillbirth rate in relation to social and nutritional factors.

Preparations and Appliances

OPERATING MICROSCOPE

Mr A BROWNIE SMITH, Assistant Surgeon, Ear, Nose, and Throat Department, Royal Infirmary, Edinburgh, writes: At the present time there is a demand by aural surgeons for a microscope of long working distance for use in the surgery of the labyrinth. Details of a microscope which can be purchased now may be of interest. The instrument is a Beck "Binomax" binocular microscope to which some alterations have been made. Two new small objective lenses of 13 dioptres have been fitted in place of the original lenses, the standard illuminating attachment has been used but altered to an angle



of 90 degrees and the light reflected by means of a small mirror placed at an angle of 45 degrees between the objectives. By these modifications the working distance has been increased from 4 to 9 inches (10 to 22 cm), and the position of the mirror has enabled good illumination to be obtained even in the depths of a narrow cavity such as the external auditory meatus. The alteration of the working distance has necessitated diminished convergence of the objective lenses and, in this type of instrument, has been carried out by the insertion of small wedges in the body of the microscope. The modifications carried out give a binocular microscope with a working distance of 9 inches, a magnification of 8 with the low power eye-pieces, and a field 1 inch (2.5 cm) in diameter. There is good depth of focus and the illumination provided by a 12-volt lamp is sufficient for most purposes. The stand is fitted with two ball-and-socket joints and can easily be clamped in position on the operating table. A small sterilizable rod can be fitted to the milled knob for focusing purposes. I have now used the microscope for six months with various modifications of the light and lenses, and find the instrument described perfectly satisfactory.

The "Binomax" microscope and stand is made by R. and J. Beck, Ltd., London, and the alterations were carried out by G. Hutchison and Sons, of Edinburgh.

Reports of Societies

HYPERTENSION

At a joint meeting of the Liverpool Medical Institution and the Manchester Medical Society held in Manchester on March 5, with Prof D DOUGAL in the chair, there was a discussion on hypertension.

Dr E T BAKER-BATES said that despite the fact that hypertension had been recognized for a century our knowledge of this leading cause of death was far from satisfactory. Hypertension could be produced experimentally by procedures that induced renal ischaemia. The significant conclusion was that hypertension could *per se* produce those vascular changes in the kidney and other organs formerly believed to be of inflammatory origin (Bright's disease). A vicious circle thus became established. On rare occasions this hypothesis had been confirmed in man by observing the relief of hypertension following removal of a diseased kidney. It now appeared that hypertension resulted from sustained arteriolar constriction brought about by a chemical agent (renin) liberated from ischaemic renal tissue.

The clinician must always satisfy himself that the patient's symptoms were due to a raised blood pressure. Neglect of this principle had caused much unnecessary invalidism. Treatment remained unsatisfactory. In the majority of cases guidance of the patient to ensure a reasonable attitude towards the condition was all that was possible or necessary. Excessive zeal was undesirable and often induced an anxiety state.

In recent studies, carried out independently in America and England, 33 preparations reputed to be capable of lowering the blood pressure did not produce significant reduction in a single case. Efforts should be made to keep the blood pressure as low as possible by restriction of activities, without making the patient an invalid. Sedatives, such as bromides or barbiturates, were indicated when there were nervousness, headaches, worry, or restlessness but treatment by prolonged rest in bed, purgation, venesection, diet, baths and diathermy was of negligible value. An artificial reduction in the blood pressure often made the patient feel worse. Finally, in no other chronic and progressive malady were common sense and insight into the weaknesses and fears of human nature more essential.

Limitations of Surgery

Mr R EDWARDS considered that, since the fundamental cause of essential hypertension was still quite unknown, any direct surgical attack upon the disease was not practicable at the moment, except in two instances: paroxysmal hypertension due to an adrenaline-secreting tumour, and rare cases of unilateral renal disease. There were two factors maintaining the hypertensive state: spasm in the first place and later sclerosis. If spasm could be controlled the sclerosis might be delayed. Vascular spasm could be relieved by division of the sympathetic nervous system. Division of the splanchnic nerves produced an extensive area of vasodilatation. This area could be increased by division also of the lower part of the dorsal sympathetic chain and the upper part of the lumbar sympathetic chain. This was the method Smithwick suggested. Adson, Craig, and Peet were content with a more limited operation.

The degree of spasm was best studied by the administration of thiopentone until a deep narcosis was produced, the blood pressure being recorded as each 1 ml was administered. Full renal investigation was important. If considerable renal dysfunction was found it was unlikely that sympathectomy would benefit the patient and sympathectomy was also of little value if cerebral damage was present. A history of coronary occlusion or anginal attacks did not contraindicate operation. Sympathectomy should not be performed in patients with a systolic pressure under 200 mm or a diastolic pressure of under 100 mm Hg but this opinion might be changed in view of the considerable success obtained in America with patients showing a lower blood pressure.

The operation was done on each side with an interval of two to three weeks between the operations. The anaesthetic used was of little moment so long as controlled respiration was main-

tained, since the pleura might be entered at any time. The first 10 of his own 35 cases were treated by subdiaphragmatic splanchnicectomy, but severe and intractable post-operative vomiting led to its discontinuance. These were cases of advanced malignant hypertension in young people and the operations were performed some four years ago, all these patients were probably dead.

In the remaining 25 operations he resected the tenth and eleventh ribs posteriorly and removed a long section of the great splanchnic nerve and the sympathetic chain from the seventh dorsal ganglion down to the twelfth. An anterior transpleural approach suggested by Prof Boyd had been utilized lately and this was an improvement on the posterior method. Delayed results were obtained in 16 cases, the remainder were too recent for assessment. There was a good immediate fall in blood pressure with a gradual rise in the succeeding months, but usually not to the original level. In a small number of cases the blood pressure had remained well down. In nearly all cases headache had been permanently relieved. The operation was not a cure for hypertension but was of considerable therapeutic value in selected cases.

Familial Factors

Prof ROBERT PLATT disagreed with some of the points made by the previous speakers. In essential hypertension psychological causes and food and drink played no part in aetiology. So-called menopausal hypertension was not due to the menopause but was discovered at that time because menopausal symptoms led to the blood pressure being taken. In these cases the hypertension did not diminish later on. The most important factor in essential hypertension was familial. More than 90% of cases in which the data were obtainable had a history of hypertension in one or both parents—it was a Mendelian dominant. In secondary hypertension the familial pattern was entirely different.

He considered that malignant and benign hypertension were the same disease and had the same hereditary background. Cases of so-called malignant hypertension in young persons were nearly always secondary to urological disease. In assessing the value of surgical treatment he said that unless the diastolic pressure was reduced to below 110 mm the prognosis was probably unaltered. The headaches could be relieved by medical treatment.

Prof GEOFFREY JEFFERSON said that in his patients the blood pressure did not fall very much afterwards (the diastolic pressure very rarely going below 110 mm) and in nearly all cases the blood pressure rose again later. Of 12 of his recent cases only two did reasonably well. One a child whose blood pressure fell from 180/120 mm to 120/80 mm after two years was still very unwell. The second was a young woman whose vision returned, with a blood pressure of 155/110 mm two years later. He doubted whether these poor results justified the extensive surgical procedure necessary.

Prof A M BOYD referred to his experience with Adson's operation. This gave some symptomatic relief but there was persistence of the hyperpnea after six months. He had been using the transpleural approach, the double operation being very extensive. He thought that cyclopropane was the best anaesthetic to use, and said that after this operation it was necessary to remove the pleural effusions once or twice.

Prof C WELLS referred to his few cases done recently. He felt that sympathectomy was not the complete answer since it did not cure hypertension, but he thought that it might relieve the patient of some of his symptoms and so make life more bearable for a few months.

The Danish Medical Society has organized a comprehensive scheme of research with regard to penicillin, and in *Nordisk Medicin* for March 21 many pages (716-738) are devoted to some of the most recent Danish experiences in this field. Dr N B KRARUP points out here that continuous intravenous and intramuscular injections of penicillin have not found great favour in Denmark, where the procedure usually preferred is the intramuscular injection every third hour. The treatment of 21 cases of diphtheria with penicillin was not very encouraging, but the results in cases of scarlet fever at the Blegdam Fever Hospital have been remarkably good.

Correspondence

Physical Therapy of Mental Disorder

SIR—Dr D W Winnicott's onslaught (May 17, p 688) on electric convulsion treatment and those who practise it appears to me to contain more fallacies than most psychiatric literature, and that is saying a good deal. What he says boils down to this: that he doesn't like ECT because it is empirical. The empiricism I admit frankly, but I call his objection prejudice. When he starts to 'condense' the vague and woolly sentimentality of his first two columns, he summarizes his objections as follows: (1) 'I would not have it done to myself.' This amounts merely to an admission of prejudice. (2) It draws to psychiatry the wrong kind of doctors. This comes to exactly the same thing, besides being arrant nonsense anyhow. (3) It undermines the public's justification for relying on doctors to keep their scientific heads. So far as this sentence has any meaning it is just as devoid of foundation as (2), of which it is merely a repetition. (4) This form of therapy done here in England leads to mass treatments by the same methods all over the world. This is an indictment of the whole medical profession outside England for which I see no justification and in which I perceive no truth. (5) 'Physical methods of treatment represent a tendency away from scientific psychology.' This is merely a reaffirmation of prejudice, not a fresh argument at all.

Now, Sir, I have no pretensions to being a psychologist. I took on psychiatric work for six years during the war as a means of putting such medical experience as I possess at the service of the country during the national emergency. As luck would have it I did a lot of ECT treatment—about 9,000+ treatments of about 300 patients. I don't think I ever saw a cure of a genuine case of schizophrenia, but I did see a number of cases of marked improvement, mostly temporary. I am quite certain that it either caused, or at least greatly accelerated recovery in nearly all my cases of puerperal insanity. I am equally certain that it really cured a small proportion of cases of melancholia and that this cure was apparently permanent.

I want to put to Dr Winnicott a case of mine which was by no means an isolated one, but perhaps more inveterate than most others. This was a schizophrenic woman in the thirties who when not under treatment, was foul and degraded in all her habits, passing urine and faeces into her clothing or her bed. She was destructive of the hospital property, and violently hostile to nursing staff whom she would often wantonly attack. She was quite unemployable in any way, very difficult to feed, and miserably emaciated. She had been like this for some years when I began to give her ECT. After a course of this she became amenable to ward routine, clean and tidy in her habits, capable of needlework, and gained weight because she consented to eat. After a few weeks' cessation of treatment she would gradually slide back into her former state from which she was rescued by a further course of ECT. This sequence of improvement and relapse went on for over two years, and for all I know may be going on still. If Dr Winnicott or any other psychiatrist maintains that ECT was not justified by its results in this and many similar cases which I saw, merely because the rationale of its action cannot be explained on any scientific hypothesis so much the worse for the insane and for the psychiatrists. I hold no brief for ECT, and I deplore the exaggerations about it which immature psychiatrists have published, but at least I am sure that until something better can be devised it ought to be recognized as a valuable weapon in the treatment of (carefully selected cases of) insanity.—I am etc

Tunbridge Wells

HENRY ROBINSON

SIR—I should like to answer Dr D W Winnicott's attack on physical methods of treatment in psychiatry (May 17, p 688) with the following observations.

1 Dr Winnicott admits that he has a personal prejudice against physical therapy, surely prejudice, personal or otherwise should have no place in the mind of a scientifically trained man.

2 He makes two grossly inaccurate statements—namely, 'Convulsion therapy is purely empirical. No one has the slightest idea how it works, when it does work.' There is an increasing mass of evidence, as a result of biochemical investigations of brain chemistry and its abnormalities in the diseases under consideration, that they are organic brain disorders in which the underlying lesion is a disturbance of the oxygen-glucose metabolism of the brain tissues. In this connexion I would refer Dr Winnicott to my article on the shock therapies and their mechanism (*J ment Sci*, 1944, 90, 550).

3 Dr Winnicott completely ignores the fact that all the great therapeutic advances of the last fifty years have been the discovery of specific physical and pharmacological agents—e.g., insulin, the sulphonamides, penicillin, and so on.

4 His criticisms are entirely destructive, and he does not offer any satisfactory alternatives to the treatments which he so sweepingly condemns.

5 His remarks regarding 'magic' and 'magical treatments' are surely misplaced. The earliest forms of 'magical treatment' employed by primitive man before medicine became a science consisted of psychotherapy in the form of suggestion and persuasion. They are depicted in the paintings of Stone Age man, and are used by the tribal medicine man among savage peoples to day, differing in few essentials from the methods of some present day advocates of psychotherapy.

6 He completely ignores the undoubtedly striking results obtained by modern physical treatments in the major mental disorders, all of which are completely refractory to psychotherapeutic methods. Would Dr Winnicott, in accordance with his theories, advocate that patients with general paresis should be treated by psychoanalysis rather than by malarial and penicillin therapy?

Finally, as one who has worked for a number of years in modern mental hospitals, I can assure Dr Winnicott that it is not physical treatments but the working conditions in these institutions which deter the right type of doctors from taking up this line of work as a career—I am, etc,

London SE 6

G TAYLEUR STOCKINGS

SIR—I was most impressed by the article on the above subject by Dr Winnicott (May 17, p 688), whose feeling towards these forms of therapy I share. My own experience is small, being confined practically to ECT in the treatment of venereophobia, but his article encourages me to give it what it is worth.

The venereophobe, it must be borne in mind, is almost invariably a man of high ethical standards—a decent, respectable, and respected citizen—who, when at the end of his tether, browned off, homesick, depressed by what he had already gone through, and viewing the immediate future with complete despair, got drunk and sought comfort and oblivion in the arms of the local Circe. This is followed by overwhelming remorse and the conviction that he has become infected. Clinical examination and reassurance by specialists, the oculodemonstration of negative blood-test results, cannot shake his conviction. He comes to psychiatric treatment depressed, obsessed, and more often latently suicidal than is comfortable for his medical officers. He has ruined his life, blotted his copy book, blasted his domestic bliss, and there is no health in him.

Under my hands psychiatric interviews, narco analysis, occupational and diversional therapy met with such total and invariable failure that even I was impressed. Group therapy was illuminating inasmuch as each patient in a group of venereophobes could appreciate that his fellows were in fact uninfected and ought to accept reassurance on this point, but each insisted that he himself was the exception, so it did not do much good. In despair and with great reluctance I came eventually to hand my cases one by one over to the electrician, and I was struck (and inwardly dismayed) by the gratifying results. After the first treatment, patients who had been wont to mope about in corners I heard whistling in the corridors and joining in the singing in the ward kitchen. They asked for more of these treatments, feeling that it was doing them good. They did not lose their phobia at once. First all they found themselves forgetting it for hours at a stretch.

They could lose themselves in a movie or at their occupational therapy. The phobia, although still present in the background, had lost its power to hurt so deeply. I never heard a patient claim that he was cured completely. He would say, 'I think I shall get over it in time now.' These patients did not know that they were being subjected to convulsions. They had had 'pentothal' sessions previously and were allowed to believe that the electric current produced a similar 'sleep treatment'. It may sound profoundly silly, but I could only account for the curative effect of ECT in these cases somewhat on these lines.

Here are these chaps whose super ego (part of which I am told dwells in the unconscious) cannot forgive them for their lapses from virtue. They feel they deserve syphilis and they insist on having their deserts. They insist on punishment. ECT supplies that alternative punishment which gives their unconscious just the kick in the pants that it is seeking. This curious hypothesis gained colour from the fact that patients who actually do get infected rarely develop venereophobia, which they could show by refusing to believe themselves cured when smeared, WRs etc., were eventually pronounced negative. Granted that some of the obsessional potential venereophobe type occasionally do get infected, one might assume that these lucky ones accept VD as their punishment, treatment as penance, and the final negative tests as absolution. (I say 'lucky ones,' because I know no condition of suffering so dire or so 24 hours a day as that of venereophobia.)

I do not see (*pace* Dr Winnicott) why ECT should be equated with death any more than sleep or narcosis should be. I feel that it is equated with punishment, and I shouldn't be a bit surprised if many of the more disagreeable but successful orthodox surgical procedures owe their success in part to a similar somato-psychic exchange—I am, etc.,

Mundesley Norfolk.

GEORGE DAY

SIR,—I would like to endorse most heartily Dr D W Winnicott's article (May 17, p 688). I was one of the first to use the ECT treatment in Eire outside of the mental hospitals, early in 1943, and could have added considerably to my income as a psychotherapist thereby had I not quickly realized that its use was merely another attempt to short-cut cure and did nothing to solve the patient's real problems. I was later required to use ECT in a mental hospital for a year, and I became fully convinced that any change which resulted was psychological, and frequently only temporary, and tended to obscure the real issue of the causes of the patient's disappointment and despair. I clearly recall two so-called menopausal depressives who were elevated to apparent normality, and who quietly committed suicide within a year.

I came to regard the ECT switch as a whip in the hands of the operator which could be of value when the patient had intellectually come to a knowledge of his or her problems but was very fearful of taking the necessary steps to solve them. A whip, however, is not a scientific instrument. Need one add more?

Pari passu, Dr J Dunne, the medical superintendent of the Grangegorman Mental Hospital, Dublin, informed me in 1944 that their statistics showed that the relapse rate after insulin treatment for schizophrenia was greater than among those left to recover spontaneously. Grangegorman Hospital had the staff to continue treatment all through the war, so that their statistics were to some point.

ECT and insulin treatment appear to be first cousins, if not full relations—I am, etc.,

Stockton-on-Tees

L F DONNAN

SIR—In his paper on the physical therapy of mental disorder (May 17 p 688) Dr D W Winnicott says "No one has the slightest idea how it works." I can't help wondering whether this is because, expecting complexity, the explanation is actually so simple that it has been disregarded. I believe the prototype of the therapy can be seen in the customary and familiar treatment of a minor hysterical disturbance by a severe sharp admonition. Sometimes slapping the face is recommended or even a douche of cold water. The important thing is to shock the patient by the unsympathetic treatment received from the external world. Clearly such simple measures would not

suffice for the graver psychoneuroses or depressions. I think the principle is the same, but it has to be properly checked up. A pail of water can't be emptied on an unhappy head by appointment. But it is different with ECT. Little is done to mitigate the patient's apprehensions. It may be better to augment them. In any event the convulsion is unpleasant enough—truly an unsympathetic external world. The contributory help of the "suggestive" value of electrical treatment or insulin or whatever it may be should not be underestimated. Ultimately one has to depend on the body's spontaneous power to restore itself. Nothing can be put in by ECT or psychotherapy that was not there before. It is useless to treat a mental defective by these methods.

The value of physical treatment to set working innate powers may be seen in the successful manipulation of an inert flaccid, white, and asphyxiated newborn baby. Nobody who has seen such a one quickly change into a pink bundle of loveliness will ever forget the transformation. But nothing has been done except to stimulate the infant to work as it was meant to, and this is generally as far as interference should go. So with convulsion treatment, the best it can do is to push the patient on to the right road without doing any harm. The psychoanalyst can do no more. He often won't do as much.

The search for first causes is vain. It has not prevented the use of the sulphonamides or penicillin, although their mode of action is not clear. If the physical therapy of mental disorder, shorn of such horrible excrescences as leucotomy, can help it should not be discouraged. Even it might be worth while to extend it to the treatment of the amorphous miscellany of chronic diseases. It might take the place of the various kinds of "shock treatment"—TAB, intramuscular injections of milk, malaria, and the rest—the idea being to jerk the natural powers of restoration into activity where the changes are not irreversible, and it is surprising how often they are not—I am, etc.,

London SW1

E GALLOP

SIR—Empiricism is like a red rag to a scientific bull according to Dr D W Winnicott whose paper, "Physical Therapy of Mental Disorder" (May 17, p 688), will undoubtedly stimulate considerable discussion. It is clear that Dr Winnicott is opposed to empirical treatment, yet he admits that "scientists regard empiricism as a stimulus to research" and that "convulsive therapy attracts to mental hospitals people with first rate qualifications." He stresses that "the doctor is expected to represent science or objectivity," but the title of his original talk was "Some Reasons for a Personal Prejudice against the so-called Physical Therapies of Mental Disorder." How can he reconcile his medical responsibility to be *objective* with his avowed personal prejudice? He suggests that his approach to the problem of physical therapy may be unscientific, but condones his attitude "as a suitable one in the case of such unscientific methods of treating the disordered mind." Surely he does not expect to convince anyone by being unscientific about the unscientific.

If we were condemned to *understand* before we *acted* our instinctive responses would find no expression and many of us would thereby fail to survive until such time as we had managed to acquire experience and psychological insight. May we not justifiably equate empirical therapy with our instincts, which we subsequently endeavour to harmonize with our environment? Stability, maturity, and understanding do normally accrue. Science was evolved from the study of items and phenomena and our knowledge has been derived as much from the observation of the extant as from the development of an idea or the investigation of a theory. Empiricism has its place in modern therapeutics. Those who decry it for such few measures as can be reconciled with absolute scientific criteria are confining themselves in a therapeutic wilderness and failing in their duty to suffering humanity.

For many years the treatment of mental disorders consisted of confinement in an institution, physical restraint and forcible feeding when necessary, and the exhibition of crude sedatives. The therapeutic approach of alienists was just as negativistic as were the clinical signs of some of their patients. Small wonder that quasi-physical measures of an empirical nature were enthusiastically adopted by the successors of that unhappy and frustrated generation. Nevertheless, over optimism and

precipitate recourse to therapy which is not understood must be guarded against and the older orthodox methods must not be discarded too readily because it is easier 'to press a button'. Let empiricism proceed along scientific lines and let us avoid its becoming the whipping boy of those colleagues whose unconscious guilt (over therapeutic impotence) determines a sanctimonious resistance to therapeutic innovation—I am, etc.,

London W 1

ELLIS STUNGO

SIR—The restatement on a systematic basis of arguments which have led Dr D W Winnicott (May 17 p 688) to become a fervent opponent to physical therapy in mental disorder deserves a thorough consideration on its merits. Physical therapy in mental disorder is deprecated and stigmatized as being 'unscientific' and encouraging the belief in 'magic'.

It is doubtful whether some of the summary statements advanced by Dr Winnicott on this subject will come to hold a place of distinction in the realm of science. "Mental disorder is a disorder of emotional development." Does Dr Winnicott exclude from mental disorder degenerative processes (arteriosclerotic and senile) or toxic-infectious psychoses (such as puerperal, choreic, and others) or the post-encephalic personality changes? "False theories are built around the assumption that the mechanism by which change is brought about is a physical one." Dr Winnicott's view seems to be firmly encapsulated in a closed system of mental causality which does not allow for interaction with physico-chemical agencies and ignores the dynamics of psychosomatic unity. None of the great psychological theoreticians who have laid the foundations of mental science (Kraepelin, Janet, Bleuler, Freud) would ever have adhered to such a dogmatic view. Changes brought about in the brain by electrical shocks cannot be fundamentally different from changes produced by chemical agents like alcohol, insulin, benzedrine, etc. Dr Winnicott might as well extend his wrath to include also narco-analysis, which proved so helpful in restoring the psychiatric casualties of the battlefield much quicker than any psychoanalyst could have undertaken. If links are missing in the hypothetical structure underlying physical treatment in mental disorder, it does not mean that such a hypothetical structure must be dropped as valueless. Hypothesis and scientific exploration are necessary correlates.

Not less detrimental than ill-considered summary statements is the monopolizing tendency shown in Dr Winnicott's identification of "scientific psychology" with psycho-analysis to the exclusion of any other approach. In order to proceed scientifically attempts would have to be made at a confrontation of sufficient numbers of cases which have failed on ECT and have responded to psycho-analysis with those in which the result was reversed accompanied by a thorough investigation of all factors involved (not excluding psychological 'epiphenomena' connected with 'submission' to shock treatment). It will be one of the tasks of the regional centres of psychiatric research, to the establishment of which we are looking forward and the existence of which is indeed a desideratum of a high order, to arrange comprehensive and statistically significant investigations into the relative merits of various forms of psychiatric treatment.

While Dr Winnicott points out the fearful reactions of patients to ECT he forgets to mention that the revelations of psycho-analysis in the form of Oedipus castration, anal and similar complexes are not always highly enjoyable. In speaking of leucotomy as a "quack cure" (only recently recommended—in cautious terms—by the Board of Control) he does not shy at a slur on a great number of contemporaries. If personal testimony is of any value I can assure Dr Winnicott that in giving ECT and advocating leucotomy in carefully selected cases I have never felt that I have allowed myself to deviate one inch from the principles of scientific psychology nor from a humanistic approach to the roots of human existence.

There is, however, one good point in Dr Winnicott's Cassandra call. The fact that the more or less formidable armamentarium of modern psychiatry might be placed into the hands of young doctors soon after qualification who lacking a basic psychological education, might use the new methods in a too mechanical way, thereby assuming decisions over the fates of sometimes "very valuable" people calls for a constant and ever increasing vigilance in matters of psychiatric education. Dr Winnicott deploras a tendency "away" from scientific

psychology, but, alas, there has not been a sufficient tendency yet, among the rank and file of psychiatrists to move 'towards' a scientific psychology. Psychiatry, now feeling rich and powerful by constantly widening its boundaries will in the end have to give a proper place again to its present Cinderella, psychopathology, which is the theoretical and experimental exploration of the fundamental dynamics of mental processes in states varying from the normal. Only on the basis of such a no-dogmatic foundation of psychiatry shall we arrive at, and finally, present a balanced view of practical methods and their results—I am, etc.,

Sedgefield Durham

STEPHEN KRAUSS

Tuberculosis and Diabetes Mellitus

SIR—I read with interest and agreement the article by Drs W R Gauld and A Lyall on "Tuberculosis as a Complication of Diabetes Mellitus" (May 17, p 677) and was sorry to find in it no mention of what, in England at any rate, constitutes one of our greatest problems in the treatment of diabetes with tuberculosis. In most sanatoria there is a lamentable absence of provisions for the proper management of diabetes, both in respect of trained staff and dietetic and laboratory facilities. As a result the advantages of good treatment of the tuberculosis are more than outweighed by the disadvantages of poor control of the diabetes. Experience has taught me that it is often better to keep the patient at home under the care of the tuberculosis officer and a good diabetic clinic than to send him or her to a sanatorium where the all-important control of the diabetes is likely to be forgotten, ignored or, more often just not understood.

The solution of this problem lies in the establishment in each region of at least one sanatorium in which there should be all the necessary facilities for the maintenance of good diabetic control and to which all tuberculous diabetics in the region could be referred for treatment—I am, etc.,

Diabetic Department
King's College Hospital

WILFRID OAFLEY

De Morgan's Spots

SIR,—May I congratulate Capt A R Murison, Lieut J W Sutherland and Flying Officer A M Williamson with regard to their article (May 10, p 634) on Campbell De Morgan's spots, which, so far as I am aware, is the only critical analysis yet published dealing with their relationship to cancer. The dearth of literature on the subject is curious considering that they are often remarked upon, and there is unfortunately an abundance of material available for examination. Your contributors may be interested to read an account of De Morgan's spots or 'plaques de Morgan' by Dr A T Brand, of Driffield published in the *British Medical Journal* in 1902.¹ Brand strongly supported their connexion with malignant disease and called them "canceroderms", his views, however, are unsupported by any statistical evidence.

It might be thought that there would at least be no difference of opinion about their histology, but Sir John Bland Sutton, discussing the structure of De Morgan's spots, said "They are patches of pigment not naevi." With this in mind I once excised and examined a number of the spots but could find no trace of pigment. Their structure is that of a capillary haemangioma—I am, etc.,

Sheffield

LOUIS A IVES

REFERENCES

- ¹ Brand A T (1902) *British Medical Journal* 2 240
- ² Bland Sutton Sir J (1922) *Tumours Innocent and Malignant* 7th ed p 129, London

Pemphigus Vulgaris

SIR—I have under my care a very severe case of pemphigus vulgaris. In a recent article in the *Archives of Dermatology* successful results are reported after transfusion with blood from persons who have recovered from the disease. Though it is not proved that the success was due to specific properties of these sera, I feel it imperative to try the method, if it can possibly be achieved in view of the extremely grave prognosis. If, therefore, any doctors know of the whereabouts of any patients that have recovered from true pemphigus vulgaris, I

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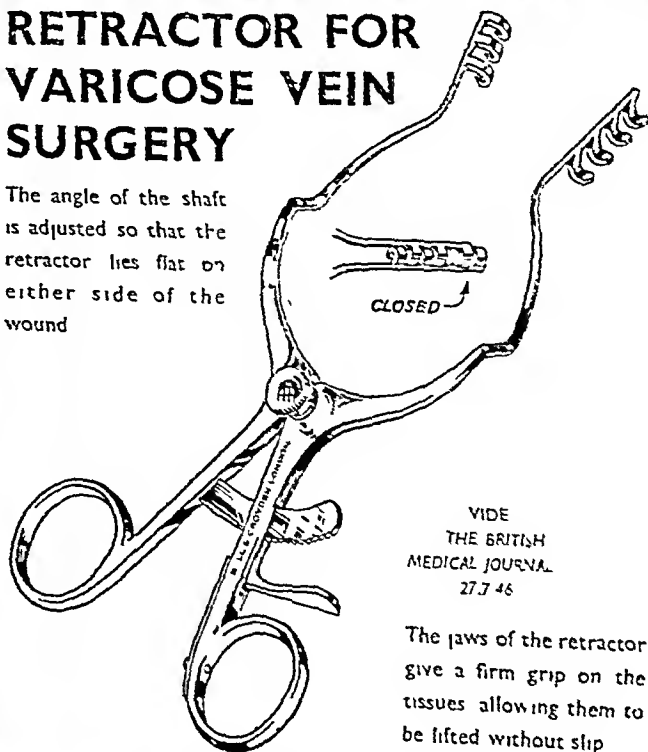
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should be most grateful if they would send me full particulars of the cases and ask the patient to communicate with The Blood Transfusion Officer, University College Hospital, Gower Street, London WC1 (Euston 5050)—I am, etc,

London W 1

W N GOLDSMITH

Water and Salt Depletion

SIR—There are some reactions affecting the distribution of salt which seem to need further study. After the masterly presentation of the role of salt in the body by Dr. H L Marriott (Feb 15, March 8 and 15) one hesitates to intervene and can only plead interest as an apology. The reactions in question involve the little-explored field of the absorption thresholds of colloids for different concentrations of electrolytes. To illustrate Gelatin placed in cold water swells. If salt be added gradually the gelatin continues to swell until a critical point is reached, then if more salt be added it will abstract water from the gelatin. Finally the salters' process is reached, used for centuries to cure skins. The significant points are that for each concentration of the electrolyte there is a different degree of absorption, and when this is active the force developed against resistance is very great. This pressure is masked in the body by elasticity in the tissues. In an organ with a capsule, like the kidney, it is greater, the rock is split. Evidently the force of colloidal absorption cannot be ignored.

Its action in the body is shown when oxyhaemoglobin is converted into the carboxy form. This causes the venous blood to absorb from 5 to 10% of its bulk of water, aiding the venous circulation and that of the tissue fluid. The water is released in the lung and excreted mainly by the kidney. That the absorptive capacity of the colloid is not exhausted is shown by the fact that in cases of suffocation the bulk of the venous blood is increased by 30%.

The typical cell is stated to retain potassium and phosphorus, but contains little salt although bathed constantly by a solution of it. The differences in the other types of cell must be due to some extent to the colloids they contain. The admission cells of the kidney pass most electrolytes in solution but refuse feebly-ionizable proteins and neutral glucose. The conservation cells of the organ absorb water and salt, which they return to the blood freely, but refuse all other constituents of primary urine. Why does the colloid of one cell combine with potassium which another refuses? Why does the earth retain potassium while salt is washed into the sea? Apparent suspension of the laws of osmosis is evident in different reactions. During life the cell excretes actively but when dead ceases to do so but absorbs avidly. Why is osmosis active in dead cells but not in the living? Why does the cancer cell absorb so rapidly as to cause pressure which favours cell division?

If a red blood cell be filled with molecules the extent of its internal surface can be expressed in square metres. As electronic change is interatomic rather than between molecules, the area at which surface interchange, the base of chemical action, can take place is very great. Considering the diversity of action in the cell, which is so small that we know but little about it, it must be the seat of intense activity, much of which must be maintained by colloidal surface. The little explored field of colloid absorption does seem to need investigation—I am, etc

Montreal

RICHARD KERRY

Prognosis in Acute Nephritis

SIR—Several statements are made in the interesting survey (April 5 p 457) of Rudebeck's important paper on the prognosis in acute nephritis that seem to me to require qualification and upon which I would venture to comment.

After remarking that the prognosis must be guarded if residual symptoms are present on discharge from hospital (with which I agree) it is stated that if they (i.e., residual symptoms) persist for more than one year or are severe, chronic nephritis may confidently be awaited. With this I cannot agree. In the paper by me cited in the annotation and by Rudebeck I referred to 586 patients with war nephritis in whom residual symptoms persisted for from one to ten years after the onset, all of whom eventually recovered completely. While the majority cleared up spontaneously in the earlier part of this

period, in 14 patients residual signs finally disappeared only in the ninth and tenth years after the onset.

It is, I believe, generally agreed that the prognosis in war nephritis differed little if at all from that in glomerulo nephritis in civilians of comparable ages. In the past twenty-five years I have certainly seen quite a number of civilian patients of all ages in whom residual signs persisted for years who eventually recovered completely as judged by standards not less rigorous than those used by Rudebeck. On the other hand the proportion of patients suffering from latent or, as I prefer to call it "unresolved" nephritis that ultimately recover is undoubtedly small. Those who do recover are fortunate exceptions. Nor in my experience is it correct to assert or to imply that chronic nephritis inevitably ensues when residual symptoms are severe for I have often seen patients recover completely with appropriate treatment who were suffering from massive albuminuria with anasarca and ascites that had persisted for more than a year after the onset of the disease and before treatment was instituted.

It is not necessarily, in my view, the severity of the residual symptoms that determines the issue, but their nature. When they include hypertension or diminished renal function, however slight, and these persist for a year, and often for less than a year it is a very different story. It is doubtful if complete recovery ever then occurs. I believe that hope of eventual complete recovery should never be abandoned however long residual signs persist, provided these do not include hypertension or diminished renal function especially the former. The continuance for more than three or four months after the onset of considerable and undiminishing numbers of red blood cells in the urine is also in my experience a sign of grave import.

The second point to which I would refer concerns the effects of prolonged bed rest on the ultimate prognosis in this disease. In referring to Rudebeck's conclusions it is stated in the annotation that "it could not be proved that the prognosis was any better if the patient was kept at rest (i.e., in bed) for long periods. On consulting the original paper, however, I find that only 50 of the patients in Rudebeck's series were confined to bed for more than ninety days and only 7 for between six and nine months. Seven patients in the series were regarded as cured on discharge (not those who were confined to bed for the longest periods), and 43 were classified as not completely recovered. Concerning the latter Rudebeck remarks "among the non recovered cases we also meet with many in which bed rest may be designated as insufficient." I entirely agree.

Observations extending over many years, but particularly during the past five years in the Renal Unit at Pembury where it is possible to keep patients in bed as long as is considered necessary, indicate that complete recovery from unresolved nephritis results more often than is commonly supposed from treatment in which prolonged confinement to bed is probably the most important factor. In many patients six to nine months' carefully regulated bed rest is not the maximum but the minimum period required to achieve success. So far as I am aware the potentialities of prolonged and accurately controlled bed rest in renal diseases have not previously been systematically exploited on any adequate scale. The effects are of course quite different from those seen in patients who languish in bed in their own homes or in hospitals where bed rest is prescribed more or less as a matter of routine. Our experience at Pembury where the objective evaluation of the effects of this measure has been a main line of research for some years indicates that it may well prove to be as important in the treatment of unresolved nephritis and some other forms of renal disease as it is in pulmonary tuberculosis, for example. That prolonged and properly controlled bed rest for from six to fifteen or twenty months is sometimes the only means of procuring complete and lasting recovery in unresolved nephritis I have no doubt though there is little to suggest that this measure will prove successful in more than a small proportion of these cases. In the absence of any speedier or better method of treatment it seems right to urge that patients suffering from unresolved nephritis should be given the chance of permanent recovery, however slender, that adequate bed rest occasionally offers—I am, etc,

Pembury Kent

A A OSMAN

State Medical Service in New Zealand

SIR—Sir Ernest Graham Little (May 3, p. 611) quotes a paragraph from an article by Mr. A. E. Porritt in the *St. Mary's Hospital Gazette* 1947, 53/54 as a warning against any form of national medical service. I have now obtained the last two numbers of this gazette and find that this quotation is a single paragraph taken from one of two long articles describing Mr. Porritt's travels in America and New Zealand. They are obviously written to amuse and instruct his students. I should imagine that the last thing Mr. Porritt expected or desired was that any part would be removed from the obscurity of an almost private publication and publicized as serious political or medical comment.

As one who has spent four months in that delightful and friendly Dominion during the same autumn when Mr. Porritt paid his shorter visit, I understand what was in his mind when he wrote that paragraph and I should be surprised if he did not now regret having expressed himself so tersely that it allows of his being quoted in a sense which I feel sure is not his true appraisement of the medical position in New Zealand.

Let me take Mr. Porritt's criticisms in detail.

(a) 'a slightly improved all round service for the public during business hours. To get a doctor in New Zealand after 6 p.m. and over week-ends is not an enviable task.'

This is really commendation of the service with criticism of the number of doctors who administer it. To a large extent this criticism is true. Now that the doctor's fee, or part of it, is paid by the Government, there has been a great increase in the number of people seeking medical advice and, unfortunately, this Act came into operation while many of the profession were in the Services. The result has been great pressure upon those practitioners still in practice, but this position will rectify itself as the number of these increases.

(b) 'a definite falling off in the standard of medical practice both from ethical and clinical viewpoints. This is the consensus of opinion from all branches of the profession.'

Having so recently visited New Zealand I know what is in Mr. Porritt's mind, though I think he would have expressed it differently if he had intended it to be made more public, as I feel sure that he was regaled with stories of the activities of certain practitioners just as I was. Ethically every country has its black sheep, but I found that these stories told in every centre generally referred to the same small group of practitioners, and finally I came to the conclusion that New Zealand has a smaller percentage of black sheep than we have to endure. Clinically New Zealand practitioners consultant and general, have the same high standards as always, both the clinical and ethical failures referred to the same small group. I only wish ours was as small.

(c) 'a growing and already appreciable dearth of specialists, and this in a country where the proportion of men taking higher degrees was previously exceptionally high.'

Here again I imagine that brevity has failed to express the true state of affairs. In most hospital appointments I think that there are just as many well trained candidates as in the past. It is true that there is a dearth of specialists in certain branches notoriously in my own, but this is due to the ancient method of hospital administration, which fails to create the necessary posts, and this is unrelated to the Social Security Act.

What I think Mr. Porritt has in mind is that there may be a dearth of well trained men in the future, as at the present time newly qualified men are tempted to rush into general practice where they can immediately make what to them is a large private income, rather than devote years to postgraduate training and the obtaining of higher diplomas. This is well recognized by those responsible for medical education in New Zealand and is a cause of anxiety. Apart, however, from any action to be taken by the authorities, this condition will gradually rectify itself as the number of general practitioners increases and patients again have greater freedom in the choice of doctors.

Like all new large schemes social security in New Zealand has much to be commended and probably much to be amended, and it seemed to me that professional anxiety was chiefly as to the form amendments would take. Of one thing I can assure Sir Ernest Graham Little the general practitioner in New Zealand would view with consternation the complete cancel-

lation of the medical part of this Act. It will be understood that any opinion expressed in this letter refers only to New Zealand and its Medical Service—I am, etc.,

Manchester

WM. FLETCHER SHAW

Classification of Tuberculous Patients

SIR—For a long time workers in tuberculosis have been awaiting an authoritative lead from the Ministry of Health in the matter of classification of the disease at the time of diagnosis and also regarding assessment of the results of treatment. Local authorities and others are now informed that the Minister has decided to adopt recommendations made to him by the Joint Tuberculosis Council, which are issued as a substitute to Section I of the Appendix to Memorandum 37/T (revised).*

Cases to be classified 'quiescent' after treatment are described in part, as those 'in which no tubercle bacilli have been found on three consecutive monthly examinations by stained film'. It would be of considerable help to one tuberculosis worker if the Joint Tuberculosis Council or the Ministry of Health would indicate precisely or even vaguely, what they are talking about. Do they refer to sputum examined by any staining method and anybody? Do they accept a specimen of saliva from which pus is absent as suitable material for examination? Do they recognize that pulmonary secretions which are not projected forward beyond the posterior third of the tongue are swallowed? Is it their intention to ignore for the purpose of future classification the fact that more precise methods of search for tubercle bacilli exist and are in everyday use? If so, the inference seems plain enough—that it is not possible in their view, to eliminate all tubercle bacilli from secretions, and we are to rely for prognosis on a crude and discredited investigation—I am, etc.,

Henley on Thames

HARLEY E. STEVENS

* Printed in the *Supplement* p. 111, of this issue—Ed. *BMJ*

Day Nurseries

SIR,—Those members of the profession who are interested in the practical, as distinct from the theoretical, aspects of the care of children in nurseries seem to be doomed to recurrent disappointment in our hopes for really useful and dispassionate information. Dr. McLaughlin's paper (May 3 and 10, pp. 591, 631) began well and promised just the kind of information which is needed, but it declined in its later stages into a mere restatement of the obvious without any attempt to evaluate the findings which were stated.

Dr. McLaughlin certainly deserves congratulation on one point, she has tried better than her predecessors to obtain figures which are statistically valid. Even so, allowance ought to be made for two factors which will bring about a certain amount of selection in the 'Nursery' and 'Home' groups. A considerable proportion of nursery children come from homes in which there exists economic necessity for the mother to work. It is not improbable that those children have had a less satisfactory start in life than the 'Home' group. Further, it would appear that something like 10% or 15% of the 'Home' children failed to attend for examination, it is not unreasonable to assume that the absentees were largely the children of the more careless parents and that a group of children who might have pulled down the 'Home' averages was missing.

This investigation, like those which have preceded it, pays attention to nasopharyngeal infections and the incidence of tonsillar enlargement. Surely it is time that we learned to be realistic in considering these two conditions. Tonsillar enlargement is becoming generally recognized as of no pathological importance in itself. There is, moreover, every reason to believe that it occurs as a part of the child's normal development of immunity. In more than a dozen years' experience of work with nursery, nursery school, and nursery class children I have found tonsillar enlargement to be a constant phenomenon which appears on a child's first admission to group life, whether this happens at the age of 2 or the age of 5 and which gradually disappears as he becomes habituated to dealing with infections. Almost equally common is a phase of recurrent minor respiratory infections, lasting between six and eighteen months and then disappearing.

So far in fact as respiratory infections are concerned the effect of nursery life is simply to anticipate an inevitable

occurrence of childhood. This may be unimportant or it may not, but it cannot be dismissed as bad without further evidence. What is the later history of the nursery child? Surely we need to know whether there is any evidence of lasting later damage before we attach any importance to the increased incidence of these infections. A similar criticism may be applied to Dr McLaughlin's comments on measles. Obviously the aggregation of children during a measles epidemic will increase infection. But it is futile merely to say, as Dr McLaughlin does, that 'this is particularly important in view of the greater mortality rate of measles in young infants and the greater risk of serious complications.' Did the 111 nursery children with measles show a greater than average rate of mortality and complications? If not, the greater incidence of infection loses its importance.

Every investigation of the health of nursery children so far carried out has been subject to two fallacies. The first is the assumption that a medico social problem can be solved in terms of clinical medicine alone—the fact that the social aspects of nursery life are difficult to evaluate is no reason for ignoring them. The second is the comparison of the nursery child with the child from a normal home—true comparison would lie between the nursery and the home which would house the particular child if the nursery were not there. Perhaps 50% of nursery children would, if the nursery were not available, have to live in home surroundings of a grossly unsatisfactory character. Nurseries are a social remedy for social ills. Presumably what we need to know is whether the remedy is, in fact, worse than the continued toleration of the ills and what more satisfactory remedies can be found. Even such a thorough and workmanlike piece of research as Dr McLaughlin has produced will be comparatively sterile unless its application to these practical problems is pursued—I am, etc.,

Colchester

JOHN D. KERSHAW

SIR—Your leading article of May 10 (p. 644) on day nurseries reflects the attitude of many recently published articles and letters. As the mother of a child who has attended a day nursery, and having worked in one myself, I am hesitant to become an advocate of any system which tends to sever the relationship between mother and child, but it should be borne in mind that a large percentage of mothers taking advantage of available day nurseries are wholly or partly responsible for the financial cost of the child's upbringing. This may arise because (a) the child is illegitimate and the putative father unknown, (b) the father is dead and the mother not in receipt of a pension or the pension afforded to her is inadequate in view of the high cost of living, (c) the father has deserted the mother and falls in arrear with his payments towards their keep. I know of many cases where the endeavour to trace the husband and to seek legal aid for the recovery of arrears or to re-establish the allotment is beyond the capability of the mother. I would add to these those instances where the husband's earnings are inadequate and the mother has real need to supplement his income with her own earnings.

If day nurseries are not available to such mothers the only alternative is to find a foster mother and whereas an intelligent nursery worker can supply the child's needs during the day with affection and sympathy without impairing the child's relationship with its mother a foster-mother often accepts the charge either for financial gain or because she has no children of her own and finds an outlet for her maternal instinct. The former reason and its effect on the stability of the child's environment need no comment. The latter is fraught with difficulties, and in many instances the foster mother receives the child's affection and the mother becomes a tolerated visitor.

Unmarried mothers to day can arrange to have their babies adopted and there are numerous children's homes willing to admit destitute children but the mother who chooses to keep and maintain her child is worthy of consideration. Some nurseries have waiting lists of children for admission, and the mothers suffer very real hardship while unable to work. Is it not possible to give priority to those mothers who have real need to work rather than to those who desire to escape maternal responsibilities for less harrowing work in factories?—I am, etc.,

Liverpool

MARGARET WIGFIELD

The Revolution in Anaesthesia

SIR,—With the letters of Drs Massey Dawkins and H. W. Loftus Dale (May 10, p. 654) it is to be hoped that the trumpet has sounded the retreat from the indiscriminate use of curare by anaesthetists. Common sense and common professional prudence may now return. It has indeed been disconcerting to hear of this highly lethal drug being used, with no other excuse than that it facilitates the passage of endotracheal tubes, for operations requiring little muscular relaxation at all.

Surgical shock has not changed its nature since the administration of curare has become all too common. The degree of shock a patient suffers from a surgical operation depends on many factors, but the chief of these remain (a) the patient, (b) what is done to him, (c) how it is done and by whom. Under the latter head come both surgeon and anaesthetist.

It is common experience to find that of two sailors falling into a dry dock while returning to their ship after dark the drunker (and more relaxed) sustains less shock and fewer fractures. Nevertheless he will die if the fall has been far enough, even if he be both "pentothalized" and "curarized" before taking the plunge. This lamentable truth applies also to the patient's plunge into anaesthesia, that 'little death,' and into surgery, especially the exploratory type of surgery which so often becomes a boisterous rummaging into what was once called the sacred temple of the human spirit. We all know the surgeon whose cry is 'Iron them out,' and we have all at times wondered whether he would really be happier with his head inside or whether he is better playing a querulous tune with the parietal peritoneum as his banjo string.

When a bull is loosed in a china shop it is fortunate if a few of the more valuable pieces have been kept on the high shelves. Only thus can complete wreckage be avoided. The bovine comparison cannot, we must admit, be confined to the surgical fraternity. One correspondent points out that the only case of shock he recalls when using curare was when he inadvertently failed to notice that his soda-lime absorber was not functioning. It is fair comment to remind him that, had he not been using curare as a short-cut solution of his relaxation problem, the fact that he was submitting his patient to auto-intoxication in addition to the exogenous poisons could scarcely have escaped his attention.

Curare is a great help in the special case, but I beg leave to doubt whether surgical and anaesthetic techniques have improved with its indiscriminate use—on the contrary, humans being what we are. This drug is indeed a milestone in anaesthesia, but do not let us allow it to produce irreversible relaxation in too many patients who might well have survived had it remained in the South American blow pipes—I am, etc.,

Derby

ANDREW G. HEGARTY

Spinal Anaesthesia

SIR,—Regarding your interesting comments on this subject in your current issue (May 10, p. 647) may I be permitted to advance a purely personal theory, entirely without laboratory or indeed any kind of scientific support that appears to me to be relevant? It is this. No mention is made regarding the normal procedure, adopted by myself over many years and, I think, the majority of anaesthetists of (alas) the older school, of smacking the skin with a scalpel (after the introduction of the ordinary preliminary local anaesthetic, with or without adrenalin or whatever it may be) before the introduction of the needle. I submit, Sir, that unless this precautionary measure is adequately carried out there is every danger of the needle failing to make an absolutely clean puncture and acting after the manner of a cork borer, carrying into the theca a minute piece of skin, with disastrous results despite the most painstaking routine sterilization.

I write, Sir, purely in the light of long personal experience and in the entire absence of any kind of supporting evidence. But the idea is well worth while bringing forward by the courtesy of your columns especially to-day when most of us are using worn and blunted instruments with badly fitting and bevelled obturators that would appear to invite trouble—I am, etc.,

Worthing, Sussex

O. P. CLARK

Penicillin

SIR—Recently you have made annotations on the dosage of penicillin (April 19, p 536) and the lack of immunization in infections treated early by this drug (May 10, p 648). In both cases, I think there is shown a feeling of disappointment that recurrences sometimes occur and show that infection has not been completely eradicated by large doses of penicillin. This view is due to an unreasonable dependence on drug treatment alone. When the drug is in direct contact with sensitive bacteria it is effective in very small quantities, so that the large amounts injected by Dr D P Whentley (April 19 p 530) for styes, boils etc., are very wasteful although convenient for ambulant patients.

It is likely that some bacteria escape the direct action of the drug in all cases and the risk of these causing lesions later depends on their numbers and the patient's resistance by serum and tissues. The danger is greatest when living organisms are left in unobserved positions and when resistance is low. Increasing dosage is not enough, on the other hand, delaying administration so that the immunity processes may be stimulated is dangerous in serious infections and is uncontrolled and is likely to be ineffective when resistance is poor. Penicillin should be used in solutions or powder locally if important lesions can be reached, and dosage should allow for absorption into the general circulation if necessary (Florey, M E *et al*, *Lancet* 1946, 2, 405). As an alternative, if no local lesion is prominent, or additionally if required, systemic injection of the drug may be needed. It is very important that if lesions recur latent primary sources of infection should be sought actively and drained or surgically removed and that resistance should be increased by vaccines, non specific protein therapy, injections of arsenic or other means. To rely too much on penicillin can bring discredit to the drug and the doctor, but a more careful use of it will reveal the immense problem of people whose susceptibility is very great to small numbers of organisms which reach them from outside or have remained from previous illness—I am, etc.

London N19

J M ALSTON

Vaginal Operations

SIR—I would like to point out that Dr J H Hannan in his letter headed "Vaginal Operations" (May 3, p 614) made a statement which is not, I am afraid, in accordance with the facts. He says "carcinoma of the vaginal portion of the cervix only occurs in women who have been pregnant".

Two series of published figures will be enough to prove this point. (1) Fricker R E (*Proc Staff Meetings Mayo Clinic* 1939, 14 705). A series of 108 "stump" carcinomata, 21% of which were in women who had never been pregnant. (2) Hurdon, E (*Cancer of the Uterus* London, 1942). There is a graph on p 3 showing the mortality rate for England and Wales in cases of cancer of the uterus at different age groups, single and married women being graphed separately. (There is a footnote pointing out that about 90% of these are cervical cases.) At nearly every age group the cases in single women are about half the number in married women (rather less in the lower age groups)—I am, etc.

Manchester

T F REDMAN

Cows' Milk and Rheumatism

SIR,—When visiting the north of Scotland lately I met a veterinary surgeon of great acumen and well known for his skill in dealing with diseases of domestic animals, and was surprised to learn from him that cows are liable to acute rheumatic arthritis, with swollen joints, and that they may develop valvular affections of the heart. He added that he prescribed salicylate of soda in spoonful doses thrice daily for the disease.

I saw at once that if this were so we had a rational explanation of the disease in human beings, as cows' milk would readily convey the infection. I am not aware that this conception of the origin and spread of rheumatic fever is mentioned in any of the textbooks on medicine. Should my friend's observations and experience of acute rheumatism in cows be confirmed, we have here an important contribution to practical medicine, and the obvious conclusion is that every cow considered to be

suffering from acute rheumatic arthritis should be reported to the medical officer of health so that measures should be taken to abolish the infection. I have pleasure in stating that the name of my accomplished friend is Mr Duncan Campbell, Veterinary Surgeon, Thurso NB—I am, etc.

Glasgow

JOHN T MACLACHLAN

Acid Drinks and Sulphonamide Therapy

SIR—Dr Petronella Potter in her letter (May 10, p 654) recommends the prohibition of acid fruit drinks for patients on sulphonamide treatment to avoid renal complications. May I point out that her recommendation is based on the entirely erroneous conclusion that acidity of fruit juices leads to an increase of acidity in the urine? Rather, the opposite is the case. The acidity of fruit juices is due to weak organic acids which in the urine at the end of a metabolic process are excreted as alkaline carbonates and so increase the alkalinity of the urine. There is, therefore, no reason for depriving patients on sulphonamide treatment of these refreshing drinks—I am, etc.

Warwick

A HOLZEL

Handling of Food

SIR—A question has been puzzling me for some time now, and recent events locally have brought it to my mind. It is this: How is it that the authorities local and central, permit our food, particularly meat to be handled as it is to day?

I have always understood that the English public health laws have been among the finest, if not the finest, in the world, and that these laws lay down that meat must be delivered to the retailer in clean vehicles by men wearing clean washable caps, overalls and aprons and that the meat must be hung a certain minimum height from the floor in such a position that customers and passers by do not come into contact with it. How is it then that one sees meat being delivered in vans that certainly do not look clean, by men wearing old serge uniforms and no aprons or overalls, and that it is dumped down in the corner of the shop on the floor?—I am, etc.

Coventry

JOHN HALE POWER

Another Name

SIR,—During this war in my experience in the Far East many "new" psychiatric conditions have been described, or perhaps these conditions were seen earlier than hitherto. The most dramatic of these is the "wartime schizophrenia"—an atypical and usually acute schizophrenia or schizoid episode which has a sudden onset and usually a happy ending brought on by ECT or insulin therapy or the two combined. As part of this syndrome there is often a distressing awareness of mental illness. This awareness does not amount to psychological insight, which is defined by Arthur P Noyes in his *Modern Clinical Psychiatry* Philadelphia, 1939 as "an appreciation of the presumed motives and genesis of their [mental] symptoms" self-judgment and the degree to which his [patient's] experience is understandable to him, the manner and extent to which it is interfering with his social adjustment and the successful performance of his usual duties.

Though I am conscious of an already cumbersome psychiatric terminology I feel that adding one further term covering awareness of mental illness "as distinct from insight will be justified if it draws attention to the symptom and leads to adequate study. This awareness of mental illness is distressingly painful to the psychotic, and the mental pain is usually relieved by "shock" therapy, but the awareness persists or, if not present before it appears in retrospect and may lead to full psychological insight.

On a parallel with anosognosia—i.e., unawareness of physical disability—I think the term "abmenognosia" or, in short, "abmenosia," may be adopted. It is perhaps rather a clumsy tongue-twisting word and a little irregular in its Latin, but until another is forthcoming it may serve its purpose.

I should be interested to hear what comments there are or this suggestion and whether it will be acceptable to medical nosology?—I am, etc.

Poona

D CAPPON

Silence on the Act

SIR—Yesterday I examined yet another week's *BMJ* without light or leading for ordinary members in the obscurity of their position. And to day an instalment of regulations under the impending Health Act, No. 899, has come into my hands. They have, of course, the force of an Act of Parliament, though all that Parliament has likely seen of them is the printed cover as they 'lay on the table'. Thus the Ministry marches while the B.M.A. stays licking its wounds.

Will the B.M.A. please tell us at least something? Has all thought of a stand gone by the board? The panel system was the last relic of our freedom. Is the B.M.A. going to make a stand for it? The silence of the *Journal* is ominous. So are regulations 899, already "in force". They deal with two oddly assorted matters. They (1) invite a Local Medical Committee, among other bodies, to appoint an original member of the Executive Council of an Area and lay down the procedure of such Councils, and (2) deal with supplementary ophthalmic services.

The eight regulations under the second head perpetuate recognition of the old imperfect sight testing arrangements and do nothing to advance those improvements in them which Bishop Harman with devoted labour, introduced. The sixteen regulations under the first head, recognizing as they do that the Act is in being, invite us to take some immediate part in working it. Have we again deferred our decision to the eleventh hour?—I am, etc.

Holmes Chapel, Cheshire

LIONEL JAS. PICTON

Guidance in Certification

SIR—The profession had some reason for believing that the principal motive of the Health Service measures contemplated in the Beveridge Report was the desire to control medical certificates in the interest of solvency of the National Insurance Act which was the main objective of the Beveridge Report. Your editorial comments on the increased demand by every Government Department for medical certificates illustrated by some of the trivial examples you quote, have rightly drawn attention to the burden this places upon the profession. But a still more serious development is foreshadowed by a question which appears in *Hansard* (May 15 1947 column 174). A Labour back-bencher asks the Minister of Fuel and Power "what guidance and instructions [the italics are mine] he proposes to issue to the medical profession in connexion with the granting of medical certificates allowing the use of gas and electricity for space heating purposes in residential premises". The Under Secretary was good enough in his answer to say that "he had no reason to suppose that the medical profession do not honourably carry out the heavy burdens which I am afraid we are obliged to impose upon them". But this answer did not satisfy the questioner, who, I fear, would be supported in these suspicions by a large section of the Labour Party.

The greatly increased powers conferred upon the Minister by the new Act would obviously intensify the danger to the profession that certification will in fact be directed and controlled from Whitehall as exemplified by the remarkable admissions made by the Minister of Food with regard to the censorship by lay persons of medical certificates in the allocation of invalid diets—I am, etc.,

House of Commons

E. GRAHAM-LITTLE

No Divorce for Neurosis

SIR—In the case reported under the heading "No Divorce for Neurosis" (April 12 p. 512) the legal argument is interesting. From a layman's viewpoint however, if the wife applied for the separation order, and refused to return to her husband despite his letter and visits, surely she is the deserter and only he would be able later to sue for a divorce.

Neurosis can make normal cohabitation impossible. In insanity the law does not compel the partners to live together. Visits and an affectionate and repentant letter "do not alter the experience nor the fear of days and nights of unreasonable behaviour to which there is no witness"—I am, etc.,

Newell, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

G. M. LANGHAM-HOBART

POINTS FROM LETTERS

Toxicity of Iron Compounds

Dr T. PIRES (Weston super-Mare) writes. In reference to Dr Violet Russell's communication (April 5, p. 465) if "massive doses of iron salts are not indicated there is no reason to withhold judicious use of same. The treating of microcytic anaemia with iron is a useful therapeutic measure, whose benefit it may easily be harmful to withhold from patients by a general measure. The precaution to take in prescribing iron is to ensure that there is no constipation and that taking iron does not cause diarrhoea. In other cases there is real benefit from such treatment, especially in times when sulphonamide therapy is so universal a practice. I should like to know whether sodium sulphate (as stated by Mr G. F. Somers in the same issue) is contained in Blaud's pill rather than sodium bicarbonate. As to vitamin concentrates, my finding is that the natural sources are more effective by oral therapy except in the case of vitamin A, perhaps on account of the deficiency of the latter in present-day diets.

Star-gazing

Dr R. CHRISTOPHER HOWARD (London, W.1) writes. Among the minor improvements which might be made by a planned State would be the suppression of the widely disseminated nonsense misnamed astrology. If we are the keepers of the public health, should we not as a profession protest against the publication of misleading balderdash, abjure the heresy that the fault lies not in ourselves but in our stars, and take a firm stand against suggestions that reward is not the result of endeavour? We may humbly and gladly admit the powerful reality of forces whose comprehension lies beyond our fallible power of reasoning, but all these can be integrated for good if, using the beautiful words of Cranmer, we pray that we may be granted those things which for our ignorance we cannot and for our unworthiness we dare not ask.

A "Medical Certificate"

Dr E. ROLAND WILLIAMS (Clynderwen, Pem.) writes. I have before me a particularly objectionable example of the kind of form still used by some insurance companies when a patient submits a claim under a "sickness and accident" policy. The form is of the type which extracts from the practitioner, under the title of a "medical certificate," a report upon the patient as a "life"—a report which, unknowing to the patient, can be 'used as evidence against him' when he is due to renew his policy, or, possibly, if he should seek a "life insurance." The certificate "is, of course, 'to be given at assured's expense'." The claimant, a healthy young adult, has had an influenza illness of moderate severity which has confined him to bed for a week and which will probably keep him from his work as a farmer for another week or ten days. He is not suffering from any other disease. One would think that legitimately, those are the only facts that the company would need to have certified. But in the case of this company "it is very essential (so the form reads) 'that full particulars be given so that the Medical Officer of the Corporation may understand the exact nature and extent of the illness'." So, to cast light into this medical officer's darkness I am asked to certify at the outset the claimant's age, weight, and height. Yes, the weight and height of a patient ill in bed! Am I to presume that, if I should have a fulminating case of meningitis or pneumonia insured for sickness with this company, I am to cart along with me a portable weighing machine, get the patient out of bed on to it, weigh him, and also measure his height? If I do not do so, will the medical officer fail to understand "the exact nature and extent of the illness"? Then this medical certificate form proceeds to ask twenty-one questions in all about my patient ill with an ordinary epidemic "influenza" pyrexia. Is he of sober and temperate habits? Has he suffered from cardiac affection, tuberculosis, gout, rheumatism, or fits of any kind? Are the teeth sound and is there any pyorrhoea? Of course the most objectionable feature of all is that the doctor feels that he must fill in this form so that his patient shall not suffer the loss of the payments due to him under his policy. The company therefore can reckon that the form will be filled in—and that they will have a free report on the patient as a "life."

Experiments on Human Beings

Dr LOUISE FRASER (Dundee) writes. As one who has served abroad in both wars I cannot be accused of being a conscientious objector, having volunteered for service. May I suggest then that so-called "voluntary" medical experiments on conscientious objectors prisoners in jails, and so forth are not ethical? The practice differs in degree, but not in principle, from the German prison-camp experiments.

Obituary

C Y PEARSON, MD, FRCS

Charles Yelverton Pearson, emeritus professor of surgery of University College, Cork, died on May 13 at the age of 89. He had been on the staff of the College for fifty years when he retired in 1928.

Charles Pearson was born at Kilworth, Co. Cork, in 1857, and his early years were spent at Carrigaline where his father was medical officer. He entered Queen's College, Cork, at the age of 17 and spent a year in the Arts Faculty before changing over to medicine. He qualified in 1878 and was appointed senior demonstrator of anatomy. For six years he worked under the late Prof. J. J. Charles until in 1884 he was appointed professor of materia medica and lecturer in medical jurisprudence. He had already proceeded M.D., being awarded a gold medal, and he took the English F.R.C.S. in 1886. He had been appointed assistant surgeon to Cork North Charitable Infirmary a year previously and some years later he became the senior surgeon there. He was also on the staff of the County and City of Cork Victoria Hospital for Women and Children and of the Lying-in Hospital.

At this time he was medico-legal adviser to the Crown in criminal cases and in this capacity was involved in what became known as the "Coachford Poisoning Case" or the "Shandy Hall Case".

The wife of a doctor in Dripsey had died in peculiar circumstances, and it was Dr. Pearson's evidence that led finally to a conviction for arsenic poisoning at the Munster Assizes in 1887. By the time he was 40, Charles Pearson had become professor of surgery at Queen's College, a position he continued to hold until 1928, when the University conferred upon him the title of emeritus professor. He was a member of the council of the University and of the senate of the National University of Ireland. In 1916 he succeeded the late Sir Charles Ball as honorary surgeon to the King in Ireland.

One of his daughters by his second marriage is now a medical student. His two sons are Dr. Charles B. Pearson of Cork, and Mr. William Pearson, professor of surgery, Dublin University. The sympathy of all who knew him as a skilled surgeon and a charming and likeable man will go out to his widow, his sons, and his daughters.

Dr. ROBERT ARTHUR HEATLEY, chief medical officer of the Bombay, Baroda, and Central Indian Railway, died in St. George's Hospital, Bombay, on April 8 after a short illness. He was 49 years of age. Dr. Heatley, who qualified in Dublin in 1925, joined the railway staff in the following year and spent the greater part of his service at the Railway Hospital in Ajmer. He acted as chief medical officer on more than one occasion and was confirmed in that appointment in November, 1946. He was a distinguished freemason, an honorary life member of the St. John Ambulance Association, and a member of the managing body of the Indian Red Cross Society. He had been a member of the British Medical Association for over twenty years.

Dr. SAMUEL EDWIN ALBERT ACHESON died in Belfast on April 14. Dr. Acheson started life as a pharmaceutical chemist and qualified from Queen's College, Belfast, in 1910. For many years he represented the medical committee in the Council of the Pharmaceutical Society of Northern Ireland. Dr. Acheson joined the British Medical Association in 1911, was chairman of the Belfast Division in 1929-31, a member of the Insurance Acts Committee from 1930 to the time of his death, and of the National Formulary Subcommittee in 1933 and 1937-8. He represented his constituency at nine Annual Representative Meetings from 1930 to 1938.

T. E. H. writes: He was a many-sided man, outstanding in every way, big in stature and big in heart. He ranked high in the masonic order. He was a great churchman and a great family man and his passing is lamented.

Dr. ROBERT SANDERSON died on April 21 at the age of 91 at his home in Lancing where he had lived since he retired from practice in Brighton. His father was Canon Sanderson, head master of Lancing College for many years. Educated at Lancing, Oxford and the Westminster Hospital, Robert

Sanderson qualified in 1883 and went into general practice two years later, but he soon began to specialize in gynaecology and became surgeon to the Brighton and Hove Hospital for Women. He was the first surgeon in Brighton to do a caesarean section. He proved a good general surgeon in the 1914-18 war when he served as a captain, R.A.M.C. in the 2nd Eastern General Hospital and with the 55th General Hospital at Wimcreux. He was elected president of the Brighton and Sussex Medico-Chirurgical Society in 1899, president of the Sussex Branch of the British Medical Association in 1920, and chairman of the Brighton Division in 1921-2. When the Association met at Brighton in 1913 he held office as president of the Section of Gynaecology and Obstetrics.

H. N. F. writes: Robert Sanderson, a man of lovable character and remarkable attainment, retired from practice long enough ago to be almost unknown to the younger generation. His rich humanity and unfailing regard for his patients' welfare brought him the reward of trust and affection. At the Sussex and the Brighton hospitals no one surpassed him in judgment and obstetrical skill. He seldom operated outside strictly gynaecological limits in civil practice, but he served on the surgical side in the 1914-18 war. His energy belied his years, for he was already over 60 when he went to France. Notwithstanding this, he took his full share in all the hospital's activities, even kept wicket for the officers, and generally opened the batting with the Irish padre, their combined ages being 110! Sanderson's charm and his many-sided interests made him a delightful companion. He was a scholar of distinction, an artist and a musician of wide culture. One would like to dwell on his love of all sports, his sympathy with all young things and their aspirations, his ideally happy home and family, his calm and courageous acceptance of the inevitable when he realized that his days were numbered. His blithe and gay spirit remained with him to the end and he leaves a memory of high ideals, faithful service, and golden friendships.

ALAN GORDON ADRAIN died at the age of 47 in Durban on April 28 after a short illness. In 1928 he took the conjoint qualification as a student of St. Mary's Hospital and then became casualty officer at the Royal Northern Hospital. He spent all his clinical life in Northern Natal, first at Felixton and later at Stanger, where he was senior medical officer to the Hulett sugar estates. Adrain served throughout the recent war and was demobilized with the rank of Surgeon Lieutenant-Commander, S.A.N.F. He served afloat for a number of years and then returned to the Durban H.Q. at Tribune House as naval medical liaison and transport officer. He leaves a widow and two children.

Dr. ERNEST JERMYN HYNES died at the City Hospital, Plymouth, on April 29. He studied medicine at the London Hospital, obtaining the conjoint diploma in 1896, the D.P.H. in 1901, and the F.R.C.S. in 1905. He was in general practice at Leigh-on-Sea for some years after qualifying and then in the Isle of Skye, where he practised for five years before joining the public health department in Huddersfield on his appointment as resident medical superintendent of the Infectious Disease and Smallpox Hospital. He returned to general practice at Grassington-in-Wharfedale for a period of eight years, and during the first world war was a captain, R.A.M.C., serving at the Stoke Military Hospital, Devonport. In 1919 he joined the staff of the Plymouth public health department as superintendent of the City Isolation Hospital and venereal diseases medical officer, remaining in this appointment until he retired in 1936. Once again he took up general practice, this time in Plymouth, and he was working to within a few weeks of his death.

D. F. J. writes: Dr. Hynes was a remarkable man with a phenomenal knowledge of clinical medicine. Although possessing a surgical qualification, his whole interest was in pure medicine, not confined to his own specialty but covering the whole field. His advice was much sought after by his colleagues especially where their own relatives and families were concerned. To work with him was a privilege. His charm of manner, his tolerance and his kindness were proverbial, and he never tired of imparting in characteristically modest fashion his great knowledge to his juniors. He devoted his whole life to his work and was ever ready to help all those in distress. He never lost his temper even under the most trying circumstances, but latterly even his calm temperament was at times disturbed by the spate of forms and certificates which fall to the lot of the unfortunate practitioner of medicine. He disliked all official documents. Apart from his wholehearted devotion to medicine, he was a pioneer motor-cyclist and motorist and a keen fisherman and photographer. He had an amazing know-

edge of birds and animals. We in Plymouth shall miss him, or he was a favourite with us all, a gentleman, and a great doctor.

Dr JOHN ROBINSON HARPER died in Barnstaple on April 30 at the age of 80. The eldest child of a family of thirteen his youth was spent in Barnstaple, where his father, Dr Joseph Harper, had been in practice for many years. He was educated at Blundell's School and later at St Thomas's Hospital, where he qualified in 1890. Dr Harper was house-surgeon and resident accoucheur at St Thomas's before joining his father in general practice. For many years he was a keen Territorial, serving as surgeon major in the North Devon Hussars. During the first world war he was twice mentioned in dispatches, and received the CBE and the Order of Avis (Portugal) as well as the Territorial Decoration. In 1918 he commanded the 14th Stationary Hospital in France. After the war he was for many years honorary surgeon to the North Devon Infirmary and was on the consultant staff of that hospital when he died. He had been mayor of Barnstaple in 1911, and up to this date had filled the post of medical officer of health to the borough. After his mayoralty he continued to be M.O.H. to the rural district of Barnstaple, and in this capacity was responsible for much of the A.R.P. work during the second world war. As a member of the Devon county council, and later as county alderman, he was on the public health committee, and was chairman of the mental deficiency committee. Dr Harper filled many other public posts with distinction. He had been a J.P. for many years and he was an active member of the British Medical Association for over forty years.

task of supervision of casualty and health services in his district. This devotion to duty lasted as long as life, and he carried out certain important official acts the night before his death. He was a man of high character and ability, tireless industry, and undaunted courage.—F.W.

Dr CHARLES GORDON GIBSON died on May 4 at the age of 83 at his home in Launceston, where he had been actively engaged in practice up to the time of his retirement in 1941. Dr Gibson qualified M.B., C.M. at Edinburgh in 1889. After serving as resident physician at Edinburgh Infirmary, and later as assistant medical officer at Kinross County Asylum, he came to Launceston in 1891. During the fifty years spent in practice he saw many changes. In the early days he used to travel by horseback to see his patients. His life was devoted to the practice of medicine, and night or day his patients came first. He possessed great clinical acumen and judgment and was greatly beloved. Apart from his professional abilities he was a man of great culture—a competent botanist, a keen astronomer, and a lover of the poets. Fittingly enough, Burns was his favourite, and he always retained a great love of his native Scotland. It was my privilege to be closely associated with him for some years, and I believe he was incapable of an unworthy or unkind thought or deed. At his passing many will remember with gratitude their contact with him.—R.E.A.

Medico-Legal

FAILURE OF A NATURE CURE

[FROM OUR MEDICO-LEGAL CORRESPONDENT]

The deputy coroner for West Cumberland, Mr W. H. Bayliff, held an inquest on March 14th into the death of a boy of 13 who was found at necropsy to be emaciated, with gross distension of the abdomen, prolapse of the rectum, general peritonitis, and chronic obstruction of the bowel due to intussusception.

Dr T. F. Kirkpatrick, of Keswick, said in evidence that he had seen the boy first on Feb. 25, two days before his death. The father told him that the boy had been taken suddenly ill about the middle of December with severe sickness and diarrhoea, probably due to ice-cream. A few days later the lower part of the bowel had protruded slightly and gone back spontaneously, but afterwards it had protruded again to a greater extent and had remained prolapsed. On Dec. 28 the father had telephoned to a "naturopath" of Ayr, Mr J. B. S. Jay, who had seen the boy twice and had afterwards conducted treatment by telephone, prescribing homeopathic remedies. Until Feb. 18 the boy's bowels had moved spontaneously, but after that date there was no motion and he had taken nothing but sips of water. The doctor judged that the boy had probably developed a subacute obstruction at the beginning of his illness and that it had become complete on Feb. 18. He explained the gravity of the situation to the parents and said that surgery might have succeeded earlier but the boy was not now fit for it. They would not allow a consultant to be called, and asked him to communicate with Mr Jay. He declined to do so, as it would have served no useful purpose. They refused his suggestion of removal to hospital. Next day he called again and found the boy's condition worse. The parents then agreed that he should go to hospital provided that no surgical treatment was given. After the boy's admission he had prescribed "nepenthe" to relieve pain. The boy had died next day. The conditions at home had been moderately good, but a patient in such a serious state should have had professional nursing attention. The parents had appeared to be anxious and in an agitated state. He had gathered that they had had "naturopathic" treatment for seventeen years, and that this was largely based on diet. Religion had not been mentioned. If the boy had received medical treatment in the early stages he would very probably have recovered. Cross-examined by counsel for the parents he said their belief in "naturopathy" seemed genuine. He agreed that many patients were restored as much by warmth and rest as by orthodox medical treatment, and that in many

Dr JOHN WILSON MILLER died on May 2 at his home in Lewisham at the age of 62. A student of Glasgow University, Dr Miller qualified M.B., Ch.B. in 1907, and obtained the diploma in public health in 1910. After service in many Glasgow hospitals he was appointed in 1913 senior assistant medical officer of health and tuberculosis officer for the County of Lanark, a post he held for five years except for one year's absence on military service as a lieutenant in the R.A.M.C. Dr Miller also acted as medical officer of health for the Burgh of Hamilton for a period of fourteen months. In 1918 he became deputy medical officer of health for the metropolitan borough of Lewisham and he had been M.O.H. there from 1937 until failing health made him retire in 1946. Dr Miller had been a member of the British Medical Association since 1911 and was chairman of the Lewisham Division for the years 1928-9 and 1936-7. In his early days at Lewisham he was the first medical officer in charge of the first municipal maternity home in the metropolitan area. Many Lewisham mothers still remember with gratitude his sympathetic and efficient care. During the ten years he was in charge no maternal death occurred in the maternity home at Rushey Green. Later as medical officer of health he launched in 1930 the "home help scheme," now recognized as one of the largest and most successful in the country. In 1935, largely through Dr Miller's efforts, a general practitioners scheme for the immunization of children against diphtheria was brought into being and most successfully developed. A year later the first health centre in the borough was erected by the council and a modern tuberculosis dispensary built. During the war years the strain and responsibility of organizing and maintaining an extensive civil defence casualty service, which functioned smoothly and efficiently, contributed very materially to his breakdown. Dr Miller had a subtle sense of humour and he was always courteous, modest, and considerate towards those who worked for and with him. He was a much loved chief and colleague.

WALTER WINGFIELD NUTTALL of Folkestone died on May 4 at the age of 80. Dr Nuttall was a student of St Bartholomew's Hospital. He qualified in 1892, and proceeded M.D. in 1908. He had retired from general practice some years before the outbreak of war but he placed his services at the disposal of the War Office in September, 1939. In May, 1941, he accepted the position of medical officer of health for a wide district in East Kent. Although at the time of his appointment he was over 74 years of age, he immediately infused into his work a vigour and enthusiasm that earned for him the appreciation, and indeed the admiration, of his employing authorities. He re-organized the casualty services and ranged far and wide into the villages and hamlets of his scattered district. Approximately 100% of the children in his area were immunized against diphtheria by him personally. Dr Nuttall was appointed a magistrate for the borough of Folkestone thirty years ago. Highly esteemed by his colleagues on the bench and deeply interested in the work, he relinquished it in 1940 so as to be able to concentrate all his strength and energy on the essential

'naturopaths' must seem successful because they kept their patients in bed and warm. The success of early surgical treatment would have depended on a correct diagnosis. The boy had had a convulsion during his first examination, and he had suggested the possibility of meningitis, but the parents would not allow lumbar puncture. In answer to Mr Jay, he said that surgical treatment would probably have availed during the first few days after the prolapse appeared.

The pathologist Dr J S Foulds of Carlisle Infirmary, agreed and added that it would have been effective up to the period when the boy developed acute obstruction. If other advice had been obtained at the beginning the question of operation need not have arisen. He had not examined the brain. Questioned by Mr Jay, he said that such a prolapse, once reduced, might recur if the diarrhoea continued, but not if it were cured.

After a warning by the coroner Mr Jay decided not to give evidence, as also did the parents on legal advice. The coroner, summing up to the jury, said that as a matter of law the parents owed the boy the duty of providing him with food, clothing, and, if necessary, medical attention. Parents had in some cases been convicted of manslaughter for failing to call in medical aid for their children, but not every such failure amounted to manslaughter: there must be a breach of duty so gross as to amount to sheer criminal recklessness whether the child died or lived. Where a person, whether a qualified medical practitioner or not, held himself out as having skill in dealing with disease and undertook the care of a sick person, he owed a duty to the patient. The coroner pointed out that the parents had not neglected to get any treatment at all; mistakenly, the jury might think, they had brought in treatment of a sort, and had been very distressed at the boy's illness. They had called in Dr Kirkpatrick at the finish, though unfortunately too late. There was no suggestion that any treatment by Mr Jay had contributed to the boy's death; it was a case of lack of treatment appropriate to the particular condition.

The jury returned a verdict of death from natural causes, a contributory factor being the reluctance of the parents to provide earlier medical attention.

Dr Kirkpatrick's conduct stands as a model for other practitioners faced with the same sort of difficulty. The cases in which any useful purpose could be served by the medical practitioner called in making contact with an unqualified person must be extremely rare.

The Financial Board offer no objection to the contained in this Report.

The following medical degrees were conferred on May 10

MD—*In person* J A Dudgeon J M Nissh C R Morrison E A P
MB BChir—*By proxy* J G Kulner

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The following candidates have been approved at the examination indicated

THIRD MB BS—¹⁶Joan D M Baker ¹J L Gowans ¹³Sadie B Mich.
¹²Margaret I Morgan ¹⁴T E Oppé ¹⁵W Peters D M Abelson Elizabeth
Acton Davis J M Allcock G T Allen A V Anderson P G Arblaster
L H Bamard T H
W Bennett J W Bon
dy P A Bovall P R
Brown W E Bn
Cade F G Cambr
Yvonne B Capon G B Carruthers P J Carter Monica L Chalmers K B
Chambers R M Chambers D J Chapman C R Chedale G H V Clark
Mary M H Cogman C I Cohen L B Cohen M H F Cooley J J Corie
J B Cook J M G Costello D D Cowen K Cronin M E S Cutts Sybil
Danks D O Davies O W Davies P H Davy F E Dische J E R Dwyer
W Drawneek P J Dwyer C T F Ealand Violet M East R J Edney R N W
Eminson A J Evans D G Evans G M Evans Elizabeth F Everett K M
Fergusson J J Fingard L Ford M J Forth Joan Y Fowler Wright
Frankton A Freier H J B Galbraith F N Ghadially H Goldschm
N G O Gourlay N F C Gowing C N Grainger K G Green J S B
Greenfield A B Haigh E G Hall J M Hall J G Hamilton B J S Harb
B J Harries J R Harries W A Harries R A Harrison Rosemary H
R M Harvey Daphne M Haynes J B Hearn Constance M Hesling H B
Hewitt G C Hickie P M Higgins J A Hill J M Holmes P J Horne
Mary C Holt D E Howells C H A Hoy H K Hulme A L Humphre
R N Jackson S L O Jackson P D James H H Jampel O M Jonath
Elynn Jones R L Jones R K Jones H B Juby A W Kelly A J Ken
K R P Kent W S Killpack L G Kiloh R A H Kineh R C King J
Knowelden P N Kohiyar I S Kreeger B Kustow E V Lambert B V

J
H Miller Barbara E Mizen A Morgenstein M F Moses J P Mostyn R F
Naughton J Newcombe J B O'Donovan J D Onel T W Osborn G J Park
E S Perkins D E H Philips N C D Pizey Estella G Pollock A C Porten
D S Porter T A J Frankerd P E Prudhoe R R L Fryer V W P
Emma L Rachwalsky I Ranger Phyllis Rashbass I B Rees Roberts W C D
Richards D S Ridley Kathleen J Rigg T N Riley D A Road J L Robert
G A Robinson
A D Rose C
Seaman J J S
J H Shore M
J G Stebbing
P Story T D
D C Thomas
Tierney Cecily
Walker G B R Walkey Pamela E Warner C E Waterman S P B War
Eileen M Welcher D G Wells D C A W. h. n. E. White R J M
Whittle Erian Williams N Will A Williams
W S Wilson N E Winstone A Williams
G A Wright Ann Wyatt Sybil R Yeates I Yentus
J L Williams

¹With honours ²Distinguished in pathology ³With honours
forensic medicine ⁴Distinguished in medicine
pharmacology and therapeutics ⁵Distinguished in
obstetrics and gynaecology

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ACADEMIC POSTGRADUATE DIPLOMA IN PUBLIC HEALTH.—W G R Ashl
Emile ¹Margaret E K Balfour F Barasi ²J H F Brotherton H S Bur
M A Charrett F Cockcroft M Crowley H J Davies Cecile R Donig
E N Dowell F H M Dummer V P Geoghegan W E Greenwood Rachel
R C West

J L Williams

* Awarded a Mark of Distinction

ACADEMIC POSTGRADUATE CERTIFICATE IN PUBLIC HEALTH.—Dorothy A Kroy
J C McNeill

UNIVERSITY OF MANCHESTER

Wilfrid Fletcher Gaisford MD, FRCP, at present consulting physician and consulting paediatrician to the Warwickshire County Council hospitals, has been appointed Professor of Child Health in the University.

The following appointments were made at a meeting of the University Council held on May 19. *Lecturer and Director of Anaesthetics Subdepartment* H J Brennan MD DA. *Lecturer in Gynaecological Pathology* F A Langley, MSc, MB, ChB. *Lecturer in Gynaecological Endocrinology* Annie M Hain, PhD, DSc. *Lecturer in Bacteriology* H Jackson, MSc, PhD, MB, ChB. *Assistant Lecturer in Bacteriology* F B Jackson, MB, ChB. *Assistant Lecturers in Radiology* R G Reid, MB, ChB, DMRE, FFR, and W McL E Topping, MB, ChB, DMRE. *Assistant Lecturer in Radiotherapy* G W Bodcn, MRCS, LRCP, DMR.

UNIVERSITY OF SHEFFIELD

The following appointments were made at a meeting of the University Council held on May 16. *Full time Dean of the Faculty of Medicine* John Gibb McCrie, MB, FRCPed. *Lecturer in*

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

The *Cambridge University Reporter* dated May 13 contains a report of the General Board on the establishment of certain additional posts in the Faculty of Medicine and on the further development of the School of Clinical Research and Postgraduate Teaching. The report, which occupies 3½ pages of the *Reporter* is the result of representations made by the Board of the Faculty of Medicine earlier in the year and concludes with the following recommendations to the University.

I That a Readership in Human Ecology be established from Oct 1, 1947 that the pensionable stipend of the person appointed to this post be £950 a year or £700 a year should he be a Fellow with dividend, and that from the same date the following be added to the Regulations for Readerships held under the Statutes of 1926 (*Ordinances* p 566) *Medicine Human Ecology*—The Reader shall not be a tutor, assistant tutor, bursar or assistant bursar and shall not give instruction on behalf of a college or colleges for more than six hours a week.

II That the head of the Department of Medicine be authorized to appoint, subject to the approval of the Faculty Board of Medicine, a senior health service officer, a junior health-service officer, and a statistician to the Department of Medicine, with tenure not exceeding three years in the first instance, and that the stipends of these health service officers and of the statistician be determined, subject to the approval of the Financial Board, by the General Board after consultation with the Faculty Board of Medicine.

III That the health service officers and the statistician to the Department of Medicine be recognized as officers of one of the departments of the Medical School for the purposes of the arrangement with Addenbrooke's Hospital (*Reporter* p 238).

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
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A cancer research laboratory - the Sloan Kettering Institute - is now being constructed in New York with the help of a \$2,000,000 gift from Messrs Sloan and Kettering of General Motors. Mr Sloan has provided a further \$2,000,000 for research.

Medical Notes in Parliament

The National Health Service (Scotland) Act received the Royal Assent on May 21. Previously, on May 20, the House of Commons had agreed to the amendments made by the Lords in this measure.

THE NATION'S FOOD

LORD CHERWELL in the House of Lords on May 22, asked what food was available to make up to 2,900 calories a day the domestic rations, which with the domestic entitlement of eight points per week had been stated by the Government spokesman in the House of Commons to amount to 1,600 calories a day. Lord Addison had stated that 2,900 calories a day were obtainable by persons not using restaurants and canteens. He was sure Lord Addison was anxious that any trace of unfairness toward a member of his profession should be put right. Lord Addison had complained that the figures given by Dr Bicknell in the *Medical Press* were incorrect by about 30%. The issue was whether Dr Bicknell was right in stating that the amount to be derived from unrationed foods, excluding restaurant meals, was about 500 calories a day, bringing the total up to 2,100 calories, or Lord Addison, when he stated that the normal man or woman, with access to restaurant or canteen could bring the total up to 2,500. According to the Minister of Food, his Department's *Dietary Food Survey* showed that the food eaten in the home in December, 1945 was equal to 2,390 calories. In November, 1946, it was 2,320 calories, in December 1946, 2,300 calories. No later figures had been published. The decline was lamentable and steady. Dr Bicknell's 2,100 calories was within 9% of the figure given by the Minister of Food. Lord Addison had protested against a statement by Dr Bicknell that the unemployed before the war were better fed than most of the nation to-day. Lord Chervell believed this to be broadly true. Ten years ago Sir William Crawford and Sir Herbert Broadley found that the diet of the two poorest social groups, those with incomes under £249 a year, fell short of the standards prescribed by the British Medical Association. But even in the lowest social group with an income of less than 12s 6d per head per week, the average calories were given as 2,335 per head per day, 35 calories above the Ministry of Food December figure for the normal consumer to day who had not access to restaurants, canteens, and the like. In 1934 Sir John Boyd Orr concluded that the poorest 10% of the population obtained 2,317 calories a day. These figures justified Dr Bicknell's statement that the unemployed before the war were better fed. Sir William Crawford's investigations showed that the poorest 15% of the population obtained 65% more meat, 80% more bacon, 46% more fats, and 90% more sugar than the rations allowed to-day. By the League of Nations standard the whole of this nation was to day on the poverty line. That a small percentage of the population might get slightly more food than formerly did not outweigh the fact that an overwhelming majority were getting much less.

LORD ROTHSCHILD said a satisfactory diet included other vital ingredients beside calories. In 1942 the combined United Kingdom, United States, and Canadian Consumption Levels Inquiry Committee concluded that the method used by the Ministry of Food in arriving at the figure of 2,900 was the best available. They concluded that an attempt to weight the statistics would increase the risk of error. The method by which the figure of 2,900 had been reached in 1947 was identical to that used in the pre war period to get similar data.

Dietary Changes

LORD ADDISON said the figure of 2,900 calories was arrived at by dividing the total quantity of food going into consumption by the total population. The comparable figure for the pre-war period, ascertained in the same way, was 3,000 calories. The total consumption of meat was to-day about 9% less than pre-war. Fats were down by 29%, sugar by 26% and eggs by 14%. Consumption of dairy products, especially milk, was up by 30%. Fresh fish had increased by 28% and flour by 10%. Consumption of potatoes had increased by 64%. While the diet had become duller it approximated more closely to the nutritional foundation on which it should be based—dairy produce, vegetables and high-extraction bread. The average of 2,900 calories covered not only straight rations and points rations but also differential rations for heavy manual workers, unrationed foods, welfare foods for children and so on. The "straight" basic rations gave 1,400 calories to the ordinary adult and the points rations another 200 calories. This allowed

nothing for bonus issues of sugar and jams or for manufactured products such as meat pies and sausages. It did not cover the sweets ration. As extra sources of food, some 164,000 catering establishments provided some 59,000,000 main meals weekly. The requirements of the people as a whole were being adequately met. There was evidence that the classes which before the war suffered from malnutrition were on the whole, better fed to-day. Lord Addison remarked that he did not withdraw one word which he had previously said. The statement attributed to "this man" that England was dying of starvation was a falsity, sloppy, inaccurate, and altogether mischievous.

LORD WOOLTON said the writer of the article was a medical scientific authority higher than any other quoted. He had used the phrase 'dying of starvation' in a strictly technical sense and it was true. The nation was, in fact, starving for fats.

LORD CHERWELL pointed out that to get 1,300 calories from fish the consumer would have to eat 100 oz., or from potatoes, 51 lb., or from cabbage over 200 oz. A total of 59,000,000 main meals per week served in canteens and restaurants was only 1½ meals per head of the population per week. He thought the additional consumption of milk compared with before the war was likely to be only 20%, not an increase of 144% as estimated by Mr Strachey or of 30% as Lord Addison had said. If there was enough bread to produce 90 oz a week why was the ration only 63 oz?

The debate then closed.

Food Comparisons

MR STRACHEY, in answer to Mr Spence on May 12, said the number of calories available to civilian consumers per head per day in the United Kingdom in 1946 was 2,890—not, as had been erroneously stated, 2,100. The consumption of some individual foods in 1946 expressed as a percentage of their pre-war consumption was as follows: liquid milk 144%, eggs (shell, dried, and liquid) 87%, flour and grain products 115%, all vegetables 110%, tea 96%, oils and fats (excluding butter) 105%, butter 44%, bacon 55%, all other meats 93%, fish 120%, sugar (including sugar in all home-produced manufactured foods) 72%, potatoes 161%. The nutrient intake for 1946 compared with pre-war, showed about 4% less calories, 12½% more total protein but 3% less animal protein, 14% less fat, and about the same carbohydrate. This not very dissimilar quantity of food was in 1946 far more equitably distributed among the population than it used to be before the war. The quantity and quality of food which could be bought by large sections of our people before the war were far too low. The Ministry of Food would need to raise them substantially and as soon as possible in order to achieve a really satisfactory national diet.

MR STRACHEY, on May 12, also furnished the following table

Estimated Average Supplies Moving Into Civilian Consumption in the United Kingdom in 1946

	Calories	Nutrients per head per day
		2,890
Protein—animal		44.1 gm
—vegetable		46.0 "
—total		90.1 "
Fat		112.0 "
Carbohydrate		381.1 "
Calcium		1,043 mg
Iron		17.2 "
Vitamin A		3,738 IU
Ascorbic acid		107.5 mg
Thiamin		1.88 "
Riboflavin		2.00 "
Niacin		17.3 "

**Notification of VD*—MR WESTWOOD told Sir Thomas Moore on May 6 that he was not satisfied that making venereal diseases compulsorily notifiable in Scotland would help in eradicating them. The question had been carefully considered from time to time, and so far as Scotland was concerned the balance of opinion had been that compulsory notification might hinder the campaign which the doctors, the Government, and the local authorities waged against these diseases. Sir Thomas Moore spoke of the danger of infection to young children with an infected person in charge of them and gave notice that he would raise the subject on the adjournment.

Category E—Approximately 109,000 men were discharged from the Army between September, 1939, and VJ Day on psychiatric grounds, 288,000 on account of other diseases and accidental injuries, 26,000 on account of injuries due to enemy action.

Hearing Aids—The Minister of Supply has already placed contracts for the manufacture of aural aids. He hopes that enough will be available to make a start with distribution when the National Health Service begins. They will then be available without charge to patients for whom they are prescribed.

No 19

EPIDEMIOLOGICAL NOTES

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended May 10

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year for (a) England and Wales (London included) (b) London (administrative county) (c) Scotland (d) Eire (e) Northern Ireland

Figures of Births and Deaths and of Deaths recorded under each infectious disease are for (a) The 126 great towns in England and Wales (including London) (b) London (administrative county) (c) The 16 principal towns in Scotland (d) The 13 principal towns in Eire (e) The 10 principal towns in Northern Ireland

A dash — denotes no cases a blank space denotes disease not notifiable or no return available.

Disease	1947					1946 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	74	3	19	1	—	61	3	21	1	3
Deaths		2	—	—	—		1	1	—	—
Diphtheria	194	24	55	18	7	368	30	82	33	11
Deaths	1	1	2	—	—	9	2	—	—	—
Dysentery	110	7	18	—	—	137	16	48	1	2
Deaths		—	—	—	—		—	—	—	—
Encephalitis lethargica	—	—	—	—	—	3	—	1	—	—
Deaths		1	—	—	—	—	—	—	—	—
Erysipelas	—	—	36	6	1	—	—	39	6	3
Deaths		—	—	—	—		—	—	—	—
Infective enteritis or diarrhoea under 2 years	—	—	—	—	—	—	—	—	—	—
Deaths	95	14	16	29	3	48	7	7	31	3
Measles*	10 134	499	157	52	28	2 570	928	809	69	5
Deaths	5	—	1	—	—	—	—	—	—	—
Ophthalmia neonatorum	73	4	12	—	—	73	10	19	—	—
Deaths		—	—	—	—		—	—	—	—
Paratyphoid fever	3	1	—	—	—	1	—	1(B)	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia influenzal (from influenza)	561	25	5	7	4	445	28	6	3	5
Deaths	10	—	1	—	1	8	—	2	1	—
Pneumonia primary	—	42	183	21	9	—	28	187	31	8
Deaths		—	—	—	—		—	—	—	—
Polio-encephalitis acute	2	—	—	—	—	1	—	—	—	—
Deaths		—	—	—	—		—	—	—	—
Polio-myelitis, acute	12	2	—	5	—	1	—	1	—	—
Deaths		—	—	—	—		—	—	—	—
Puerperal fever	—	2	9	—	—	—	2	11	—	1
Deaths		—	—	—	—		—	—	—	—
Puerperal pyrexia†	151	14	12	1	3	123	12	17	1	—
Deaths		—	—	—	—		—	—	—	—
Relapsing fever	—	—	—	—	—	—	—	—	—	—
Deaths		—	—	—	—		—	—	—	—
Scarlet fever	1 002	79	129	21	29	1 022	67	127	15	25
Deaths	—	—	—	—	—	1	—	—	—	—
Smallpox	2	—	—	—	—	2	—	—	—	—
Deaths		—	—	—	—		—	—	—	—
Typhoid fever	6	—	2	3	—	9	—	1	1	—
Deaths	1	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths		—	—	—	—		—	—	—	—
Whooping-cough*	2 222	300	225	40	12	2 180	160	115	34	18
Deaths	15	2	3	4	2	9	3	—	2	—
Deaths (0-1 year)	437	61	92	41	21	353	38	52	53	14
Infant mortality rate (per 1 000 live births)										
Deaths (excluding still births)	4 769	742	646	235	138	4 301	676	551	210	135
Annual death rate (per 1 000 persons living)			13.4	14.8				12.1	13.5	
Live births	10 106	1546	1242	574	301	8 366	1241	1055	468	294
Annual rate per 1 000 persons living			25.0	36.2				21.2	30.0	
Stillbirths	263	31	33	—	—	276	38	30	—	—
Rate per 1 000 total births (including stillborn)			26					28		

* Measles and whooping-cough are not notifiable in Scotland and the returns are therefore an approximation only

† Includes primary form for England and Wales, London (administrative county) and Northern Ireland

‡ Includes puerperal fever for England and Wales and Eire

Smallpox

Contacts are still under surveillance in connexion with the outbreaks of smallpox at Barnsley and Sheffield West Riding and at Bilston and Cosley Staffordshire

Barnsley—The source of infection at Barnsley has not yet been determined with certainty but a man who had been exposed to smallpox in a common lodging house at Scunthorpe and was at the time re-vaccinated successfully (April 5) arrived at the Barnsley lodging house on the evening of April 30. Among innumerable marks of recent scabies, and trauma on his body was one pock mark suggestive of variola six or more weeks ago and half a dozen nondescript scars which might have been modified smallpox. Attempts to culture variola virus from him have failed. He has been notified as smallpox and is in hospital. In addition to the man removed from Bermondsey on May 16 there are now 5 cases in the first generation arising at Barnsley. 3 of these were mentioned last week (May 24 p. 745) the remaining 2 both males aged 68 and 70 developed rashes on May 17 and 19. It is doubtful whether the man from Scunthorpe could have infected the earliest case in this generation who is recorded as having had a pustulo-vesicular rash when he was admitted to a general ward at St Helen's Hospital Barnsley, on May 13. He remained there until he was removed to the smallpox hospital on May 16. There were 93 men, women and children sleeping in the Barnsley lodging-house when the disease was detected there on May 16. Of these 5 absconded but only two (Elizabeth Fenton and Lewis Stewart) remained untraced. Assuming that the period of infection at Barnsley began about April 26 several contacts had left before surveillance started and are still untraced. One of them, a man named Thomas Durlin was also a contact with smallpox at Grimby. Any news concerning his whereabouts should be communicated immediately to Whitehall 4300 extension 145. The disease at Barnsley is variola major of a severe type. 2 of the patients have died.

Sheffield—The father and aunt of the original case have been removed to hospital. The father successfully vaccinated for the first time on May 5, sickened on May 13 and developed a markedly modified smallpox rash on May 18. The aunt is at present a suspect only.

Bilston—A new case has been removed to hospital—an unvaccinated child aged 11 with onset on May 16 and a rash which appeared on May 19. She lived in a house near that occupied by the cases removed in April.

Cosley—An unvaccinated kitchen maid at Moxley Infectious Diseases Hospital became ill while at her home in Cosley on May 13. A severe confluent eruption appeared on May 15.

Discussion of Table

In England and Wales infectious diseases were more prevalent. Increases in the number of notifications were reported for measles 1 692, whooping cough 189, scarlet fever 129, acute pneumonia 45, and cerebrospinal fever 22. Dysentery with 12 fewer cases was the only disease to show a fall in incidence during the week.

The rise in the notifications of measles was fairly general but large increases were recorded from only a few counties notably Yorkshire West Riding 627, Staffordshire 246, London 136 and Middlesex 87. The increase in cases of whooping cough was mainly confined to the neighbourhood of London the largest increases were Middlesex 69, London 50 and Kent 37. The only change of any size in the local trends of scarlet fever was a rise of 57 in Lancashire. Notifications of diphtheria increased by 9 in Lancashire and by 8 in London. Lancashire had 72 cases of dysentery almost two thirds of the total for the country (Prestwick M.B. 40, Liverpool C.B. 18, St Helens C.B. 10).

In Scotland infectious diseases, in contrast to the trend in England and Wales tended to decrease. The falls in notifications included measles 73 and whooping cough 30 while the only increases of note were acute primary pneumonia 17 and diphtheria 15.

In Eire increases were reported for diarrhoea and enteritis 11, measles 7 and diphtheria 6. There was a decrease of 15 in the notifications of whooping cough.

In Northern Ireland the only changes were increases in the notifications of measles 8 and diphtheria 5.

Week Ending May 17

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1 028, whooping cough 2 120, diphtheria 243, measles 12 678, acute pneumonia 578, cerebrospinal fever 57, dysentery 65, acute poliomyelitis 11, paratyphoid 3, typhoid 9, smallpox 12.

Medical News

The Chelsea Clinical Society, one of the youngest medical societies in London, was founded in 1897 and its first President was Dr J Foster Palmer. It originally consisted of only 15 members, all of them resident in the south-west district of London. They met together once a month in a dispensary in Chelsea and at these informal meetings it was a tradition that whisky should be provided. Membership grew until in 1909 there were 126 members, a year later the Society held its meetings in the students' clubroom of St George's Hospital. After 1922 the business of the Society was conducted at dinner meetings, and membership rose to 230. The President's Jewel was presented by Dr T W Parkinson, later Sir Thomas Parkinson, a Silver Bell was presented by Dr Gordon Lane, and is used by the President to call to order any member thought to have spoken too long. The President has another disciplinary instrument in the shape of an Ivory Gavel and Block. The Chelsea Clinical Society celebrated its Jubilee at a dinner last week presided over by the President of the Society, Dr Ronald Jarman. The Earl of Clarendon, who was the principal guest of the evening, paid a personal tribute to the medical profession when proposing the health of the Chelsea Clinical Society. He congratulated the Society on its present prosperity and mentioned the fact that its membership was now over 200. In response, Dr Jarman thanked the Presidents of the various medical societies and especially the Presidents of the Royal Colleges for rallying round the Chelsea Clinical Society on the occasion of its Jubilee. Sir Cecil Wakeley proposed the toast of the guests and Mr Russell Vick, K C and Sir Hugh Lett, Bt, suitably replied.

A science meeting of the Colour Group of the Physical Society will be held at the Lighting Service Bureau Electric Lamp Manufacturers Association, 2, Savoy Hill, London, W C on Wednesday, June 4, at 3.30 p.m. when Mr H G W Harding will read a paper on "The Colour Temperature of Light Sources".

Owing to indisposition Sir John Fraser will be unable to be present at the first post-war dinner of the Edinburgh University Club of London on June 5 announced in this column last week at p. 749. Sir Henry Wade will reply for the University. Among other acceptances are Admiral Lord Cunningham and Field-Marshal Lord Wilson. The dress for the evening will be tails or dinner jackets. Any member who has not yet received notice should write the honorary secretary at 12, Wimpole Street, London, W 1.

A meeting of the Faculty of Homoeopathy will be held at the London Homoeopathic Hospital, Great Ormond Street, London, W C, on Thursday June 5, at 5 p.m. when Dr J D Kenyon will read a paper entitled "Comments on the Homoeopathic Treatment of Diabetes".

Mr L H Savin will deliver a lecture on "Cataract" before the Whipp's Cross Hospital Medical Society on Friday, June 6 at 8.30 p.m.

The annual general meeting of the Association of Orthopaedic Physiotherapists will be held on Saturday June 7, at 2.30 p.m., at the London School of Hygiene and Tropical Medicine, Keppel Street, W C, when Brig R J Furlong, FRCS, will speak on "The Spine and its Physical Treatment".

Prof H E Sigerist will retire in June from the Chair of Medical History and the Directorship of the Institute of the History of Medicine at Johns Hopkins University, Baltimore. After studying at Zurich, University College, London, and Munich, and gaining his M.D. Zurich in 1917, Prof Sigerist was appointed lecturer on the history of medicine at Zurich and later professor of that subject at Leipzig University. He went to Johns Hopkins University in 1931. Prof Sigerist intends to settle in Switzerland and write a history of medicine throughout civilization.

The summer week-end course arranged by the Empire Rheumatism Council (Tavistock House (North), Tavistock Square, London, W C) will be held at the Apothecaries Hall, Blackfriars Lane, Queen Victoria Street, London, E C, on Friday, Saturday, and Sunday, June 13, 14 and 15. On June 13 at 4.30 p.m., Sir Adolphe Abrahams will deliver the inaugural lecture and at 5.30 p.m. Dr Ernest Fletcher will speak on Arthritis. The programme for June 14 is as follows: 10 a.m. Dr R E Bonham Carter "Juvenile Rheumatism and Still's Disease"; 11.15 a.m. Dr G D Kersley, "Spondylitis"; 2 p.m. Dr George Graham, "Gout"; 3 p.m. Dr W S C Copeman, "Non-articular Rheumatism and Scurvy"; and 4.30 p.m. Dr Oswald Savage, "Differential Diagnosis of Arthritis". On June 15, at 10 a.m., Dr F S Cooksey will speak on "Physical Treatment in the Rheumatic Diseases" and at 11.15 a.m. Mr W D Collart will discuss "Orthopaedic Aspects of the Rheumatic Diseases". The fee for the course is £1 1s and the number of entries is limited to 50. Applications to join should be sent to the General Secretary of the Council at the above address.

The Société des Médecins Inspecteurs des Ecoles de la Seine and the Société Française d'Hygiène Scolaire have arranged a conference on health in the school and the university to be held from June 23 to 29 at the Faculty of Medicine, University of Paris under the patronage of the French Ministries of Education and Health. Plans are being made for visits during the conference to schools, dental care institutes and centres of educational psychology. Visitors will also be able to attend physical education demonstrations organized by the conference of the League of Physical Education, which will take place during the same dates as the health conference. A joint meeting of the two conferences will be held at the Sorbonne. Those wishing to attend should write as soon as possible to Dr Astre (Direction de l'Hygiène Scolaire, 5, Rue Auguste Vaequerio, Paris, VIII^e) from whom full particulars as to fees, etc., can be obtained.

Dr Jerzy Chorobski, lecturer in neurosurgery in the University of Warsaw, has arrived on a visit to this country under the auspices of the British Council. He is visiting hospitals and medical institutions in London, Manchester, Edinburgh, Oxford and Cambridge. Before the war Dr Chorobski held a Rockefeller Foundation Fellowship and worked in neurosurgical centres in London and in America.

Dr G T Badenski, professor of pathology in the University of Temisoara, Rumania, who has been doing research work on virus diseases including influenza, has arrived on a visit to this country, under the auspices of the British Council. He will be mainly engaged in research studies at the Malaria Laboratory, Horton Hospital, Epsom, but will also visit universities, research institutions and hospitals in London, Liverpool, Manchester, and Sheffield.

Sir Alexander Fleming has been awarded the American Order of the Purple Heart for his work on penicillin, which saved so many lives during the war.

Dr Kenneth Mellanby, reader in medical entomology in the University of London, has been appointed Principal Designate of the University College which it is proposed to establish in Nigeria. Dr Mellanby, who was born in 1903 and educated at Barnard Castle School and King's College, Cambridge, has carried out research work at the London School of Tropical Medicine and Hygiene and in East Africa. In 1945 he was awarded the OBE for distinguished services in connexion with the preservation of the health of our troops in South East Asia. Recently Dr Mellanby went over to Nuremberg to report on the war crimes trials in which German medical men were involved. His account of "Medical Experiments on Human Beings in Concentration Camps in Nazi Germany" appeared in our issue of January 25, 1947, at p. 148.

The Royal College of Obstetricians and Gynaecologists, which was founded as a company without share capital eighteen years ago, has now received its Royal Charter dated from March 21.

The Royal National Orthopaedic Hospital at Stanmore has recently instituted a 24 hour accident service. Accidents of all types, particularly those of industrial origin, are being dealt with. This new development is part of the hospital's policy in widening its scope and function so as to provide full training for post-graduates in all branches of orthopaedic surgery. The telephone number of the hospital is GRimsdyke 1894.

Prof R E Lane, of Manchester University, has been appointed a member of a committee set up by the Minister of National Insurance under the chairmanship of Judge Edgar T Dale to review the policy adopted in scheduling industrial diseases under the Workmen's Compensation Acts and to advise on the principles that should govern the selection of diseases for insurance under the National Insurance (Industrial Injuries) Act. Those interested are invited to submit evidence in writing to the Secretary, Mr F K Forrester, Ministry of National Insurance, 6, Curzon Street, London W 1.

President Truman has asked Congress to give immediate attention to the enactment of a national health and disability insurance scheme, which should include adequate public health services, additional medical research and medical education, more hospitals, insurance against the costs of medical care and protection against loss of earnings during illness.

The Freedom of the Borough of Buxton was on May 30 conferred on Dr C W Buckley Alderman of the Borough.

Dr Frederick Reiss, formerly Professor of Dermatology at the National Medical College and St John's University Medical College, Shanghai, China and recently of Cornell Medical College, has been appointed Associate Clinical Professor in the Department of Dermatology and Syphilology, New York University College of Medicine.

Dr William Dyson, O.B.E., consultant to the Manchester Hospital for Skin Diseases, who died on Feb. 5, left £9,326. Sir Harry Linnington Martyn, K.C.V.O., late Surgeon Apothecary to H.M. Household at Windsor, who died on Jan. 7, left £10,110.

Any Questions ?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Treatment of Muscular Rheumatism

Q—A patient with muscular rheumatism or fibrositis of the shoulder has been treated with an autogenous vaccine consisting of non haemolytic streptococci and mixed staphylococci taken from a throat swab. Is there any rationale for this form of treatment, and is it worth while continuing it?

A—Vaccine treatment is rarely of any use in cases of this type, though sometimes a septic tonsil may be the cause. Cases have been reported of an acute periarthritis of the shoulder apparently infective and endemic or epidemic in some districts. They tend to clear up in a few weeks. Mild trauma is often responsible, especially in cases of occupational origin leading to irritation of the cords of the brachial plexus from tension of the scapula, often associated with a cervical rib or large transverse process. Thorough clinical investigation and x-ray examination are necessary to find the cause. Treatment of septic tonsils is called for, possibly tonsillectomy, local x-ray treatment has been strikingly effective in some cases. A sling should be worn to rest the muscles, infra red rays followed by light massage or ionization with histamine, or salicylates are other useful forms of treatment.

Penicillin for Hand Infections

Q—What is the indication for penicillin therapy in local staphylococcal infections of the hand? To what extent does it replace surgery? Should injections be started before or at the time of pus formation?

A—Penicillin therapy is indicated in every case of infection of the hand except the most trivial. This should be started at the earliest possible moment, as by this means many staphylococcal infections will be aborted and the dire streptococcal infections prevented. So serious are the after results (functionally, aesthetically, and economically) of hand infections—even those that at first sight appear minor—that too much stress cannot be laid on the prophylactic side of treatment, and in this respect penicillin provides an invaluable weapon. If hospital treatment is not indicated or possible (where intensive dosage can be provided) massive daily doses of about 250,000 units should be given parenterally until the local condition has resolved. If pus has actually formed (for example, pulp abscess) incision will still be necessary, but local penicillin dressings (powder or ointment) after the early post-operative effusion has settled will greatly expedite healing. It cannot, therefore, be said that penicillin therapy has entirely replaced surgery in hand infections, but it has, except in neglected cases, limited it to the drainage of local collections of pus and it has removed the dread of the dire sequelae.

Tuberculin Tests

Q—What is the technique of the Mantoux test? Is there any danger if an active focus is suspected and should precautions be taken? I should also like particulars of the patch test.

A—The Mantoux test consists in the introduction of a certain known quantity of tuberculin intradermally to determine hypersensitivity to tuberculo-protein. The technique of the test has been laid down in detail in the supplement to the Ministry of Health circular 166/45, dated Sept. 28, 1946. It is carried out by injecting intradermally, with a sterile tuberculin syringe and No. 29 needle, 0.1 ml of 1/10,000 solution of old tuberculin (OT) or 0.0002 mg of purified protein derivative (PPD). The injection is usually made on the flexor surface of the forearm after cleaning the area with alcohol. If no reaction is obtained after two hours a further injection is made of 0.1 ml of 1/1,000 solution of OT or 0.005 mg of PPD. If there is

still no reaction after a further lapse of 72 hours a third test is made with 0.1 ml of 1/100 OT. The reaction should be read 48 hours after the injection. A positive reaction is indicated by an area of swelling 5 mm or more in diameter. Any swelling less than 5 mm across or simple redness of the skin should be considered as negative. Except in very sensitive individuals, in whom it may produce a severe local reaction the test is harmless. No permanent disability has been known to occur, and in the large majority of instances the local reaction causes no discomfort. The main precautions consist in giving careful attention to technical details particularly with regard to sterility and the use of freshly prepared tuberculin.

The patch test is the determination of skin sensitivity to tuberculo-protein by the transtaneous method. The patch consists of a strip of adhesive tape on which is placed a square of filter paper saturated with OT. The test material, if kept in a cold dry place, will remain reliable for six months. It is important to see that the skin is thoroughly cleaned with ether or acetone before applying the test. In some definitely positive cases the result may not be readable until after five or six days, but usually a reaction is present in 72 hours in positive cases. The site of choice for the patch test is the skin area between the scapulae just right of the midline. This test is rather less sensitive than the Mantoux test but is useful in infants and small children, who may be frightened by the intradermal method. Occasionally in a sensitive patient the reaction is great and even vesiculation may occur. It may take two to three weeks to fade.

Acrocyanosis

Q—A healthy well built girl of 11 has had very marked but painless cyanosis and swelling of the hands and feet during the last four winters. There are no familial tendencies to the condition. What treatment do you suggest?

A—Acrocyanosis is not rare at this age and in this sex. The majority of girls suffering from this condition require no normal circulation in the skin of the extremities after puberty. Thus there is no indication for radical treatment at this age. The hands and feet should be kept warm with thick woollen gloves and stockings during the cold weather and the nutrition of the skin should be carefully preserved. If acrocyanosis persists when the patient has reached 19-20 years and is causing discomfort a full investigation is called for and sympathectomy might be considered.

Sterilization of Glass Syringes

Q—An article recently gave instructions for wrapping all glass syringes in kraft paper or cellophane before sterilizing in a hot air sterilizer or autoclave. I understand that cellophane is impervious to steam. How then is sterilization achieved by this method?

A—Wrapped all glass syringes should always, if possible be sterilized in a dry oven at 160°C for one hour. Kraft paper is somewhat more permeable by steam than cellophane and if a good vacuum is obtained in the autoclave steam will in any case get inside the wrapping between its layers. What is more serious is that steam cannot permeate the interior of the syringe itself, especially if this is lubricated with liquid paraffin. Autoclaving an assembled syringe is thus tantamount to sterilization by dry heat at the temperature employed—say 120°C. This is likely to destroy any but sporogenous organisms but cannot be regarded as a dependable method of absolute sterilization.

Induction by Drew Smith's Catheter

Q—Please describe in detail the technique for using the Drew Smith catheter in induction of labour.

A—With the patient in the lithotomy position the vulva, vagina, and cervix are cleansed and painted with an antiseptic solution. Two fingers of the left hand are then inserted into the vagina and the first finger is passed through the cervix. Previous dilatation of the cervix is usually unnecessary. The catheter, with the stylet withdrawn, is held in the right hand and its tip guided through the cervix along the finger of the other hand. It is passed between the membranes and the uterine wall behind the presenting foetal head. When the tip

is just above the curve of the foetal head and pointing forwards towards the foetal neck, the stylet is pushed in and the membranes punctured. The liquor flows back through the catheter, and at least 500 ml should be withdrawn to ensure the induction of labour. The catheter is then taken out and labour usually begins within forty-eight hours. Opinion is divided as to whether the patient should be given an anaesthetic. It is sometimes essential in primigravidae, and in a multiparous patient it has the advantage that it permits a more thorough cleansing of the vagina.

Ejaculatio Praecox

Q—What advice should be given to a healthy man aged 30 newly married who ejaculates prematurely? There is a previous history of masturbation.

A—Ejaculatio praecox is often said to be due to a man's being 'too keen', but in fact it is found to be of the same nature and to have the same motive as sexual impotence—namely, a subconscious unwillingness to have intercourse, which is therefore prevented by the premature ejaculation. This inhibition is often due to an early engendered fear of sex. Masturbation as such does not produce it, but in so far as masturbation is an expression of self-love it inhibits love for the partner and may therefore be an important factor. Apart from this, some boys are often threatened with the consequences of sex, which threat may remain subconsciously although it may be discarded consciously, while others are told that masturbation leads to impotence and other disorders and this may have a deterrent effect by suggestion. Early circumcision is in many cases the inhibiting factor, especially when it is regarded as a punishment for sex. Fortunately, if the matter is taken calmly, and love for the wife, in its true sense, is encouraged, leaving the sex side to take care of itself, the condition usually resolves in time. If not, analytical treatment to discover and get rid of the cause should be advised.

Receding Gums

Q—How can recession of the gums be prevented?

A—Recession of the gums with advancing years appears to be one of the penalties derived from civilized diet and disuse of and lack of friction on, the gums appear to make them more liable to infection with gradual loss of the supporting tissues. Treatment should aim at keeping up the tone of the gingival tissues by massage, with careful scaling and cauterization of pockets or gingivectomy in order to eliminate any sepsis.

Books on Psychology

Q—Can you recommend an elementary book on psychology?

A—Perhaps the best simple book on pure psychology is Woodworth's *Psychology*. If, however, an elementary knowledge of medical psychology is required the question is more difficult to answer, because there is such a variety of approaches and no textbook has been written. We should therefore suggest going to the source of modern psychopathology and reading Freud's *Papers on Hysteria* which shows how he came to discover the importance of conflict repression, and wish-fulfilment in the neuroses and then Freud's *Introductory Lectures on Psychoanalysis*. Later authorities—such as Jung's *Analytical Psychology*, Adler's *Neurotic Constitution*, McDougall's *Normal Psychology and Abnormal Psychology*—can be better understood when a start has been made on these.

Cystine Stones

Q—Large cystine stones were removed from the kidney of a girl aged 4. Stones are also present in the other kidney. It is said that cystine stones can be dissolved with suitable diet. Could you please supply full details of this treatment?

A—Cystinuria is due to a hereditary abnormality in metabolism and we know of no diet which will prevent the formation of cystine crystals in a patient who suffers from this condition. Nor are we aware of any method by which cystine stones can be dissolved after they have formed.

Letters and Notes

Penicillin Snuff for Colds and Sore Throats

Dr H F BARNARD (Beverley, E. Yorks) writes: Dr J F Buckmaster (April 5, p. 476) has drawn attention to his work showing that penicillin snuff 'materially shortened and mitigated the common cold by reducing secondary bacterial invasion'. Our experience at Beverley Emergency Hospital is in agreement with this, and competent opinion elsewhere has expressed the same view. It is not commonly realized that penicillin snuff is valuable in the treatment of sore throats (Meadley, R G S, and Barnard, H F, *Lancet* 1946 1 87). A dose of 1,000 units maintains an adequate bacteriostatic concentration in the pharynx for up to four hours. The film of snuff coated mucus is slowly swept back by the ciliated epithelium of the nose to the pharynx and posterior surface of the tongue. Involuntary swallowing movements then bring it forward to the fauces, and tracing this flow with methylene blue shows that the posterior pharynx in particular is reached. After thus demonstrating its possibilities a series of sore throats in R.A.F. personnel were treated in bed. Penicillin snuff was given to alternate cases, the others acting as controls. The snuff treated cases showed a shorter period of disability and more rapid clearance of pathogenic bacteria. Penicillin lozenges, gelatin pastilles as advocated by Drs A B MacGregor and D A Long (Feb. 1, p. 197) or chewing gum introduced by McIntosh, C F and Perryman, P W (*Pharm J* 1946, 157 354), are indicated in buccal infection. In conclusion I would like to draw attention to the simplicity of this four hourly snuff method of achieving prolonged antiseptic activity in the upper respiratory tract. A small piece of paper is folded obliquely and from this is tipped and sniffed into each nostril as much powder of penicillin in sulphathiazole, 10,000 units per gramme, as will stand in a 1 cm circle.

Cider and Rheumatism

Prof B T P BARKER (University of Bristol Agricultural and Horticultural Research Station, Long Ashton) writes: Under the heading 'Any Questions?' (April 12, p. 515) an inquiry was made as to the grounds, if any, for the current belief that cider drinkers do not suffer from rheumatism of the arthritis type. In the reply given it was stated that salicylic acid is often added to cider, some times in very large amount, and this may be the origin of the idea. To prevent any misconception and possible harm to the cider industry of this country I wish to point out that neither salicylic acid nor any preservative other than sulphur dioxide is permitted in this country for addition to ciders. The maximum quantity of sulphur dioxide allowable is 14 gr (0.9 g) per gallon—i.e., 200 parts per million or 0.02%. The regulation has now been in force for many years.

Treatment of Post herpetic Pain

Dr N N TERESHCHENKO (Wandsworth) writes: I am surprised that in your answer to the question on the treatment of post herpetic pain (April 26, p. 585) you do not mention parenteral liver extract injections. This method was first described in your *Journal* (1946 1 942, 2 38). I had the opportunity to use it twice, each time with a dramatic result, the pain disappearing within twelve hours.

Correction

In the paper entitled "Occupied Holland" by Dr Henriette A Lohr published in the *Journal* of April 19, we omitted her reference to the work on "hunger osteopathy" done by Dr Pompen, Dr Groen, Dr la Chapelle, and Dr Mercx. Dr Lohr's observations on this were taken, by permission, from a monograph by these authors which is now published in Holland, and she is anxious that the description of this new clinical entity should be properly attributed to the above named authors. Dr Lohr's paper as published in the *Journal* was a much abridged version of an address given last September to the London Association of the Medical Women's Federation.

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BRITISH MEDICAL JOURNAL

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CENTENNIAL OF THE AMERICAN MEDICAL ASSOCIATION

BY

MORRIS FISHBEIN, M.D.

Editor Journal of the American Medical Association and Hygeia the Health Magazine

The first meeting of the American Medical Association took place in Philadelphia on May 5, 1847. The ideals and motivations that inspired its founders were a logical development of the thousands of years of tradition which have marked the medical profession through the centuries. The medical practice of 1847 in the United States more

closely resembled British medicine than that of any other European nation. Many of its greatest leaders had been schooled in British medical colleges. Indeed, Oliver Wendell Holmes, who served as chairman of the first committee on medical literature, felt that American medicine had followed far too closely its British pattern, and urged the creation in the United States of a distinctive medical literature.

Ideals and Patterns

The primary purpose of the American Medical Association was the advancement of medical education. In 1847 schools were mostly owned by groups of physicians who conducted these institutions as a means of enhancing their individual prestige and income. There were no definite standards. Little real progress was made in achieving this objective until shortly after the turn of the century. Up to 1880 the suggestion had been made many times that the American Medical Association be organized according to the pattern of the British Medical Association. However, the suggestion did not fall on fertile soil, and until 1900 the Association continued to be a representative body organized on a somewhat peculiar plan. There were representatives from the medical schools, from such State medical societies as had been organized, and also from other medical societies such as district and tri-State and specialistic

groups. A truly democratic organization was established with the reorganization in 1901, at which time representation was definitely limited to the individual States according to the number of members in the State medical society, and each of the scientific sections of the American Medical Association was permitted one

delegate in the representative body. In addition a delegate was assigned to each of the medical departments of the armed forces—the Army and the Navy—and also one to the U.S. Public Health Service. For many years attempts were made to obtain some representation for the Veterans Administration. Only following World War II, however, did the Congress of the United States establish the medical department of the Veterans Administration according to a plan resembling that of the medical departments of the Army and Navy; now the Veterans Administration will also be entitled to one representative.

This representative body, known as the House of Delegates of the American Medical Association, is the policy-making body. It determines the principles that govern organized medicine in the United States. All of the officers, employees, and other representatives of the American Medical Association are presumably bound in their official pronouncements to represent the policies established by the House of Delegates.



Nathan Smith Davis * Founder of the American Medical Association

Journal of the American Medical Association

For many years the American Medical Association met once each year and thereafter published a volume of *Transactions*, including the actions taken by the meeting and the scientific papers that were read. By the second decade, suggestions began to be made that the Association publish a periodical similar to that published by the British

Medical Association At one time Mr Ernest Hart, then editor of the *British Medical Journal*, was invited as guest and consulted frequently as to the principles governing such a publication Eventually in 1883 the *Journal of the American Medical Association* was established It did not attain great circulation nor prestige, nor was it able to earn much income for the American Medical Association until Dr George H. Simmons, an Englishman by birth and a citizen of the United States by adoption, became editor of the *Journal* in 1899 and subsequently the secretary and general manager To him also is given most of the credit for the plan of reorganization and growth of the Association that has taken place since 1900 As an outgrowth of the reorganization plan, the Association developed finally the concept of Fellowship A Fellow of the American Medical Association is a physician who is a member of a county and State medical society and who then applies for Fellowship in the American Medical Association and subscribes to the *Journal* To-day the circulation of the *Journal of the American Medical Association* is in excess of 133,000 weekly, and of its subscribers less than half are Fellows of the American Medical Association

Printing and Other Publications

When Dr George H. Simmons became editor, and general manager of the Association, he undertook promptly an expansion of its printing facilities During its first few years the *Journal* was printed by a private printer Shortly thereafter a typesetting machine was purchased, and from time to time the equipment was expanded so that to-day the Association employs about 350 employees in its printing department It has many flat-bed presses and four rotary presses one of which prints 96 pages in six forms and in two colours simultaneously The *Journal of the American Medical Association* and the special periodicals are all products of the Association's own printing plant The special periodicals were initiated in 1908 with the *Archives of Internal Medicine* Shortly thereafter came the *American Journal of Diseases of Children* The special periodicals now include

- Archives of Internal Medicine
- American Journal of Diseases of Children
- Archives of Neurology and Psychiatry
- Archives of Dermatology and Syphilology
- Archives of Surgery
- Archives of Otolaryngology
- Archives of Pathology
- Archives of Ophthalmology
- Occupational Medicine

Directory

Early in the 1900's also, the Association found it desirable to maintain its own file of all of the physicians licensed to practise in the United States and determined to publish a directory This directory has been regularly published every two years, except for the war periods, and represents one of the most valuable assets of the Association Indeed in both World War I and World War II the United States Government depended on the American Medical Association for recruitment of physicians to meet the needs of the armed forces The Association had, in fact, the only complete up-to-the-minute file of practising physicians available in the nation Indeed it is safe to say that few, if any, of the States had biographical files of their own physicians actually in practice Toward the end of World War II the Government developed a national roster of scientific and trained personnel, but even this effort has already fallen into desuetude

One more publication of the American Medical Association which represents an important contribution to the advancement of medical science is the *Quarterly Cumulative Index Medicus* The first complete index of the important medical literature of the world was the *Index Medicus*, founded by John Shaw Billings and continued by Robert Fletcher and Fielding H. Garrison When this fell on difficult times aid was given by the Carnegie Foundation, which eventu-



Dr George H. Simmons

ally withdrew its support Previous to that time the American Medical Association had undertaken the *Quarterly Cumulative Index*, which made no pretence beyond the indexing of 400 selected periodicals With the combination of the *Quarterly Cumulative Index* with the *Index Medicus* came the new publication, which now indexes more than 1,200 periodicals and which represents the most complete index of medical literature of the world thus far attempted Parenthetically, the annual loss in producing this publication has varied from \$30,000 to \$60,000

The Councils of the Association

When the Association found itself confronted with the problem of suitable controls over medical education and with the problem of regulating the advertising of proprietary medicines in its own pages, a pattern of development evolved which has become the usual technique to be followed in solving any of the many great problems that confront the organization For years there was a Committee on Medical Education which rendered annual reports In 1905 this committee was established as the Council on Medical Education with a full time secretary in the headquarters office This Council undertook to

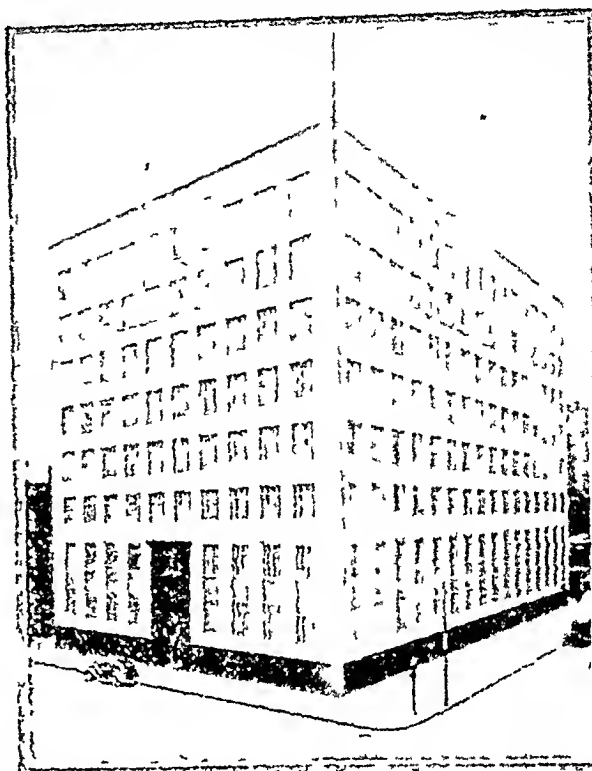
examine the medical colleges and to establish a minimum standard of medical education. Colleges which met the standard were rated Class A, and others which failed in certain particulars were rated Class B. Those which were found completely inadequate were listed in Class C. Year after year the inspections continued and the ratings were published. There were 165 medical colleges in the United States in 1905. Less than 20% of these were rated Class A at that time. To-day there are 77 medical colleges in the United States, and all of them are Class A. There is one medical school in Class C. The improvement has occurred by elimination of the inadequate schools, the combination of several weaker schools into one strong institution, and the development of new medical schools as departments of great universities. The stimulus to improvement was simply annual publication of the facts to both the medical profession and the public.

Since the right to practise medicine in the United States must be obtained by licensure of a State Licensing Board, the Council on Medical Education also publishes each year the records of the graduates of the individual schools in the examinations by the State Medical Licensing Boards. The publication of lists of those who pass and those who fail has been significant in raising the standards of medical educational institutions. It has also caused the State Licensing Boards to raise their standards of qualification.

Finally, the Council on Medical Education was expanded into the Council on Medical Education and Hospitals. This became necessary because medical education now continues from the medical school into the hospitals in which the young graduates serve their internships and later become residents who will qualify as specialists. The Council on Medical Education and Hospitals lists annually those hospitals which have been found acceptable for the training of interns and residents. Subsequently as a voluntary movement initiated with the Section on Otolaryngology came the establishment of the certifying boards in the various specialties. These certifying boards represent the special societies and the scientific sections of the American Medical Association. The Council on Medical Education and Hospitals establishes a minimum standard for certifying boards. Already more than 30,000 American physicians have obtained the certificates of these certifying boards in the various specialties. One of the present pressing problems of the American Medical Association is the tendency of hospitals to eliminate from their attending staffs men who do not have the certificate of a certifying board.

Drugs and Advertising

Almost immediately following the establishment of the American Medical Association resolutions were introduced condemning the prescribing of patent medicines and nostrums, the adulteration of drugs, and the sale of worthless preparations. Other resolutions condemned physicians who lent the aid of their names and of their prestige to endorsements of such remedies. With the establishment of the *Journal* there came a demand for elimination from its advertising pages of the advertisements of products with secret composition or sold with exaggerated claims. In 1905 the Council on Pharmacy and Chemistry was organized to investigate and report on medicinal products offered to physicians. In 1906 a chemical laboratory was established in the headquarters office as an adjunct to the council. Products which meet the standards of the Council on Pharmacy and Chemistry are permitted to display on their labels a shield-shaped emblem with the words, "Accepted, American Medical Association, Council on Pharmacy and Chemistry".



The home of the American Medical Association, Chicago

The work of the Council on Pharmacy and Chemistry is conducted without any charge to any manufacturer. In fact, the Association pays for all of the work of its councils and bureaus from the dues of its Fellows and the profits on its publications.

The Council on Pharmacy and Chemistry publishes each year a book called *New and Non-official Remedies* which lists all of the newer products not yet admitted to the United States Pharmacopoeia, with methods of identification and statements concerning their actions and uses. The council publishes also an *Epitome of the Pharmacopoeia* with criticisms of products in the *Pharmacopoeia* and also a book called *Useful Drugs*, containing some 250 drugs and preparations which form the basis of teaching in materia medica and pharmacy in most medical schools.

The pattern of the Council on Pharmacy and Chemistry proved so successful that subsequently a Council on Food and Nutrition was established, which deals with food products, and the Council on Physical Medicine which is concerned with apparatus such as the ultra-violet, diathermy, infra-red hydrotherapy, and massage equipment.

Practically all of the State Medical Societies likewise limit their advertising to accepted products. Many of the periodicals published by special medical societies also limit their advertising. This has been one of the most effective activities of the organization.

The next council to be established was known as the Council on Health and Public Instruction. This council was formed with the concept of achieving another objective of the Association—namely, education of the public regarding health and disease and the encouragement of legislation for the improvement of the public health. This council established a speakers' bureau, a special committee to deal with legislation, a division to assemble the law as related to the public health and the practice of medicine in the United States. It developed committees dealing with such special topics as ophthalmia neonatorum, cancer, tuberculosis, and the care of the Indians. Eventually its health educational activities were assigned to a new Bureau

of Health Education in the headquarters office, to a Bureau of Legal Medicine and Medical Legislation, to the publication of *Hygeia*, the health magazine of the American Medical Association which now has a circulation in excess of 200,000 subscribers, and to other agencies *Hygeia* the health magazine, is now published as a part of the editorial functions of the Association

As the interest grew in the field of industrial medicine, a Council on Industrial Health was established

The most recent of the Councils is the Council on Medical Service, which is concerned with the development of voluntary insurance against the costs of hospitalization and of sickness. In association with this council there is a Bureau of Medical Economic Research and the information bureau maintained in Washington, D C, the national capital

Another bureau of the Association is the Bureau of Exhibits, which arranges not only for the scientific exhibit at the annual sessions of the American Medical Association but for similar exhibits at the meetings of the State Medical Societies and at meetings of voluntary philanthropic organizations in the field of health and other exhibits of medical interest. It has taken part in the encouragement of the establishment of health museums, of which there are now about six in the United States

Quackery

Quackery is perennial. The charlatans have preyed on the public in the field of disease and health since the beginning of time. As the *Journal* began to gain prestige it undertook to expose from time to time various charlatans who had achieved great followings in the United States. As a result of these exposes the *Journal* and its editor have been sued for libel—the total number of such suits approaching 40 and the total amount of damages sought being more than \$30,000,000. The *Journal* has gone into court at least six times, since it has never compromised or settled a libel suit. In only one instance did it ever have an unsatisfactory verdict, and in that instance the award to the plaintiff, who was a manufacturer of an alcoholic nostrum for women, was one cent in damages.

Research

Early in its career the American Medical Association offered prizes for essays and other literary contributions to the advancement of medical knowledge. As its funds began to accumulate, the number and the value of these prizes increased. As each of the councils was established, funds were made available for encouraging research, and the Association established also a Committee on Scientific Research, which makes grants to medical investigators. The Association has spent more than \$1,500,000 for such research during the last forty years and has set aside \$2,000,000, the income of which is regularly used for research.

The single room with four employees which represented the headquarters of the American Medical Association in 1899 has grown to a building of half a block in width and almost a block in length, in which more than 700 employees carry on their activities. For these employees the Association has established hospitalization insurance and insurance against the costs of surgery or catastrophic illness.

Early in its career the American Medical Association recognized the importance of the State in the development of preventive medicine and public health. More than any other organization it has the credit for the development of the State Health Departments and of the United States Public Health Service. It has co-operated with every voluntary health agency in assuring adequate return for

the funds contributed by the people in promoting research and in education both of the public and of the medical profession regarding tuberculosis, cancer, blindness, deafness, paralysis, heart disease, and the work of the Red Cross in disaster and catastrophe. Some of its special campaigns have led to the elimination of the hazards of fireworks and gunpowder in celebration of the Fourth of July. It has led in the campaign against motor accidents and the provision of first aid when such accidents occur. It has carefully recorded the progress of the campaigns against death from typhoid and diphtheria. It has stood as the bulwark of medical science against the vast army of the ignorant, the stupid, and the fanatic, the antivivisectionists, the anticreationists, the antimicrobial science groups. All of these functions it has carried on with never an appeal for fund from any agency outside the medical profession itself, never an appeal to any other agency than the medical profession itself to eliminate the evils and misrepresentations. Always it has been the pride of Medicine that it has cleaned its own house, that it has recognized its obligations, that it has met every crisis in its career with its eyes set on greater goals for the good of mankind than have been its objectives in the past.

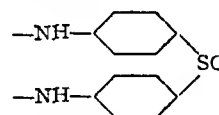
THE SULPHONE TREATMENT OF LEPROSY

BY

ERNEST MUIR, M.D., F.R.C.S. Ed

Medical Secretary The British Empire Leprosy Relief Association

The drugs commonly known as sulphones are derivative of diaminodiphenyl sulphone



It was their antibiotic effect in controlling the growth of *M. tuberculosis* in experimental animals and *in vitro* (Feldman *et al.*, 1942, Petter and Prenzlau, 1944) that first suggested trial in leprosy. Strangely, they have so far shown much more evidence of usefulness in leprosy than in tuberculosis.

The sulphone derivatives which have so far been tried in leprosy are "promin" (USA, "promin", in England, "promanide") (diaminodiphenyl sulphone-*un* didextrose sulphonate), "diasone" (disodium formaldehyde sulphonylate of diaminodiphenyl sulphone), "promizol" (2,4'-diamino-5-thiasolylphenyl sulphone), and "sulphetron" (tetrasodium phenylpropylamino-diphenyl-sulphone tetra sulphonate). Promin was first used in the National Leprosarium, Carville, U.S.A. (Faget *et al.*, 1943). It was found to be excessively toxic by oral administration but to be tolerated intravenously in daily doses up to 5 g. Following on the first published results on promin, Muir (1944) began a trial of diasone in Trinidad. Fearing that diasone might be toxic by mouth like promin, he first gave it intravenously, but later found that it was well tolerated orally in daily doses up to 2 g. A more recent sulphone derivative, promizole, is considered by the Carville workers (Faget, Pogge, and Johansen, 1946) to give possibly even better results than the first two preparations, though it has not yet been tried out sufficiently. This can be given orally in daily doses up to 6 g. Lastly, sulphetron (B.W. & Co.) is under trial, and the first reports indicate promising results.

The results obtained with these sulphones appear to be similar, though they may vary in the degree of toxicity, the amount of the effective dose, and the speed of results.

Mode of Administration

Suitable Type of Case—It is the lepromatous or severe type of leprosy to which sulphone treatment has been applied—that is to say, the type which so far has been most amenable to treatment by chaulmoogra and other drugs. I have had no experience with sulphones in tuberculoid and uncharacteristic cases, nor have I seen any published results in these types.

Toxic Effects—Faget *et al.* (1943) mention the following toxic signs as occurring: decrease in blood cells, leucopenia, allergic dermatitis, allergic rhinitis, mild and phemeral headaches and nausea, and lepra reaction including iridocyclitis. Further observation has, however, shown that with suitable dosage most of these can be avoided. In my experience anaemia (chiefly due to destruction of red cells) and increased reactionary exacerbations are the two toxic indications to be guarded against, and these are apt to occur principally in patients in poor general health and/or in an advanced stage of the lepromatous type, and in the initial stages of treatment. Before beginning treatment the patient should be examined for anaemia, and when this is present, as it often is in severe lepromatous cases, a preliminary course of full doses of ferrous sulphate or carbonate should be given.

Dosage—My own experience has been chiefly with diasone (Muir, 1944, 1946), and the dosage here described is what is recommended in the use of this drug. Considerably higher doses have been used with promin and promizole (Faget *et al.*, 1943, 1946). It is advisable to begin with small doses in all cases, and gradually raise the amount according to the tolerance of the patient. In doing this the important indications are the stage of the disease, the general condition of the patient, especially as regards febrile and focal reactionary signs, the condition of the blood, and the presence of anaemia. If the haemoglobin percentage is below 70 a preliminary course of iron should be given, and if this is not effective injections of liver extract should be added.

Diasone is generally made up in 5-gr (0.32 g) capsules or tablets. When the haemoglobin is at or over 70%, begin with 1, 2, or 3 tablets according to the general condition of the patient. This should be taken in one undivided dose, preferably an hour after food, so as to promote quick absorption and the highest blood concentration. Reactionary signs are not a contraindication to beginning the treatment, but are a warning not to raise the dose too rapidly. Whatever the initial dose, repeat it every second day for the first week unless they are signs of exacerbation. In strong early cases without septic or other complications one tablet may be added after the first week on the intermediate days and increased gradually till, after three or four weeks, the patient is taking 3 tablets daily for six days a week. It may, however, be a considerable time before a weaker or more advanced case reaches this dosage. The haemoglobin should be tested every week to begin with and iron (and if necessary liver extract) continued in all cases with a percentage below 80 or 90. A fall below 70% or the intercurrent of increased reaction calls for temporary suspension of diasone or diminution of the dose. When a dose of 3 tablets a day for six days a week has been reached it is well to suspend treatment for one week every month. Apparently when full dosage is suddenly resumed after this temporary stoppage the blood concentration rises to a higher level for a time. In patients who have improved

and are free from signs of anaemia and reaction the dose may be gradually raised to 6 tablets daily six days a week for three weeks a month—this being regarded as the maximum average dose, though it may be increased or diminished according to the body weight of the patient.

Effects of Treatment

These vary according to the stage of the disease. In a severe advanced lepromatous case with ulcerating leproma of the limbs, ulceration of the nasal and other mucous membranes with obstruction of breathing, and with severely affected eyes going on to blindness, the first effects, which often take place within a few weeks, are the healing of ulcers, clearing of the nose, and arrest of the eye condition with improved vision.

The next effect is seen in patients with chronic or sub-acute allergic reactions indicated by slight rise of temperature and/or the frequent appearance and subsidence of nodules and other inflammatory skin lesions. These symptoms gradually subside. At the same time permanent nodules and other raised skin elevations become slowly absorbed and flattened out, leaving marked wrinkling of the integument. This improvement generally requires a few months.

The third stage in recovery, and the only one in early or less advanced cases, is the gradual lessening of the number of bacilli found in sections and smears from the skin and in smears from the nose. Thus three plus cases become two-plus and then one-plus, and one-plus cases become negative. The time required for this appears to vary with the advancement of the disease. Some early cases have become negative in four to six months, but more advanced cases may require four, five, or even more years. One of the most striking signs of improvement is that seen in the affected eye and especially in the cornea, where, because of its transparency, the arrest and a certain amount of recession of the lepromatous infiltration can be observed with a lens or corneal microscope.

There is one important point on which evidence is not yet available—that is, whether or not a point is reached at which the type changes, the lepromatous case being transformed into a tuberculoid one with a negative "lepromin" test becoming positive. Theoretically the lepromin test is negative in the lepromatous case because the antigen (the lepra bacilli) are in such great excess of antibodies formed that an effective allergic reaction, which would destroy the bacilli, cannot take place. As the bacillary antigen becomes less and less, is a point reached at which an effective reaction can take place? If so, it would be indicated by a positive lepromin reaction, and we should have an additional factor helping to clear up the residual bacilli. I have found indications in one or two cases that this may occur to some extent, but further evidence is needed.

Length of Treatment

In any case, treatment should be continued at least until repeated bacterioscopic examinations have given negative results over a period of six months to two years, varying directly with the advance of the disease at the beginning of treatment, and with the length of treatment required to produce the first negative bacterioscopic results. Faget (1947) reports that "19 promin-treated patients have been discharged as disease arrested following twelve consecutive months of negative bacterioscopy. Of this number three were under treatment for 1½ to 2 years, three from 2 to 3 years, six from 3 to 4 years, and seven from 4 to 5 years. There have been no relapses. The period of

observation following arrest of the disease has varied from a few months to 2½ years.

Iodides have a specific effect in showing up concealed lepromatous foci. It is possible that their careful administration in cases that have become bacterioscopically negative may be of use in determining the length of further treatment required, and perhaps in speeding up the elimination of residual foci, but this matter still calls for very careful investigation.

Regulation of Established Treatment—Particulars have been given of the dangers attending the initial treatment with diasone. But once the patient has taken his maximum dose for a few months without diminution of haemoglobin content or reactionary symptoms, and has made definite improvement as regards both leprosy and in his general health, the same precautionary methods cease to be necessary and treatment may be continued by an intelligent and reliable patient with a minimum of supervision. A visit by the doctor once a month is often all that is needed. This fact is particularly helpful to patients under domiciliary treatment.

Mode of Action

It is still uncertain how the sulphones act. Fite and Gemar (1946), after examination of biopsy sections from 32 patients under promin, concluded that tissue changes are "atrophic in character with extremely slow and gradual lessening of numbers of organisms in the lesions to the point of final disappearance in 10 of 32 cases examined."

The important finding is that promin appears to eliminate bacillary infection of the blood vessels and blood stream, thereby preventing the formation of new lesions. The atrophy of focal lesions is also more apparent in areas with a more generous blood supply. The results indicate strongly that the best results may be expected in those cases in which treatment is begun in a comparatively early stage of the disease.

A satisfactory hypothesis is as follows. Ordinarily in lepromatous cases the cellular ingestion of bacilli and their multiplication in the cytoplasm result in the formation of "globi," the rounded masses of bacilli found in all typical lepromatous cases. The global bacilli gradually die and are transformed into a non-acid-fast lipid matrix which imbeds the still acid-fast bacilli. Thus in untreated cases the living bacillary element in a globus gradually becomes extinct, and its place is normally taken by fresh globi. It may be supposed that the sulphones act not by destroying bacilli but by preventing the multiplication of bacilli and the formation of fresh globi.

If this hypothesis is correct it would account for (a) The finding of globi in smears from the nose and skin of treated patients, in which there are no acid-fast bacilli or in which the bacilli are thin and ghost-like. (b) The long time required in the clearing up of bacilli in fairly advanced cases. This will be made clear when it is mentioned that human leprosy bacilli, killed by boiling and injected into rats, can still be found retaining their acid-fastness after 18 months.

The Future of Sulphone Treatment

The history of leprosy in the last 30 or 40 years is strewn with the wrecks of so called "cures." Knowing this, one is hesitant to put forward claims for the sulphones which might fail to be confirmed. It will take years before we can say with any confidence what the final results are, whether a complete and lasting cure is possible, what is the relapse rate, and whether relapsed cases will yield to further courses of treatment.

Confidence is given, however, by the fact that experienced workers all over the world who have carried out the initial trials have without exception obtained favourable results such as they had never before found with other remedies. Many have reported definite improvement in practically all cases that have been under treatment for at least six months.

The history of a rising scale of effectiveness in other drugs, such as the sulphonamides, gives reason for hope that sulphone derivatives may be produced which will give even more rapid and effective results.

Sulphones and the Anti-leprosy Campaign

The Supply of the Drugs—Few of the countries where leprosy is rife are wealthy, and the patients who require treatment most are as a rule the poorest of the poor. In a campaign against leprosy there is, therefore, need for a drug which is not only effective but which can be made available to the poorest patient in countries like Africa, India, and China.

Fortunately the raw material of the sulphones is not expensive, and although the outlay on manufacture must at first be considerable the cost should rapidly diminish with mass production. It is calculated that 1,000 5 gr (0.32 g) tablets of diasone should, on an average, suffice for one patient for one year, and the present cost of this is in the region of £6. If treatment is to be extended to a gradually increasing proportion of the one or two million lepromatous cases calculated to exist in the world, there will be a considerable call on the budgets of governments, and on the generosity of philanthropic bodies.

Effect on Control—The two chief difficulties in the control of leprosy have been (a) open infectious cases through ignorance, fear, and shame, or want of opportunity, are not isolated until they have had a chance, often lasting several years, of spreading the disease to their relations and other contacts, (b) that the treatment available has been painful and hard to persist with over a long period and, even when persisted with, has in the majority of lepromatous cases been unable to arrest the disease.

It may be expected that once the effects of sulphone become widely known they will attract early cases which would otherwise have concealed the disease as long as possible. Thus to a gradually increasing extent the danger of infection should be cut off at its source.

Need of Personnel—One of the chief difficulties in anti-leprosy work has always been the lack of doctors. In the medical profession there has been a prejudice against leprosy, either on account of fear or because it was considered that so little could be done for it. In Brazil the Government offers an extra allowance beyond the ordinary service rates. But the best work has always been done by those who have felt they have a vocation, and many such doctors and other workers, once they have overcome their prejudices which surround the subject of leprosy, have become enthralled by the interest of the work. Now that there is a clearer prospect of effective treatment and control, it is to be hoped that more doctors with a pioneering and venturesome (not to say philanthropic) spirit will offer to do this work.

Summary

The sulphones have been found of definite benefit in the severe or lepromatous type of leprosy, clearing up complications, causing a slow but steady diminution of the bacilli, and in some cases bringing about arrest of the disease.

The method of administration of diasone, its possible mode of action, and length of treatment are given in detail.

The effects of sulphone treatment on the campaign against leprosy, the supply of sulphones, and the need of suitable personnel are discussed

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TROPICAL EOSINOPHILIA IN EAST AFRICA

BY

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The syndrome now generally known as tropical eosinophilia or eosinophilic bronchitis was first described by Frimodt-Møller and Barton (1940) in Southern India. Under the title "a pseudotuberculosis associated with eosinophilia" they published an account of a syndrome characterized by cough, fever, and loss of weight which ran a prolonged but comparatively benign course. There was a fairly constant similarity in the radiographs of these patients, the characteristic picture showing extensive mottling of both lung fields, resembling somewhat miliary tuberculosis or silicosis. Blood counts revealed a high degree of eosinophilia, and in over half the patients examined 5,000 or more eosinophils per c mm were found.

Weingarten (1943) recorded 81 cases of tropical eosinophilia. He found that expiratory dyspnoea was a prominent symptom and that the spleen was often enlarged. After trying various remedies without success he discovered that dramatic improvement resulted from a short course of neoarsphenamine. Further cases were described in India by Simeons (1943), Treu (1943), Menon (1945), and others, while a similar condition was reported from Ceylon by Carter, Wedd, and d'Abrera (1944), Carter and d'Abrera (1946b), and Soysa and Jayawardena (1945). The Ceylon workers discovered mites of various genera in the sputum of more than half their cases, and considered that tropical eosinophilia might "in part at least be explained on the basis of a mite infestation of the respiratory system". Treatment by inorganic arsenicals was found to be effective with neoarsphenamine and "acetylarsan" by injection, and acetarsol or carbarsone by mouth.

While tropical eosinophilia can no longer be regarded as a rare disease in India and Ceylon, its existence in Africa has not yet been generally recognized. Isolated cases have, however, been recorded by Parsons-Smith (1944) and Stephan (1946) in Cairo, while Ritchie (1944) described the condition in a Tanganyika native serving in the Middle East Forces and Hunter (1946) in a European recently returned from West Africa. The present communication describes an investigation carried out in Dar-es-Salaam, Tanganyika. Differential white counts were performed on a consecutive series of 34 patients attending the native civil hospital with symptoms of recurrent bronchitis or asthma. The patients were all males, and consisted of 29 Indians, four Africans, and one Arab. In 28 cases an eosinophilia of less than 20% was found, while in six cases the eosinophilia ranged from 40 to 78%. The latter group, and a seventh case which was referred on account of an unexplained eosinophilia, were submitted to detailed investigation. All were considered to be suffering from tropical eosinophilia,

six were treated successfully with arsenic, while the condition regressed spontaneously in the seventh case.

Clinical Findings

The characteristic picture appeared to be recurrent attacks of cough, wheezing, and low fever separated by intervals in which the only symptom was a spasm of unproductive coughing in the early hours of the morning. In four cases retrosternal pain was present, and three complained of acute irritation of the larynx and upper respiratory tract. After a variable number of attacks the intervals of freedom became shorter, and cough and dyspnoea caused increasing distress. Early cases showed no constitutional symptoms, but those who had been ill for several months complained of lassitude, anorexia, and loss of weight. Case VII conformed to the clinical type described by Frimodt-Møller and Barton as "pseudotuberculosis". That patient complained of chronic cough, pain in the chest, and occasional small haemoptyses without asthmatic attacks.

X-ray Findings—In three cases no abnormality was seen. In Cases VI and VII there was diffuse mottling of both lung fields, characteristic of the "eosinophil lung pattern," and a suggestion of mottling was seen in the radiographs of Case IV. These cases gave a history of one year's, two years', and ten months' duration respectively.

Pathological Findings—(a) **Haematological**—An initial blood count was done on all cases by Dr Vivarelli. The red cells varied from 4,650,000 to 5,150,000 per c mm and the haemoglobin from 94% to 110% (Lovibond)—comparatively high figures in a country where anaemia is prevalent. Leucocytosis was a constant finding, counts ranging from 11,250 to 34,000 cells per c mm, with an eosinophilia of 52–78%. Except for an occasional eosinophil metamyelocyte no immature cells were seen, the granules varied in size and tended to be larger than normal, they frequently did not fill the cell, and left spaces like vacuoles in films stained by the Leishman method. Whitby and Britton (1942) noted a similar appearance of the cells in eosinophilic leukaemia. Differential counts were repeated two or three times weekly on 200–400 cells, and the percentage of vacuolated cells was seen to diminish in the course of treatment. The blood sedimentation rate was estimated by Westergren's method in three cases, in one case it was raised to 47 mm after 1 hour, but in the other two cases it was within normal limits. Films from all patients were examined for filariae, but none were found.

(b) **Urine and Stool Examinations**—No abnormality was found on naked-eye or microscopical examination of the urine, and specimens of stools were negative for parasites, except in Cases V and VI, in which a few ankylostome ova were discovered by concentration methods. In both cases a rise in the total eosinophils was found when the blood was re-examined after deworming.

(c) **Sputum**—Specimens were repeatedly examined for tubercle bacilli, but none were found. Sputum from Cases II–VI was examined by Dr Vivarelli for mites by the method described by Soysa and Jayawardena. Twenty-four-hour specimens were collected into sterile stoppered bottles, and the mucopurulent material was disintegrated with 10% potassium hydroxide. After it had cleared, enough formalin to give a 10% concentration was added and the liquid left for 24 hours. It was then centrifuged and the deposit systematically examined under the microscope. Four mites of *Tyroglyphus* and a few ova were found in specimens from Case II, one mite of *Tyroglyphus* in Case VI, and an unidentified mite in sputum from Case IV. No mites were found in sputum from Cases III and V.

Treatment

Case II was treated with weekly injections of neoarsphenamine, in the other cases it was intended to follow the method advocated by Soysa and Jayawardena. They gave carbarsone or acetarsol 0.25 g twice daily until clinical cure had been obtained and the eosinophils had fallen to a satisfactory level. Using this method, it was found that a Jarisch-Herxheimer type of reaction occurred between the second and fifth days. This consisted in a brisk exacerbation of symptoms, usually accompanied by some rise in temperature. After two or three days rapid clinical improvement began, with complete and apparently permanent disappearance of symptoms during the next 5 to 10 days. The haematological response was much slower, and the original intention of treatment by a prolonged course of acetarsol was abandoned in favour of a 10- or 12-day course of acetarsol or carbarsone followed, after an interval, by weekly injections of neoarsphenamine. It was found that there was a fairly rapid fall in the eosinophils during the first four or five weeks of treatment, but after this no significant fall occurred until after treatment had been discontinued. Case V was given a 10-day course of carbarsone and four injections of neoarsphenamine, treatment being abandoned when the eosinophil count was still 29%. Two months later the eosinophils had fallen to 4% (a total of 248 per c mm). Case I was of equal severity and Case III was practically asymptomatic. Both were given considerably more arsenic without a more rapid clinical or haematological response being obtained.

In Case II, which was treated with neoarsphenamine alone, the clinical response was slower, but the haematological response was approximately the same as in the other cases.

Case I

An Indian aged 24 had had a cough, retrosternal pain, and a low fever for two to three weeks which were not improved by sulphapyridine and expectorants. On June 2, 1945, the temperature was 99°F (37.2°C), the blood pressure 135/95. Sonorous rhonchi were heard in all areas of the chest and moist rales at both bases. A blood count showed red cells, 5,350,000; haemoglobin, 110%; colour index, 1.02; white cells, 34,000 (polymorphs, 75%; lymphocytes, 24.5%; eosinophils, 66%; eosinophil metamyelocytes, 2%). Most of the eosinophils appeared vacuolated. In three specimens of sputum tubercle bacilli were not found, nothing abnormal was observed in the urine, and no ova or parasites were present in three samples of stools. A skiagram of the chest revealed no abnormality.

On June 4 treatment was begun with acetarsol 0.26 g twice daily by mouth. On the third day there was a sharp rise in temperature which lasted three days and was followed by rapid clinical improvement. By June 17 he was symptom free, and ten days later his chest was entirely clear. On June 28 acetarsol was discontinued after 50 tablets (13 g) had been taken. His white blood cells numbered 11,000 (37% eosinophils). In the course of the next six weeks he was given carbarsone, 0.5 g daily for five days, followed by four weekly injections of neoarsphenamine (one of 0.6 g and three of 0.75 g). On Aug. 18 his white count was 9,600 (19% eosinophils). On Oct. 23 it was 7,176, with no eosinophils. He remained in good health.

Case II

An Indian aged 18 had had recurrent attacks of cough for 12 months. Originally dry the cough had become productive in the last six months, and later he had coughed up large quantities of mucopurulent sputum. Retrosternal pain and increasing dyspnoea had caused him considerable distress, and he had been unable to work for several months. He had had in-patient and out-patient treatment without improvement.

Examination on June 4 showed him to be a thin and dejected individual very distressed by continuous dyspnoea and constant spasms of coughing. The temperature was 99°F (37.2°C). Chest expiration was prolonged and loud sonorous rhonchi were

heard all over both lungs. The spleen was enlarged 34 L (8.9 cm) below the costal margin. The Wassermann reaction and Kahn test were negative. A skiagram of the chest revealed no abnormality. Examination of the urine and stool showed nothing abnormal. Tubercle bacilli were not found in five specimens of sputum. A blood count showed red cells 4,660,000; white cells 13,750 (P, 25%; L, 19%; E, 56%). A sternal puncture gave the following readings: neutrophil polymorphs, 15%; eosinophil polymorphs, 35.2%; basophil polymorphs, 1%; neutrophil metamyelocytes, 5%; eosinophil metamyelocytes, 18%; neutrophil myelocytes, 1.2%; eosinophil myelocytes, 8%; neutrophil premyelocytes, 0.4%; eosinophil premyelocytes, 1%; eosinophil myeloblasts, 1%; normoblasts 7.2%; erythroblasts, 1.2%; macropolycytes and megakaryocytes, 0.6%; mitotic cells, 0.4%. The blood sedimentation rate (Westergren) was 47 mm after one hour, 56 mm after two hours.

The patient was given eight weekly injections of neoarsphenamine (0.15 g, 0.3 g, 0.6 g and five of 0.75 g) beginning on June 7. Four mites of *Tyroglyphus* were found in a 24 hr specimen of sputum collected after the first injection had been given, and a few ova were seen in a specimen collected a week later, but no further adults or larvae. There was an increase in symptoms after the third and four injections, but his clinical condition then steadily improved. By July 28 he was asymptomatic and gaining weight, his total leucocyte count had fallen to 8,000, with 16% eosinophils, and his BSR to 26 mm after one hour.

He was seen again in August, when he complained that he was still getting attacks of asthma. He was repeatedly examined but no abnormality was found in his chest, and his eosinophils had fallen to 10%. Arrangements were made to readmit him to hospital for observation, but he failed to return.

Case III

An African clerk aged 25 was first seen on May 22, with a large number of eosinophils were found in a blood film when he was suffering from an attack of malignant tertian malaria. He was otherwise well except for a slight dry cough. The white cells numbered 8,000 (P, 26%; L, 19%; M, 1%; E, 2%; E, 52%). Nothing abnormal was found in the urine, and no ova or parasites were present in the stools on seven consecutive days. The white cell count on June 6 was 15,500 (P, 10%; L, 18%; M, 0.5%; B, 1%; E, 69%; eosinophil metamyelocytes 1.5%)—15% of the eosinophils showed cytoplasmic vacuolation. The BSR (Westergren) was 9 mm after two hours.

Clinical examination was negative except for a slight splenic enlargement which might have resulted from the malaria. He was given 0.26 g of acetarsol twice daily for 15 days, starting on June 14. After two days his cough increased and a small quantity of sputum was expectorated. This was collected and examined for mites, but none was found. He was entirely free from cough three days later, but his eosinophils still numbered 46% at the end of the course. After two weeks' interval he was given six weekly injections of neoarsphenamine (one of 0.6 g and five of 0.75 g). On July 19 the blood count showed 6,200 white cells, with 12% eosinophils. On Oct. 18 his white cells numbered 6,000 (P, 51%; L, 40%; M, 2%; B, 1%; E, 6%). He has remained in good health.

Case IV

An Indian clerk aged 32 complained of recurrent attacks of dry cough for 12 months. The cough usually woke him in the early morning. In the past four months attacks had grown more frequent and more severe and expiratory dyspnoea had become increasingly troublesome. Treatment had not given him any relief.

On examination on June 11 expiration was prolonged and a few rhonchi were heard at the right base and a patch of inspiratory rales at the left base. The white cells numbered 11,000 (P, 15%; L, 7%; E, 78%). The BSR (Westergren) was 5 mm in one hour. Examination of the urine and stool revealed no abnormality. A skiagram of the chest showed faint mottling of both lung fields. A course of acetarsol 0.26 g twice daily was begun on June 12. Three days later his symptoms became so severe that he abandoned treatment for

days, resuming it on June 19. Sputum was collected at the beginning of the exacerbation and one unidentified mite was found on microscopical examination. The following day he was symptom free, and three days later his chest was clear on clinical and x-ray examination. Treatment was discontinued after a total of 50 tablets (13 g) had been taken, the eosinophils at this time numbering 21%. In view of his high eosinophil count he was given five weekly injections of neoarsphenamine, starting on June 12 (0.6 g followed by 0.75 g). On July 28 his white cells numbered 8,600, with 13% eosinophils and on Oct 23 they had fallen to 6,240 (P, 85%, L, 10%, M, 3%, E, 2%). He remained fit, and stated that he was now feeling thoroughly well for the first time for over 12 months.

Case V

An African cook aged 24 complained of continuous dry cough since an attack of acute bronchitis a month previously. During the last two days his acute symptoms had recurred with cough, wheezing, and fever. On examination the temperature was 99.8° F (37.7° C). Numerous rhonchi were heard all over the chest and a patch of leathery rales at the left base. Neither tubercle bacilli nor mites were found in the sputum. The urine was normal. A few ankylostome ova were found in the stools by concentration methods. A radiograph of the chest revealed no abnormality. The white blood cells numbered 14,600 (P, 20%, L, 15%, M, 1%, B, 1%, E, 63%). He was dewormed with chenopodium and tetrachlorethylene and a blood count on July 9 showed red cells, 4,650,000, haemoglobin, 94%, colour index 1.01, white cells, 20,000 (P, 11%, L, 25%, M, 2%, E, 62%). Treatment was begun on July 9 with carbarsone 0.25 g twice daily for 10 days. On the fifth day the cough and sputum increased and the eosinophils rose to 83%. All sputum was systematically searched for acari but none was found. By July 19 he was symptom free and his chest was clear, but his eosinophils numbered 75%. He was given three injections of neoarsphenamine (0.6 g, 0.75 g, and 0.75 g at weekly intervals). The eosinophils fell to 29% at the end of treatment, and on Oct 24 the white cells numbered 6,240 (P, 65%, L, 25%, M, 6%, E, 4%). He stated that he had had no cough since the beginning of the treatment and that his general health was better than it had been for many months.

Case VI

An African night watchman complained of continuous dry cough with recurrent acute attacks of cough, wheezing, and pain in the chest for the last ten months. He asked to be admitted to hospital, as an acute attack had begun two days previously. When examined on July 10 his nutritional state was poor and there was marked dyspnoea, with rhonchi all over both lungs. The urine was normal. A few ankylostome ova were found in the stools by concentration methods. A blood count showed red cells 4,590,000, white cells 8,750 (P, 30%, L, 30%, E, 40%). He was dewormed with chenopodium and tetrachlorethylene and a blood count on July 28 showed red cells 4,650,000, haemoglobin, 95%, colour index 1.02, white cells, 19,600 (P, 11%, L, 13%, M, 1%, E, 75%). A skiagram of the chest showed mottling of both lung fields typical of the "eosinophil lung pattern". Treatment was begun on July 28 with acetarsol 0.26 g twice daily for 12 days. On the fifth day he became extremely dyspnoeic and his temperature rose to 101° F (38.3° C). Sputum was examined during the acute phase and one mite (*Troglyphus*) was found. By Aug 6 the patient was symptom free and his chest was clear. The course of acetarsol was followed after a short interval by eight weekly injections of 0.6 g of neoarsphenamine. Throughout treatment an eosinophilia persisted, counts varying between 28% and 50%, but on Oct 28 his white cells numbered 8,250 (P, 50%, L, 14%, M, 3%, E, 3%) and skiagrams showed considerable clearing of the mottled pattern. Two months later he was still fit and had had no recurrence of symptoms.

Case VII

An Arab stone-mason aged 30 complained of chronic cough with occasional small haemoptyses. The first attack began 3 months before and had lasted 10 months. It was

followed by 10 months' freedom, then the present attack began 7 months previous to admission.

When examined on July 31 he was afebrile, expiration was slightly prolonged, and there were numerous coarse rales at both bases. Tubercle bacilli were not found in three specimens of sputum, and no parasites were discovered in three stool specimens. A skiagram of the chest revealed diffuse mottling of both lung fields typical of the "eosinophil lung pattern". A blood count showed red cells, 4,950,000, haemoglobin, 98%, colour index, 0.99, white cells, 22,300 (P, 16%, L, 20%, M, 1%, E, 62%, eosinophil metamyelocytes, 1%). He was not seen again until Oct 18, when he was traced and re-examined. It was found that his condition had again regressed spontaneously. A skiagram of his chest revealed no abnormality and white cells numbered 9,360 (P, 70%, L, 20%, M, 6%, E, 4%).

Discussion

The finding of six cases of tropical eosinophilia in a consecutive series of 34 patients suffering from chronic cough or asthma suggests that this condition is relatively common in the Dar-es-Salaam district. All the patients had resided on the Tanganyika coast for the previous two years, and none of them had been out of East Africa for eight years. The only features common to all cases were a history of less than three years' duration, cough of variable degree, leucocytosis, and pronounced eosinophilia. In most cases there was no obvious symptom or physical sign to distinguish them from bronchial asthma or recurrent bronchitis, and it must be emphasized that unless a differential white count is done in the Tropics as a routine on all such cases tropical eosinophilia will constantly be missed.

The aetiology of tropical eosinophilia still remains obscure. It has been found at all ages and in both sexes. Weingarten stresses the importance of environment, finding it common on the coast round Bombay, but absent from the inland district of Rajputana. Although cases have since been recorded from inland districts the majority seem to have contracted the disease in a hot and humid atmosphere. In Dar-es-Salaam the mean temperature varies between 74° and 82° F (23.3° and 27.8° C), with a relative humidity of 60 to 90%.

Löffler (1936) described a syndrome characterized by fever, cough and eosinophilia which resembles tropical eosinophilia but is essentially an illness of short duration in which rapid spontaneous cure occurs. The pulmonary infiltrations described by Löffler were transient ("fluchtige Infiltrate"), seldom lasting more than eight days, and were often confined to one lung. In tropical eosinophilia there is a tendency towards spontaneous cure, but if untreated the condition is apt to persist for several years. It is unlikely, therefore, that the two conditions are identical.

Vaidya (1943) and Lal (1945) do not consider the condition to be a separate disease entity, but think that it should be regarded as a form of asthma with a pronounced eosinophilic response. The relation between tropical eosinophilia and asthma is clarified by regarding asthma or bronchospasm as a symptom common to several diseases, of which this condition is one. Tropical eosinophilia differs from the primary allergic group of disorders in the absence of a family history and in the presence of fever, leucocytosis, splenomegaly, and characteristic shadows in the skiagrams of the chest. Moreover, arsenic is not particularly useful in the treatment of bronchial asthma, and no response was obtained when it was tried in a few of the cases with low eosinophil counts.

As Menon (1945) showed, tropical eosinophilia bears a fairly close resemblance to infectious mononucleosis, and both its clinical appearances and its response to treatment favour the theory that it is a specific infection. Whether

or not the *Acarus* is the infective agent has not yet been satisfactorily proved. The finding of ova and larvae in sputum by Carter and his colleagues and of ova in the present series strongly suggests that the mites are living in the respiratory tract either as commensals or as the direct or indirect cause of the associated symptoms. Carter, Wedd, and d'Abrera (1944) have demonstrated that the mite *Tyroglyphus longior* is killed by exposure to arsenious oxide (1:1,000) for ten minutes. Carter and d'Abrera (1946a) have also produced a syndrome resembling tropical eosinophilia by introducing ova of tyroglyphid mites into the trachea of a toque monkey. Against the theory that the *Acarus* is the infective agent it may be argued that the mites found are not of any specific genus, nor did Carter and his colleagues find that they had entirely disappeared after the patient had been successfully treated. Further research is clearly necessary on this subject, particularly the examination of sputum from patients in the Tropics suffering from pulmonary disorders unassociated with eosinophilia.

Treatment with inorganic arsenic is dramatically successful. Until the aetiology of this condition is understood, and until more cases have been followed up, the minimum effective course of treatment cannot be determined. Vaidya and Lal both record cases which relapsed owing to inadequate treatment, and Soysa and Jayawardena found that the length of treatment should be determined by the blood picture and not by the pulmonary symptoms. In the present series treatment was probably continued in most cases longer than necessary. The most effective method appeared to be a ten-day course of carbarsone followed after a few days by four weekly injections of neoarsphenamine (0.6-0.75 g). This was sufficient to produce complete clinical cure, and further treatment seemed to delay rather than accelerate the fall in the eosinophil percentage. No untoward reactions occurred, nor did any case relapse during the three months in which cases were followed up.

Summary

Seven cases of tropical eosinophilia are described from Dar-es-Salaam, East Africa.

Six of them were successfully treated with arsenic, the seventh regressed spontaneously.

It is thought that this condition must be relatively common on the coast of Tanganyika, and probably elsewhere in tropical Africa.

I wish to express my indebtedness to Dr F. Vivarelli, who undertook most of the pathological investigations described, and to Dr J. H. Macdonald for his assistance in following up the cases. My thanks are due to the Acting Director of Medical Services Tanganyika, for permission to publish this paper.

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Information on French spas is now available and may be obtained from the French National Tourist Office, 179, Piccadilly, London, W 1.

CAUSALGIA OF THE FACE TWO CASES SUCCESSFULLY TREATED BY SYMPATHECTOMY

BY

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While causalgia most often follows injuries to the median nerve and the medial division of the sciatic nerve, other nerves are sometimes similarly affected. I saw two cases of causalgia of the face, and as such cases are unusual it seems worth while to place them on record. Because of the good results obtained from sympathectomy in many cases of causalgia following injury to other nerves, it thought that this line of treatment might relieve the pain in these cases. As will be seen from the case histories, interruption of the sympathetic chain proved successful.

Case I

An Indian NCO aged 28 was wounded by shell fragment on Feb. 28, 1944. He sustained a small penetrating wound of the right cheek and a severe compound fracture of right leg for which an above-knee amputation was performed. Burning pain on the right side of the face developed on the day he was wounded and was still present when he was seen a day later. It was continuous, was felt in the area of distribution of all three divisions of the trigeminal nerve, and was sometimes confined to this area. It became worse with warmth—when in the sun or on a very hot day—with eating, or with rest. Talking. Marked hyperalgesia of the skin supplied by all three divisions of the trigeminal nerve was present. In the centre of the right cheek was the scar of a small penetrating wound. X-ray examination revealed a small metallic foreign body under the base of the skull in the region of the foramen ovale.

Paravertebral Procaine-alcohol Injection.—A procaine block of the stellate ganglion was produced by the paravertebral injection of 2 ml of procaine on March 17, 1945. Within few seconds, no longer than was required for the procaine to produce a nerve block, the facial pain was completely relieved. A further 3 ml of procaine was injected and was followed by 5 ml of absolute alcohol. The alcohol, unfortunately, produced a neuritis of the upper intercostal nerves, with pain in the back and front of the chest. This was fairly severe at first and lasted for several weeks. Three weeks after the injection the facial pain and tenderness returned and the pain became severe. On examination it was found that the sympathetic block had been only temporary and that sweating returned on the left side of the face. It was decided to interrupt the superior cervical sympathetic ganglion.

Operation.—On April 22, 1945, under local anaesthesia, the right superior sympathetic ganglion was exposed through a 3 in. (7.6 cm) incision along the posterior border of the mastoid muscle. The sympathetic chain was divided below the ganglion, the superior cardiac nerve and communicating rami from the ganglion to neighbouring nerves were cut, and the lower half of the ganglion excised. The facial pain and tenderness were again immediately relieved, and there was no return of their return when the patient was last seen three months later.

This patient also suffered from phantom pain felt in his amputated foot. This, however, was only slightly painful and he did not wish to have anything done for it.

Case II

An Indian NCO aged 23 sustained multiple mortar wounds on April 1, 1944. There were several small penetrating wounds on the left side of the face and head, the left arm and the left shoulder, and an extensive wound of the left thigh. Ten days later the left leg was amputated above the knee for gangrene. Pain in the left cheek began three months after the

injury It was a continuous burning pain, usually confined to the maxillary division of the trigeminal nerve. It was not very severe, but was sufficient to worry the patient considerably. It was worse when he was talking or eating, and he was unable to eat solid food. It also became worse when the weather was warm, and when he was angry or otherwise emotionally upset. On these occasions pain was also felt in the ophthalmic division of the nerve.

When seen almost a year after the injury, pain was still present and was showing no sign of subsiding. The scar of a minute penetrating wound was seen on the left cheek, close to the ala nasi. There was marked hyperalgesia of the skin of the cheek to pinprick and light friction. X-ray examination revealed, in addition to the foreign bodies in the scalp of the left parietal region, a metallic foreign body lying in the left temporal fossa. This had passed from the cheek through the maxilla, and a fracture of the roof of the maxillary antrum was seen in the radiograph.

Paravertebral Procaine alcohol Injection—On March 17, 1945, a procaine sympathetic block produced instant relief of pain, and alcohol injection was performed. Complete relief of pain and tenderness persisted for two months. Simultaneous hyperalgesia and slight pain then returned, and it was seen that interruption of the sympathetic chain had not been permanent. For some months pain did not become severe, and it was at first thought that no further treatment would be required. Later, however, pain increased, and nine months after the alcohol injection it was extremely troublesome. Division of the superior cervical ganglion was then undertaken. **Operation**—As in the first case, on Dec 21, 1945, the lower half of the superior cervical ganglion and a portion of the sympathetic chain were excised under local analgesia. Facial pain and tenderness were relieved immediately.

Discussion

It seems clear from these two cases that, as in causalgia affecting other nerves, sympathectomy will be successful. In some cases of causalgia affecting the trigeminal nerve, as in other cases of causalgia, a procaine sympathetic block should first be performed in order to determine whether relief can be obtained by sympathectomy. Treatment by repeated procaine injections was not attempted in these cases, because even when prolonged relief of causalgic pain is obtained by this means it is sometimes necessary, months or years later, to have further injections, or both these patients this might have presented considerable difficulty.

The aetiology and mechanism of production of causalgic pain and the reason for sympathectomy relieving pain in some cases have been the subject of much speculation. The idea that sympathectomy may interrupt a pain pathway from the periphery has usually been rejected, and a number of other theories have been suggested. For example, Homans (1940), among others, regarded pain and tenderness in such cases as due to peripheral changes brought about by reflex sympathetic impulses, these sympathetic impulses being initiated by afferent impulses passing centrally from the site of injury to a main peripheral nerve or to periarterial pain nerves. Livingston (1944) suggested that persistent causalgic pain is in many cases due essentially to a disturbance of function in the cord or higher centres. Doupe, Cullen, and Chance (1944) suggested that the nature of the nerve lesion in causalgia is a loss of insulation of somatic sensory nerves, and a linkage between them and sympathetic nerves, with the result that they are stimulated by efferent sympathetic impulses.

From observations on and investigations of a number of cases of causalgia and post-amputation pain, however, we have come to the conclusion that when sympathectomy relieves causalgic pain and tenderness it does so by interrupting the sensory pathway.

When the superior cervical ganglion was first exposed in Case II it was noticed that pressure on it caused the patient to complain of pain in the face. About 1 ml of procaine was injected below the ganglion, in the neighbourhood of the sympathetic chain, but not close to the ganglion itself. After this, neither pressure on the ganglion nor pinching the ganglion in forceps caused facial pain. If the facial pain had been produced by efferent sympathetic impulses to the periphery, pain then being conveyed to consciousness by some other pathway, blocking the sympathetic chain below the ganglion would not have prevented facial pain being felt when the ganglion was stimulated. As far as can be seen, blocking the sympathetic chain would have had this effect only if in this way the sensory pathway had been interrupted.

I am indebted to Col S M A Faruki, I M S, Officer Commanding the hospital, for permission to publish these case records.

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IN-PATIENT TREATMENT OF THE MALADJUSTED CHILD

BY

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The problem of dealing with the maladjusted child is one which affects the general community, and is now engaging the close attention of large numbers of responsible persons. An attempt to cope with the difficulties is revealed in the establishment of child guidance clinics in most large towns, and the need for this service is reflected in the considerable waiting lists of these clinics. The problem is, however, largely sociological, and the child psychiatrist working in comparative isolation has a very limited scope and can do little to affect the issue materially. As in all aspects of mental health, the need for integration of the medical and social services is paramount, and until this is carried out throughout the country on a large scale the problem will remain unsolved.

The commonest cause of maladjustment is the faulty attitude of either one or both parents, and the treatment and education of parents are, of course, a well-recognized part of child guidance. In many cases, however, this may prove impossible for a variety of reasons, of which lack of co-operation is often the most important. It is essential in such cases that, for a time at least, the child should be removed from the home environment. In other cases it is impossible to give domiciliary treatment because of the child's grossly disturbed behaviour. The provision of foster homes is not always practicable, and even the best of these may not meet the situation. Apart from a few evacuation hostels established during the war, there has been little real effort to cope with the difficulty in this country, and according to Burlingame (1947) a similar position appears to exist in the United States.

During the development of the Portsmouth Mental Health Service it was realized that some provision for child in-patient treatment would have to be made, and ten

years ago the experiment of admitting such children to St James's Hospital was initiated

Outline of the Work

The following is a brief description of the work that has been carried out during the past seven years

Numbers of Admissions—Since 1940 125 children have been admitted. The numbers have increased steadily since the beginning, and in 1943, 1945 and 1946 the admissions were 13, 21, and 48, respectively. The number of boys exceeded the number of girls, and in 1946 33 males and 15 females were admitted.

Ages—The ages varied between 4 and 15 years but the majority admitted were between 7 and 11 years old, with a peak at 9 years for the boys and at 10 years for the girls.

Period in Hospital—The average period in hospital was four months—the longest three years and the shortest six weeks.

placed elsewhere as soon as their general behaviour had settled down sufficiently. A fairly large group were admitted because of suspected epilepsy. Once the diagnosis was established and the condition stabilized the children were allowed to return home and attend as out patients. The more severe cases were placed in a colony. A small number were found to be suffering from organic disease of the nervous system.

Symptoms—A very common combination of symptoms was stealing with enuresis, often associated with running away from home. Aggressive behaviour, with destructiveness and temper tantrums was another common syndrome, and some children showed sexual misdemeanours. Others (mostly older children) exhibited panic attacks and allied hysterical manifestations.

Factors—A very frequent factor was rejection of the child especially by a step parent or by one parent in adoption cases. Alternatively, there may have been a bad home background as in cases where the parents were divorced, separated alcoholics.

Case No and Sex	Age Admitted (Years)	I Q	Referred From	Symptoms	Factors	Length of Illness (years)	Period in Hospital (months)	Disposal	Result	Follow-up	
										Duration (months)	Res.
1 M	11	125	Child guidance clinic	Pilfering truancy running away from home	Parents separated financial stress mother overanxious	1	5	Home	Recovered	6	Very well
2 M	10	106	Court child guidance clinic	Enuresis pilfering running away from home	Not wanted (illegitimate) father alcoholic poor physical health	3	9	Still in hostel Home very unsatisfactory	Improved	—	—
3 M	7	84	School child guidance clinic	Enuresis aggressive behaviour truancy	Defective mother father dead backward	2	3	Home	Very much improved	9	Very well
4 M	6	100	Child guidance clinic elsewhere	Aggressive and destructive behaviour grossly obscene language unmanageable	Parents at loggerheads psychosis—schizophrenic	3	14	Still in hospital	Improved	—	—
5 M	8	92	School child guidance clinic	Enuresis and soiling pilfering	Father away mother neurotic jealous of other children	9/12	4	Home	Very much improved	12	Very well
6 F	13	134	Other local authority	Childish regression panic attacks refusal to eat backward at school	Death of father over anxious mother illegitimacy (?)	1	9	Foster home	Recovered	12	—
7 F	7	112	School child guidance clinic	Solitary moody refusal to make contacts at home (? psychosis)	Sudden death of mother who spoilt her step-mother rejected her	2	7	Home	—	3	Well
8 F	8	78	School child guidance clinic	Destructive behaviour fits, enuresis	Physical defect parents separated mother promiscuous backward	1½	3	National children's home Home	Improved	6	—
9 F	9	80	School out-patient department	Fits uncontrollable truancy	Epilepsy backward	1	3	Home	Much improved	6 No fits for 3 months	—
10 F	7	120	Court child guidance clinic	Pilfering running away from home and school backward at school	Parents separated financial stress mother neurotic	1	12	Home	Recovered	4	Most better

Girls tend to remain longer than boys, the average for the girls being five months and for the boys three months.

Intelligence—Apart from a small group of backward children the average intelligence was well above normal, while some were very intelligent. Many, however, were educationally retarded on admission (for example, in the appended Table, Case 6 had previously been labelled as backward and placed in a special class) but had improved before they left. The average intelligence quotient was in the region of 110, and it is of interest to note that one recently admitted girl of 13 (not included in this series) has a mental age of over 20 years, which gives her an I.Q. of 170.

Sources—Fifty eight per cent of the children were admitted after treatment at the child guidance clinic had proved unsatisfactory either because the child's behaviour was too severely disturbed for it to remain at home or because the home situation was extremely difficult. 6% were admitted via the Magistrates' Court and the child guidance clinic, 20% were admitted from the out-patient clinic at St James's Hospital after the parents and the child had been seen and a report from the psychiatric social worker studied, 4% came from the local education or other authority because the child had proved to be unbilletable in hostels or foster homes, and 12% came from child guidance clinics elsewhere or were referred by the medical practitioners of other areas. Recently the latter group has formed a much higher percentage (30% in 1946).

Problems—All cases were admitted with a provisional diagnosis of maladjustment, though in a small proportion of cases it was suspected that the disturbed behaviour was due to a psychosis and in others that it may have been the result of backwardness. After a period of observation these cases were regraded, the psychotic types treated and the backward children

or promiscuous. Jealousy of another child often appeared, a factor, and evacuation or absence of the father on foreign service was frequently cited by the parents. Very few of the children came from what could be called normal homes.

Correlations—There was a positive correlation between stealing with enuresis and rejection, and also between sex misdemeanours and the immoral life of a parent (especially where the parents were separated).

Placing in Hospital—Owing to the diversity and severity of the symptoms and to the varying sexes and ages, it was not always advisable to treat the children in one ward, and it was useful to have at our disposal the wide facilities which the mental hospital offered. Some children were treated for a time in the male or female admission wards and villas, but the majority were housed in a special wing of the female convalescent villa. Recently a large house in the city has been converted into an annexe to this hospital. The building is situated in quite pleasant surroundings and provides accommodation for twenty children, who are transferred after a preliminary period of observation and if necessary, treatment in the main hospital.

Education—At first daily lessons were given in the hospital by a qualified teacher, but because of the wide age group it did not always prove satisfactory. For over a year now the children have attended the local schools. This has been most successful even where they had previously been very difficult at school, and it helped to promote a feeling of normality in the child. The local education authorities have always proved most helpful over these arrangements.

Treatment—(1) All children were given a thorough physical overhaul and any physical defect or deficiency was, if possible, corrected. (2) As regards general treatment, we have attempted to provide a secure background to the lives of these children.

many of whom have never known consistency or stability always keeping in view our goal, which is that, if at all possible, the child shall eventually return home. We have aimed at a combination of routine with latitude, and of kindness and understanding with the gradual development of a really constructive attitude towards the child. (3) Play therapy has been widely utilized both as individual and as group treatment, and for the older children talks and discussions. (4) We have invited the parents to attend regularly for interviews, and in some cases have had to insist that they keep in touch with us. This is most important, as some parents are only too willing to shelve their responsibilities, and it is very noticeable that in these cases the children lose all their symptoms immediately they enter hospital but relapse very quickly when they return home. (5) Finally, we have tried to return the child to his normal environment gradually by a slowly extending system of group parole days out with relatives or friends, and week end leave.

Disposal—The majority of the children (roughly 80%) returned home, 14% were placed in foster homes or specially chosen institutions (for example, national children's homes) and about 6% went to M.D. colonies or special schools.

Results—Some 80% recovered or were very much improved, and 16% showed some improvement, only 4% showed no improvement. All the children were followed up, either by attendance at the out-patient clinic or by home visits or letters. The Table gives details of 10 unselected cases. All these cases were treated on the general lines described above, with the exception of Case 4, a young schizophrenic who, after extensive psychological treatment both here and elsewhere had failed to produce any result whatsoever, was treated by electric convulsion therapy.

Conclusions

From the foregoing account it will be seen that some 80% of the children were greatly benefited by in-patient treatment. It should be noted that the majority of these had received previous child guidance treatment as out-patients, both here and elsewhere, without any appreciable improvement in their condition. It would seem, therefore, that there is a great need for the provision of in-patient treatment, and it may be of interest to note that since it became known that we were undertaking the care of such children in this hospital we have been inundated with requests to arrange admissions from doctors and local authorities all over the country. It is, unfortunately, only possible to cope with an extremely small proportion of these pleas, which continue to arrive at the rate of about three a day.

We wish to thank Dr Thomas Beaton, medical director of the Portsmouth Mental Health Service, for helpful criticism and permission to publish this article.

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Burlingame, C. C. (1947) *Digest Neur Psychiat* 15, Editorial.

The Librarian at the London School of Hygiene and Tropical Medicine, Mr C. C. Barnard, has written an interesting illustrated pamphlet entitled *The History of the Library*. The London School of Tropical Medicine was founded in 1899 by the Seamen's Hospital Society, and by 1904 had collected 373 volumes. The first librarian was appointed in 1915 and in 1921 a library committee was formed and £10,000 invested to produce an annual income for the support of the library. In 1924 the library was incorporated in the newly constituted London School of Hygiene and Tropical Medicine, and in 1929 it was moved into the School building in Keppel Street. Preparations for the recent war were begun as early as 1938, some of the more valuable periodicals being removed to the basement and duplicates evacuated to Kent. On the outbreak of war the library remained open, but in 1941 a large number of books and periodicals were sent to Hampshire and other places. The librarian then made monthly visits to collect books that had been asked for during the preceding weeks and brought them to London or posted them to the required addresses. A valuable adjunct to the library is the instruction in its use—a course of three lectures on tropical medicine, public health, and bacteriology given to students at the beginning of each session preceded by a conducted tour of the library.

Medical Memoranda

Smallpox A Case with Minimal Lesions

About 9.30 p.m. on Monday, Oct 21, 1946, one of the practitioners in this area telephoned me saying 'I have got a case of alastrim with the amber-coloured lesions. I would like you to see it with me to-morrow'. At the consultation next morning I agreed that the diagnosis was smallpox.

The patient, a garage proprietor aged 37, lived with his wife in a flat above his garage in Beaconsfield. He had spent six weeks partly on business and partly on holiday, in Sweden and Denmark. He returned to this country on Oct 3. On Oct 15 he felt sick and complained of a severe headache and backache. When seen by his doctor on Oct 17 he had a temperature of 102° F (38.9° C), the only other sign was a severe stomatitis. He was regarded as a case of influenza and treated accordingly. The feverish illness lasted for three days. On Oct 21 both temperature and pulse became normal, and have remained so ever since.

In consultation the practitioner and myself observed five small suspicious lesions. There were several superficial pustules of an acneiform type widely distributed all over the body, but the suspicious lesions were peripherally distributed—on the right hand, right arm, and the sole of the left foot. Most of them were no bigger than a large pin's head, they were intradermal, and the lesion on the palm of the hand felt 'shotty,' as did the one on the sole of the foot. They all appeared together during the night of Oct 20-21.

The yellow pustular lesion on the palm of the right hand was about 1 cm in diameter, and its base was surrounded by a distinct margin of erythema. It was intradermal and very "shotty" to the touch. The peripheral distribution of the lesions, the short sharp febrile illness, and the site, character, and "feel" of the right palmar lesion in my opinion definitely suggested smallpox.

Dr W. H. Bradley, of the Ministry of Health, made arrangements for one of the smallpox consultants on the regional panel to see the patient with the practitioner concerned and myself the same afternoon. The deputy M.O.H. for the county was also present. At this consultation there was no diagnostic unanimity, but it was decided to vaccinate the patient and his wife. Specimens of blood, crusts, and swabs were sent to Prof. Downie at Liverpool and the patient was isolated. Prof. Downie reported on Oct 25 that the patient's serum gave a negative reaction for variola antibody, and that the material on the swab was insufficient for examination by the complement-fixation test. Further specimens of crusts were then sent to him.

The patient had been vaccinated sixteen years previously. When he was revaccinated on Oct 24 his doctor reported there was an immediate reaction. His wife had been vaccinated in infancy and her reaction to revaccination on the same day was delayed but very marked on the fifth day. Both were kept under general surveillance during the period of isolation. On Nov 1 a wire was received 'Variola virus isolated from crusts and swab'. Arrangements were made through the Bucks County Council and the Oxford authorities to open up the Garsington Smallpox Hospital, where the patient was admitted on Nov 2.

Despite the isolation conditions imposed on Oct 23, several friends, his own garage hands, and some relatives had visited the patient in his flat. There was also the question of laundry and of petrol coupons to be considered. Between Oct 28 and Nov 1 one set of laundry had been collected, put through the laundry and returned, another lot had been sent to the laundry on the morning of Nov 1. To minimize the risk to public health, the workers at the laundry were offered vaccination. 33 were vaccinated on the same day, the remainder during the following weekend—Nov 3-5. As the patient had himself handled the garage petrol coupons during his infective stages these were regarded as fomites. By an arrangement with the Petroleum Department, 2,572½ units in a sealed envelope were burnt, and a certificate to this effect was given for replacements.

All visitors and relatives who had been in contact with the patient, except a squadron-leader and a friend, whose address was unknown, were traced. Of these 9 contacts 2 had been vaccinated during the past two years in the Services, none of the remaining 7 had been vaccinated since infancy and they were revaccinated. The local practitioners, neighbouring local authorities and hospitals were notified.

My thanks are due to Dr Kipping the practitioner, who was convinced throughout that the case was one of smallpox though the lesions were minimal and the clinical picture was that of a patient suffering from a sharp three-day influenza attack which became pyrexial

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Suprarenal Cortical Extract for Collapse in Infantile Eczema

Although sudden collapse in cases of infantile eczema admitted to hospital is well known, little has been written concerning treatment. Twiston Davies (1940) suggests that adrenaline can be of value, but states that most patients die in spite of all treatment. The following report of two successive cases seems to indicate the possibility of a more positive approach.

CASE I

A five months old boy was admitted to hospital on Jan 8, 1947, with a history of repeated mild attacks of rash on the face since he was four days old and a severe relapse two days before admission.

On examination he was seen to be a healthy well built baby, with no physical abnormality except a severe weeping and crusting eczema of the head, face, back, and limbs. The temperature was 102.4°F (39.1°C), pulse 120, and respirations 22. Treatment was commenced with starch poultices to all areas. Feeding 6 oz (170 ml) four hourly, half-cream milk, and glucose and water between feeds. On Jan 9 at 9.30 a.m. he was more comfortable and there was less exudation. The temperature was 99.2°F (37.3°C), pulse 90. A calamine liniment was applied to all areas. At noon the temperature rose rapidly to 105°F (40.6°C) and the pulse to 128. Fearing a possible respiratory infection, penicillin in oil, 50,000 units, was given intramuscularly. At 7.45 p.m. the child suddenly became unconscious and cyanosed, the respirations were very rapid and shallow, the pulse uncountable, and the temperature 105.4°F (40.8°C). There were many moist rales in chest and slow coarse nystagmus to the left. Adrenaline, 2 min (0.12 ml) was given subcutaneously, and the respirations at once became slower and deeper, the rales disappeared, and there was a partial return of the response to visual stimuli. At 8.30 p.m. there was a sudden relapse, with rapid respirations and rales, followed by cyanosis and nystagmus. Adrenaline, 1 min (0.06 ml), was given subcutaneously with only partial relief. Five minutes later a further 2 min (0.12 ml) gave greater benefit. At 8.45 p.m. the respirations again became rapid, and prompt relief was obtained with 2 min of adrenaline subcutaneously. At 8.55 p.m. the respiratory rate was rising and adrenaline, 2 min, was given subcutaneously with immediate relief—respirations 35 deep, no rales, pulse 130. The skin was pale and the eczema had nearly cleared. The temperature was found to be 108°F (42.2°C)—and this could not be reduced by tepid sponging. At 9.45 p.m. he had a convulsion, beginning with twitching of the right side of face and neck, and passing to rhythmical contractions of right arm and leg. Reflexes were not obtainable, nystagmus to left. From this time the condition of the child deteriorated, with convulsions becoming more pronounced and spreading to the left side. Later the coma became deeper, with Cheyne Stokes breathing followed by death at 2.20 a.m. the following morning.

The relief obtained in this case, although only temporary attracted attention to the suprarenal gland, and suggested the possible value of employing the cortical extract in addition.

CASE II

A five-months-old baby girl was admitted on April 15, 1947, with a history of rash on both cheeks since she was three months old which spread to the body with increasing severity during the three weeks before admission.

On examination a healthy well-built baby was seen, with no physical abnormality except a severe weeping eczema of the head, face, buttocks, and limbs. The temperature was 98.2°F (36.8°C), the pulse 126, and the respirations 28. Treatment commenced with lead lotion to the limbs, zinc oxide and ichthyol ointment to the body, and ammoniated mercury with tar to the face and scalp. Feeding 5 oz (142 ml) three hourly, half cream milk and glucose and water between feeds. On April 16 the child appeared well, she had occasional cough and there were a few rales in chest. The temperature was 99.8°F (37.7°C), pulse 134, and respirations 34. Zinc oxide and ichthyol ointment was applied to the limbs in place of the lotion. The condition remained the same until the

evening of the following day. At 5 p.m. on April 17 the child was very quiet. The skin condition was clearing rapidly. She vomited after the 4.30 p.m. feed. The temperature was 101°F (38.9°C), the pulse rapid, uncountable, and the respirations 60. The breath sounds were clear. Fluid was not detected in the bronchi. Sodium bicarbonate, 1 teaspoonful to 1/2 pint (284 ml) of water was given 3 oz (85 ml) taken. At 6.45 p.m. the child was comatose but could be roused. Her colour was good. The temperature was 100.5°F (38.05°C), pulse rapid, uncountable, respirations 90. The limbs were flaccid, the eyelids drooping. The breath sounds were clear. The condition of the child was obviously deteriorating rapidly. Adrenaline, 2 min, was given subcutaneously with immediate improvement. There was a partial return of response to visual stimuli, the limbs were flaccid. At 6.55 p.m. her condition deteriorated and the respiratory rate increased. Adrenaline, 3 min (0.18 ml) subcutaneously, and extract of suprarenal cortex ("Eucorione," Allen and Hanburys) 3 min intramuscularly were given with immediate improvement. At 7.5 p.m. she had a relapse. She was very pale, respirations 90, very shallow, the pulse was of good volume, rapid, uncountable. She had divergent squint, the left eye rotated slightly inwards, and the right eye rotated upwards and outwards. The pupils were small and equal. Adrenaline, 5 min (0.3 ml), and cortical extract, 8 min (0.5 ml), were given together intramuscularly, with immediate effect. The respirations were deeper, the breath sounds clear. Active movements of the limbs were very weak. She was trying to scratch. At 7.30 p.m. she was greatly improved. Her colour was good, she was crying and was able to sit up, showing active movements of limbs, and was interested in the surrounding activities. The skin condition was much improved, moist. At 8 p.m. the child was restless, but her general condition gave no indication of the serious state in which it had been one hour previously. The temperature was 99.8°F (37.7°C), pulse 120, and respirations 70. The breath sounds were clear. Glucose and water 3 oz, was taken with avidity, followed by 2 oz of milk and water in equal parts. The child then slept for 2½ hours, and after receiving 2 oz of glucose and water she appeared much brighter. A green frothy stool was passed at 11.30 p.m. From this time the child has given no cause for anxiety.

Cases of sudden collapse in infantile eczema have been known to recover without treatment, but the dramatic results shown in the second case suggest that suprarenal cortical extract should be administered when this serious condition occurs.

I am indebted to Dr P. B. Mumford and Dr M. Peach for permission to report these cases.

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REFERENCE

Davies J. H. Twiston (1940) *Brit J Derm* 52 182

The annual report from the Medical Department of the Gold Coast Colony contains an interesting account of an outbreak of cerebrospinal meningitis which assumed major epidemic dimensions. Co-operation between all departments made it possible to circumscribe its area, otherwise the whole of the Northern Territories and Ashanti might have been involved. There were 9,863 cases recorded with 1,056 deaths. In 285 of the fatal cases it was not possible to give any treatment. The lowness of the mortality rate is attributable to early treatment with sulphonamide drugs. To ensure immediate treatment small stocks of these drugs were entrusted to the care of the chiefs, with instructions for their use, thus treatment at an early stage, before a medical officer could arrive on the scene, was possible. The epidemic covered an area of nearly 10,000 square miles, calling for extensive travelling by the staff engaged in control. Sulphanilamide was found more effective than sulphapyridine. A chief of any village where a case of sudden suspicious death had occurred, or where spread was expected, was furnished with number of tablets of sulphanilamide and was instructed to give one tablet at once for every double hand span—18 in (46 cm)—of patient's height, and to report immediately to the nearest control camp. If his village was very remote the chief was instructed to repeat the dose in three hours' time. It is stated that faulty diagnosis was unusual, the commonest error being confusion of the condition with pneumonia in children. The mortality rate in treated cases was 7.8%. It is added that the prevention of recrudescence of outbreaks of cerebrospinal meningitis in the north of the Gold Coast depends very largely on the question of housing. The need is to enforce increased ventilation and avoidance of overcrowding. The "fortress" type of house does not lend itself readily to improvement, but the "round house" compound with well-spaced houses, and provided with windows yielding cross ventilation can be made a satisfactory type of community dwelling.

Reviews

MODERN STATISTICS

The Advanced Theory of Statistics Volume II By Maurice G. Kendall M.A. (Pp 521, illustrated 50s) London Charles Griffin and Co

In reviewing the first volume of Mr Maurice G Kendall's *The Advanced Theory of Statistics* (Feb 26, 1944 p 290) we said that a medical journal was not the place in which a detailed examination of a work primarily addressed to mathematical readers should appear. We have, of course, mathematical readers—the intellectual tastes of our profession are catholic—but they will also be readers of statistical and mathematical journals. We did, however, try to indicate the general character of the volume then under notice.

In his second volume Mr Kendall has completed a difficult and important task in a manner which would have been creditable to one able to devote his whole time to the work. To have completed it while engaged in important administrative duties is indeed a triumph. Much of this volume is devoted to a problem which we all meet in professional life, namely that of inferring from the examination of a sample the probable characters of the "population" from which it came. We may, for instance, wish to form a judgment on the general state of nutrition of the inhabitants—say the children of school age—of a large city, but can completely examine only a small number. In the first place, how is the sample to be obtained, how can we be sure that it is a fair sample? The technique of sampling is now well developed, and in the 25th chapter Mr Kendall gives a lucid account of the best methods which does not make very heavy demands on the reader's mathematical knowledge. Next, having an appropriate sample, we pass to the main problem—to form some judgment of the "population" from an examination of the sample. If the sample consists of a hundred children of whom ten are undernourished, the only *certain* inference is that at least ten of the population are undernourished and not so many as 100%. But "common sense" tells us that it is more probable that 10% of the population are undernourished than 1% or 99%. There is no difficulty in answering a question of the following kind. If we infer from the presence of 10% ill-nourished children in the sample that the population does not contain more than $p\%$ defectives, what are the odds in favour of our conclusion being right? It is of course only a probable conclusion, sometimes we shall be wrong, actually the hypothesis was true although our statistical test rejected it. But we may also fall into a different error: not only may we reject the hypothesis when it is true, we may accept it when it is false, when the population *did* contain more than $p\%$ ill-nourished. In the particular illustration there is no great difficulty in handling the dilemma, but sampling even in medical matters, is often concerned with something more complex than a mere dichotomy. The situations which arise are fully examined by Mr Kendall, they present two difficulties of apprehension: the first is to be sure that one fully grasps the nature of the hypotheses under examination, the second to follow the technique of the mathematical solution.

In the last two chapters in the volume, on time series, the author discusses with adequate arithmetical illustration a subject of universal interest. A time series is a set of observations of a variable made usually at equal intervals—say the number of cases of or deaths from measles recorded in successive weeks. It may be that the time series has a steady trend, it may be that it exhibits to the eye what seem to be more or less regular rises and falls, short waves and longer waves. These are of great interest as we all know, to statesmen and economists. They are also of interest to medical men, the alleged periodicity of epidemics of measles is a well-known instance. Our readers will recollect that the late Sir William Hamer first gave statistical reasons for attributing the major waves of the measles graph to the accumulation of susceptible subjects and that in 1929 the late H. E. Soper much extended Sir William's method of analysis. The process was to apply statistical methods to test the adequacy of a plausible biological hypothesis (it may be

said that the wartime effects of evacuation in "aborting" expected epidemics made the hypothesis more than plausible), and the result was to show that it did describe a good deal but certainly not all of the facts. Mr Soper said it gave half the picture. The late Dr John Brownlee followed a different line and applied to the data the method of periodogram analysis used by astronomers, and extracted a number of periods the biological meaning of which gave rise to much discussion. Subsequent mathematical-statistical work, beginning with that of Mr Udney Yule in 1926-7, has made it clear that periodogram analysis is a rather dangerous fool in routine statistical practice. Mr Yule showed that it was quite possible to have time-series which, to the eye, suggested a regular harmonic series, although the waves were not produced at all in the way those who have applied the method of periodogram analysis to economic or epidemiological data supposed.

Mr Kendall who has himself made important contributions to this branch of analysis, has admirably summarized the work of the last twenty-five years, and it is clear that statistical epidemiologists must reconsider the interpretation of so-called epidemic periodicity. It never seemed very probable that arithmetic, however extensive, would enable us to predict accurately when the next pandemic of influenza would afflict the world. Modern research has not increased the probability, yet few will deny that the subject is alluring, and we now have improved tools. Mr Kendall has placed all statisticians, including medical statisticians, under a heavy debt of gratitude.

MAJOR GREENWOOD

ASTHMA

The Treatment of Bronchial Asthma By Vincent J. Derbes, M.D., and Hugo Trisram Engelhardt, M.D., F.A.C.P. With Chapters by a Panel of Contributors. (Pp 466, 61 illustrations, 48s) Philadelphia and London L. B. Lippincott Company 1947

The reception of yet another beautifully produced book on asthma from the United States suggests that the Americans are paying much attention to this disease. The reason, we suppose, from the chapter on climatic and weather effects is probably the climate. No other continent has a cyclonic storminess comparable with that of North America. The wind distributes pollen, spores, and other allergic material widely. The storms of 1934 often heavily coated cars and houses with fine yellow dust that had come from 1,500 to 2,000 miles away.

A group of distinguished authors from different centres in the U.S.A. wrote this unusually interesting book, and editorial control has maintained a balanced presentation of the subject. It is divided into two sections, "Orientation" and "Clinical Aspects". The former is of particular value in providing a historical, statistical, and scientific background to asthma. British readers will particularly appreciate in the clinical section the full account of the non-allergic aspects of diagnosis and treatment. There is a welcome chapter on psychogenic factors in bronchial asthma written by a member of the American Psycho-analytic Association, in which he convincingly discusses the concept of the asthmatic attack as a suppressed outburst of crying. As is characteristic of American books, the part played by allergens, their detection and treatment, is considered in detail, less characteristic is a brief but lucid account of the immunology of asthma. Until recently many have thought that desensitization to pollen or similar antigens was brought about by a combination of the antigen and the cellular antibodies, an analogy being the refractory state occurring after anaphylactic shock. The present hypothesis is that nothing like this happens and there is no reduction of reagin after treating the patient with the specific pollen antigen. What occurs is the production of a new antibody, the "thermostable antibody," which neutralizes the pollen antigen and thus prevents its union with the reagin. However, it is difficult to understand how this theory explains the sensitization to liver which occurs in patients treated by parenteral injections or the rush add that the paper printing, and lay out of this book are most attractive. We have hinted that there are already a great many books on asthma but there is always room at the top and this book looks like getting there.

L. J. WITTS

PAPERS ON SURGERY

The Surgical Clinics of North America Nationwide Number Oct 1946 Symposium on Aseptic Surgical Technique Gastro Intestinal Surgery, Genito Urinary Surgery Issued serially six times a year Sold by 1 year's subscription to six consecutive numbers (Pp 268, illustrated Cloth covers 75s, paper covers 55s) Philadelphia and London W B Saunders Company 1946

This volume contains much information of general interest though some of the articles will appeal chiefly to specialist readers. It begins with an excellent historical summary of the development of aseptic surgical technique, this should be read in conjunction with the later stimulating article in which the author discusses 'unexplained infections' in surgical wounds and claims that the use of ultra-violet radiation in the operating theatre will banish such infections. Sections on penetrating wounds of the chest, plastic surgery of the breast and complications of thoracotomy are useful practical contributions.

The second part covers oesophago gastrostomy, bleeding peptic ulcer, penetrating wound of the abdomen megacolon, and the technique of anastomosis of the colon. The articles are well balanced presentations of the subjects, though in the last mentioned we are surprised to find the Paul-Mikulicz operation relegated to such a secondary position. It is encouraging to note that the mortality from peritonitis consequent on penetrating wounds of the abdomen has been significantly reduced since the advent of chemotherapy by the sulphonamides and penicillin.

The authors of the third part deal with the management of bladder tumours discuss bladder neck obstruction and recommend the use of cotton sutures in vaginal plastic operations. There are two articles of general interest—the first on tests of renal function and the second on the many unnecessary abdominal operations which are performed for overlooked pathological lesions of the genito urinary tract. The concise, clear, and well documented account of the clearance and saturation tests of renal function should be valuable to both physicians and surgeons and the same remark applies to the second article which draws attention to the necessity of considering the genito-urinary tract before undertaking any abdominal operation. The additional article on the removal of foreign bodies in the neck under fluoroscopic control records two such operations which were undertaken in the author's consulting room under local anaesthesia. One of these operations involved a deep dissection in the neck in the neighbourhood of the large vessels and was performed through an incision 3 cm in length. The anaesthetic was not perfect and the patient had to be 'kept in good spirits by a flow of kind remarks'. The bullet was removed, but it is stated that at the end of the operation, which took two and a half hours, the patient was somewhat shocked and his pulse weak. However he soon recovered.

V ZACHARY COPE

Practical Methods for the Microbiological Assay of the Vitamin B Complex and Essential Amino Acids by E C BARTON WRIGHT D Sc, is published in London by Ashe Laboratories at 7s 6d. In this small book details are given of the microbiological assay of riboflavin, nicotinic acid, biotin, pantothenic acid, aneurine, pyridoxine, and the amino acids tryptophane, leucine, isoleucine, cystine, valine, methionine, phenylalanine, lysine, histidine, arginine, and threonine. Chemical methods of assay of these substances are tedious and often of doubtful validity, and biological methods using larger animals are time consuming and expensive. Microbiological methods which have recently come into use have many advantages over biological ones. They are rapid they require no elaborate apparatus and a number of samples can be assayed at one time. The apparatus is such as would be found in any well equipped bacteriological laboratory. Dr Barton Wright gives all the necessary details for performing these assays.

Adventures in many different countries and a youthful sense of humour are the main ingredients of *99 and All That* by the medical man who writes under the pen name FREDERICK KAIGH. A saint's pickled and revered heart showing signs of syphilitic disease, an importunate nymphomaniac, a negro witch doctor employing the latest surgical techniques in the depths of Africa—a character who might have stepped straight out of 'Itma'—are some of the remarkable specimens displayed to us. These leaves from an M.O.'s notebook (published at 9s 6d by Richard Lesley and Co., Ltd.) can be recommended for holiday reading.

BOOKS RECEIVED

(Review is not precluded by notice here of books recently received)

Le Traitement de la Néphrite Aiguë par les Antihistaminiques de Synthèse By François Reubi (Pp 50 3 Swiss francs) Basle Benno Schwabe 1946

A monograph on synthetic antihistaminic drugs, with experimental evidence from rabbits, in the treatment of acute nephritis.

Municipal Health Services By Norman Wilson, M.A. Dipl.P.A. (Pp 178 7s 6d) London George Allen and Unwin 1946

An account of the principles and methods of administration and organization of municipal health services.

Rehabilitation through Better Nutrition Tom D Spies M.D. (Pp 94 20s) Philadelphia and London W B Saunders 1947

A monograph on the long term application of the principles of nutritional therapy, including discussion of vitamin deficiencies and certain anaemias.

Handbook on Mental Health Social Work Published by the London County Council (Pp 114 Post free 2s 8d) London Staples Press 1947

A guide to mental health social workers on the Mental Deficiency Acts and the Lunacy and Mental Treatment Acts.

Gonadotrophines et Tumeurs Testiculaires By M Sorba (Pp 80 6 Swiss francs) Basle Benno Schwabe 1946

An investigation into the production of gonadotrophins and their control in hormone therapy.

Lehrbuch der Nervenkrankheiten By Dr Robert Bing 8th ed (Pp 743 52 Swiss francs) Basle Benno Schwabe 1947

Textbook of neurology revised in the light of recent neurological research.

Homoeopathy and Chemotherapy By O Leeser, M.D. (Berlin) (Pp 87 7s 6d) London Hippocrates Publishing Company 1947

Discussion of chemotherapy from the homoeopathic view point.

The Contribution of Homoeopathy to the Development of Medicine By O Leeser, M.D. (Berlin) (Pp 69 7s 6d) London Hippocrates Publishing Company 1947

An account of various aspects of homoeopathic teaching.

A Textbook of Dietetics By L S P Davidson, M.D. FRCP FRSE and Ian A Anderson B.Sc., M.B., Ch.B. 2nd ed (Pp 517 21s) London Hamish Hamilton Medical Books 1947

Discusses the practical problems of dietetics for students and general practitioners, includes recent work.

The British Encyclopaedia of Medical Practice Medical Progress 1947 (with cumulative supplement) Edited by Lord Horder (Pp 525 42s for 2 vols) London Butterworth 1947

Includes critical surveys of medicine by Lord Horder, surgery by Sir Max Page, and obstetrics and gynaecology by Prof F J Browne.

The Glands of Destiny By Ivo Geikie Cobb, M.D. 3rd ed (Pp 258 15s) London William Heinemann 1947

A simple account of endocrine glands and of their effects in well known historical personalities.

The Art of Healing By Bernard Aschner, M.D. (Pp 336 12s 6d) London Research Books, Ltd 1947

The author discusses the place of many ancient remedies in present day medicine.

The Medical Register, 1947 Published for the General Medical Council (Pp 2274 22s post free) London Constable 1947

Recent Trends in Alcoholism and in Alcohol Consumption By E M Jellinek, Sc.D. (Pp 42 \$0 50) New Haven Connecticut Hillhouse Press 1947

An analysis of alcohol consumption statistics and the prevalence of alcoholism in America.

The Mystery at Orchard House By Joan Coggin (Pp 158 9s) London Hurst and Blackett 1947

A detective story.

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CENTENARY OF THE AMERICAN MEDICAL ASSOCIATION

The American Medical Association is next week meeting in Atlantic City, New Jersey, to celebrate its one hundredth anniversary and the programme of the activities that will take place from June 9 to June 13 suggests that this memorable occasion will be altogether worthy of the event and of American medicine. The American Medical Association has invited a number of medical men from this country to take part in the meeting. Those who will speak as distinguished guests at the various section meetings include Sir Howard Florey, Sir Heneage Ogilvie, Sir Stewart Duke-Elder, Prof John McMichael, Prof G W Pickering, Prof H J Seddon, Dr A R Hunter, Dr R M B MacKenna, Mr G E Martin, and Dr E A Underwood. The British Medical Association will be represented by the Chairman of Council, Dr H Guy Dain, the Chairman of the Organization Committee, Dr J A Pridham, and by the Secretary of the BMA and the Editor of the *Journal*. The British visitors are honoured by the invitation and are assured of a warm welcome from their professional colleagues in the USA. We have pleasure in printing in the opening pages of this issue an article on the history of the American Medical Association from the pen of Dr Morris Fishbein, Editor of the *Journal of the American Medical Association*.

What first strikes the British observer of the American scene is that the BMA and the AMA are almost contemporaries, because it was only fifteen years ago that the BMA completed the first 100 years of its history. The birthplace of the BMA was the provincial cathedral town of Worcester, the AMA may be said to have been conceived in New York and born in Philadelphia. A meeting was held in the Medical Department of New York University in May, 1846, at which 80 medical delegates from some of the States were present. Dr Nathan Smith Davis was the Chairman of a committee appointed to bring the subject of medical education before the Convention. This committee put forward four principal proposals. It was desirable, the committee felt that (1) a National Medical Association should be founded in the USA, (2) a uniform and high standard for the MD should be adopted by all medical schools, (3) before a young man started as a medical student he should have a suitable preliminary general education (4) a code of ethics should be adopted for the medical profession. The New York Convention of 1846 also set up committees to consider the registration of births, deaths, and marriages, and the establishment of a nomenclature of diseases to be adapted to the USA. Exactly a year later on May 5 1847, the delegates to

the National Medical Convention met in the hall of the Academy of Natural Sciences in Philadelphia. Reports were made on the matters discussed the previous year, and it is worthy of note that the resolution on medical education recommended that a young man, before being accepted as a medical student, should be of good moral character and should have acquired "a good English education," a knowledge of natural philosophy and of elementary mathematics, and such acquaintance with the Latin and Greek languages as would enable him to appreciate the technical language of medicine and to read and write prescriptions. Dr Nathan Smith Davis, who may justly be described as the founder of the American Medical Association, also made the interesting recommendation that a committee should be set up to record the indigenous medical botany of the USA.

The Convention finally got down to the difficult question of organization, and after much discussion on the proposed National Medical Association it was proposed that "This institution shall be known and distinguished by the name and title of 'The American Medical Association'." As a preamble to the constitution the purpose of this Association was declared to be

- for cultivating and advancing medical knowledge
- for elevating the standard of medical education,
- for promoting the usefulness, honour, and interests of the medical profession,
- for enlightening and directing public opinion in regard to the duties, responsibilities, and requirements of medical men
- 'for exciting and encouraging emulation and concert of action in the profession,
- for facilitating and fostering friendly intercourse between those engaged in it'

The founding fathers of the AMA, meeting in the city where the constitution of the United States had been drawn up 60 years before, urged the formation of State and local societies. Nathan Smith Davis, who for so many years was to be a powerful guiding force in the AMA, was always proud that it was based democratically on local medical organizations and institutions. The foundation stones of the AMA were medical education and medical ethics. The ethical principles adopted were with little alteration those propounded by the English physician Dr Thomas Percival, FRS, who published his code of ethics in 1803. When the code was presented to the National Medical Convention in May, 1846, Dr John Bell observed "As it is the duty of a physician to advise, so has he the right to be attentively and respectfully listened to—an observation which has a strangely modern ring to it. The AMA, particularly through the *Journal of the American Medical Association* has always been a forthright opponent of quackery and has always attacked the purveyors of nostrums and secret remedies with a freedom and courage which we may envy. The attack on these evils began in the very first week of its foundation.

One hundred years ago medical education in the USA was, to say the least, in an unsettled and unsatisfactory state. Between 1830 and 1845 medical colleges doubled in number and the majority of them were conducted on a commercial basis. By shortening the curriculum and making the terms of graduation easy in order to attract

students and their fees the managers of these colleges did a great disservice both to medicine and to the community. Three years before the A M A was founded Nathan Smith Davis attacked the abuse of the procedure whereby medical students were taught and licensed by the same college. In 1869 we find Dr William O Baldwin, who was the president of the New Orleans annual meeting, stating that "almost any body of medical men may obtain a charter for a medical college in most of the States of this Union, with pretty much the same regulations and privileges as they may agree upon among themselves and ask for." The A M A continued its uphill struggle for the reform of medical education and an important step was taken in 1905 by the formation of a Council on Medical Education, to which a full-time secretary was appointed, there had before this been a Committee on Medical Education. This Council, as Dr Fishbein points out in his article, "undertook to examine the medical colleges and to establish a minimum standard of medical education." It graded medical colleges into Class A, Class B, and Class C. The results of this wholesome classification were published. In 1905 less than 20% of the 165 medical colleges in the USA came under Class A. To-day the 77 medical colleges in the USA are rated as Class A, and there is one medical school in inglorious isolation in Class C. As Dr Fishbein puts it "The stimulus to improvement was simply annual publication of the facts to both the medical profession and the public." The Council on Medical Education was finally enlarged into the Council on Medical Education and Hospitals. In 1905, also, the Council on Pharmacy and Chemistry was established, although there was much opposition to it—it was described as "the most important and effective measure ever undertaken by this Association to rid the profession of the abuse of the nostrum evil." A year later the Council on Pharmacy and Chemistry asked the Board of Trustees to provide them with a laboratory. The fierceness of the attacks from many quarters on the activities of the Council showed the extent of the evil it set out to combat and the fears of those who anticipated the financial loss of exposure. Needless to say, the Council on Pharmacy and Chemistry successfully rode the waves of opposition and its service to medicine is deeply appreciated by those who are familiar with its reports published in the *Journal of the American Medical Association*.

In the early years of its existence the A M A published an annual volume of *Transactions*, and the value of these *Transactions* was repeatedly questioned by members. A Committee on Medical Literature drew attention to the fact that many medical editors had abandoned their work for other professional activity and that "some had tired of their ill-paid toils and thankless duties, some had been snatched away by the hand of death"—to quote from Dr Fishbein's "History of the A M A."

Dr S D Gross had been to England to look into the way the British Medical Association conducted its affairs and as a result he suggested that the *Transactions* be discontinued and replaced by a periodical publication. The matter came to a head at the meeting of the A M A in New York City in 1880. In his Presidential Address then, Dr Lewis A Sayre urged that the example of the British Medical

Association be followed. "It is very questionable," he said, whether the mode pursued by the British Medical Association, in establishing their own journal, would not be an immense improvement on our present method. The British journal is the exclusive property of the Association, and by the liberal compensation of an accomplished editor, a weekly edition is issued, instead of an annual volume. Dr Sayre attributed the success of the British Medical Association to its journal and observed also that its advertising columns made a useful contribution to its funds. He considered that the combination of an association and a journal in the hands of an editor given full discretion on what to publish was congenial to American ideas. "It is," Dr Sayre observed, "dependent for its success on the intelligence, union, and good will of the members." Above all, it is a most successful and influential means of increasing the membership, enlarging the power, and widening the basis of the association and of making it a living organism during the intervals between the annual meetings. Dr Nathan Smith Davis was a member of the committee set up to consider Dr Sayre's recommendations, and a resolution was passed that a weekly journal should be established. The first number of the *Journal of the American Medical Association* appeared on July 14, 1883, and a year later it was announced that as a result of the publication of the *Journal* the income of the Association had increased. It is pleasant to record the fact that in founding the J A M A the American Medical Association freely consulted the then Editor of the *British Medical Journal*. Mr Ernest Hart, who was invited to go to America to advise them on how such a journal should be launched. A Board of Trustees was set up in 1882 to be responsible for the financial conduct of the *Journal* and to appoint the Editor. The Board then consisted of nine members who served for a term of three years.

The guiding hand of Nathan Smith Davis is clearly visible in the evolution of the American Medical Association up to the end of the 19th century. Throughout the first quarter of the present century the successful expansion of the A M A's activities owed much to Dr George H Simmons—an Englishman by birth and an American citizen by adoption. Dr Simmons became Editor of the *Journal of the American Medical Association* in 1889 and subsequently joined this office with that of Secretary and General Manager. His influence made itself felt in the reorganization of the A M A in 1900, in his establishment of the printing works of the A M A, in the development of the nine specialist publications issued by the A M A and in the publication of a Medical Directory and of that indispensable instrument of medicine the *Quarterly Cumulative Index*, the successor to the *Index Medicus*, founded by John Shaw Billings and continued by Robert Fletcher and Fielding H Garrison. When Dr Simmons resigned from the Editorship in 1924 he was succeeded by Dr Morris Fishbein, from whose "History of the A M A," which has been appearing in the *Journal of the American Medical Association* since November last year, the facts recorded in this article are taken. Dr Simmons often expressed his wish to be relieved of the duties of Secretary, and an important step was taken in 1922 when Dr Olin West was appointed Secretary of the American Medical Association.

Dr West retired from this position in 1946. He was succeeded as Secretary by Dr George F Lull, and his services to the Association were recognized by his selection as President of the Centenary Meeting at Atlantic City. Most unfortunately ill-health has prevented him from filling this distinguished office and the Centenary Meeting will be presided over by Dr Edward L Bortz, of Philadelphia.

There are now about 190,000 medical men in the U.S.A., and of these 130,000 are members of the American Medical Association. American medicine owes much to the A.M.A., and it is indeed remarkable how great an influence on American life has been exerted by a voluntary organization of professional men, well organized, and wisely led. This great American Association will continue to lead the American medical profession in its adaptation to the changing conditions of modern life, and in doing this it will without question take a firm stand on the principles on which it was founded.

LEPROSY AND ITS PROBLEMS

Leprosy is still a most mysterious disease. An acid-fast bacillus is undoubtedly the causal agent, but failure to transmit and to propagate this bacillus in animals has resulted in failure to determine the means by which infection is transmitted to man. There have been, and there still are, many curious theories to account for human infection. Some African peoples consider that the breaking of food taboos is the real cause. The Lobi, one of the rather primitive tribes which dwell on the banks of the Volta, are convinced that if gold dust comes in contact with their skin they must inevitably acquire the disease. In mediaeval Europe infection was thought to be transmitted either as a venereal disease or by the breath, so that lepers in many areas had to cover the nose and mouth with a cloth. Then came the era when decaying fish was believed to be the "true cause, while to day, though it is generally agreed that leprosy is a disease of low infectivity for man, there is still uncertainty as to how far malnutrition and close association with lepers in conditions of squalor are the main predisposing causes. A new theory has recently been put forward by Moissier,¹ who believes that cockroaches carry lepra bacilli, infection from man to man would then be indirect.

If more were known of the means of transmission we might have a clue to the reasons why at the end of the Middle Ages leprosy practically died out in Western Europe. In the early years of Christendom the disease, which hitherto had been confined to the East, crept slowly along the Mediterranean littoral and by the ninth century it had become firmly established in Western Europe. Yet even hundred years later leprosy was to be found only in a few out-of-the-way corners. The last British leper whose infection could not be traced directly or indirectly to the Tropics died in 1798 in the Shetland Islands. Was the disappearance of leprosy due to improvements in hygiene and nutrition? It hardly seems likely, for even in mediaeval Europe though leprosy was largely a disease of the poor, there were rich and important lepers. Robert the Bruce

was possibly not a leper, according to MacArthur,² though Louis XI of France may have been, and Baldwin IV, King of Jerusalem, undoubtedly was. Poverty and malnutrition did not cease in England with the coming of the Tudors, in fact, the "sturdy beggars" of Queen Elizabeth's reign were a national problem. If the development of the infection were dependent solely on poor food and worse hygiene it might have been expected that leprosy would have been rare among those Africans who during the war enlisted in the armed Forces, where their food and general living conditions were far better than anything they had previously experienced, yet leprosy developing during their army career was by no means rare even among men with four to six years' service. Nevertheless the appearance of leprosy in a few Europeans who were interned in the Far East, as recorded in the *Journal* of May 24 (p. 731), suggests that malnutrition must play a considerable part in increasing susceptibility to infection.

Was the disappearance of leprosy in Europe due to the isolation enforced? As early as A.D. 583 the Council of Lyons, following the stringent rules laid down in the Old Testament, had prohibited the free movement of lepers. In England the first leper house, of which there were to be more than a hundred, was founded at York in A.D. 936, though in Scotland the isolation of lepers did not begin till 1226, when a leper hospital was built at Rothfarnham. Lepers were treated as dead and were forced to announce their approach by means of clappers. There must therefore have been many who evaded inspection for leprosy, for people are ever reluctant to face a living death, and, as in Africa to-day, many must have escaped detection until they became too disfigured or too weak to work. Mediaeval leprosy certainly disappeared without any great change in medical treatment, apart from isolation. Although Gilbert, Bernard de Gordon, and others urged an adequate diet the main idea in treatment seems to have been to feed the leper on the worst possible food. Coulton³ mentions an agreement entered into in 1356 by which the city fathers of Oxford graciously granted to the Chancellor of the University jurisdiction over the market "and over all flesh or fish that shall be found to be putrid, unclean, vicious, or otherwise unfit on this condition, that the things forfeited be given to the Hospital of St John." This idea evidently became popular, for Comrie⁴ records that the Scottish Parliament in 1386 agreed that the flesh of wild beasts found dead must be given to lepers, as well as all pork or salmon found corrupt in the market. The town of Berwick-upon-Tweed thoughtfully added a rider that "if there be no leper-folk, the rotten pork or salmon shall be utterly destroyed."

If individual treatment was ever attempted there were various sovereign remedies. Three black serpents should be caught, their heads and tails cut off, and then middle portions burned in a new pot, white soap and oil were to be added and the whole rubbed in a mortar until thick like honey. This material was applied for three days and the part well washed. If any of the infirmity were left all that was needed was to behead a tortoise, collect its blood,

¹ E. Afr. Med. J. 1946 23 295

² J. R. A. M. C. 1926 46 321

³ Medieval Panorama 1938 Cambridge

⁴ History of Scottish Medicine, 1932, London

and anoint the affected parts with a feather.⁵ The Portuguese in the fifteenth century believed in shipping their lepers to one of the Cape Verde Islands, where the unfortunates lived like aldermen on a diet of everlasting turtle soup. In the meantime both in India and in China chaulmoogra oil had been used in the treatment of leprosy for many centuries. It was first introduced into western medicine in 1854 by Mouat,⁶ who reported improvement in a case of leprosy after its oral administration and local application. Although chaulmoogra has since then been used in all forms of leprosy there is still doubt as to its efficacy. McCoy,⁷ for instance, in view of the meagreness of the data available and the tendency of many cases to improve spontaneously, is left after twenty-five years' personal experience 'with the very definite impression that chaulmoogra oil and its derivatives are of doubtful value in the treatment of leprosy'.

Dr E. Muir draws attention on page 798 of this issue to a new and more hopeful outlook in the treatment of leprosy by means of the sulphones. Cowdry and Ruangsiri⁸ were the first workers to find that promin had some curative action in rat leprosy. Later Feldman and his colleagues⁹ demonstrated the beneficial action of promin in tuberculosis in guinea-pigs, while Faget and others,¹⁰ who had previously failed to note any improvement in human leprosy from sulphanilamide, sulphathiazole, sulphapyridine, and sulphadiazine,¹¹ promptly used it on human lepers, reporting far greater benefit than with any other sulphonamide derivative. As Dr Muir emphasizes, the action of sulphones has not yet been fully tested in all forms of leprosy. Nodular leprosy may possibly prove intractable, for according to O'Leary and his colleagues¹² sulphones such as promin are less active than streptomycin in curing skin tuberculosis. Nevertheless the 2,000,000 lepers in the world, of whom 97.5% are Indian or African, may well take heart, as may those few Europeans who have been so unfortunate as to contract leprosy during the war. An important step has been taken and one which may perhaps end in freeing the world from the scourge and dread of leprosy.

STREPTOMYCIN AND T B MENINGITIS

Medical men and the lay public are worried about the question of streptomycin in the treatment of tuberculosis. Occasional appeals broadcast by the B.B.C. on behalf of individual cases increase the anxiety that is felt, and perhaps do more harm than good, because the response to these appeals seldom produces enough "open market" streptomycin to treat the patient in need of it. To discuss the problems that arise from this situation the British Medical Association last week held a conference which was attended among others by representatives of the Ministry of Health, the Ministry of Supply, the pharmaceutical industry, and by Sir Alexander Fleming. The conference concluded at the end of its session that it could make no useful statement to the public. Nevertheless those who attended left with a clearer idea of what the difficulties were as seen by the

research worker, the Government departments concerned and not least the medical practitioner and his patient.

Streptomycin is available in this country in only very small quantities, and these small quantities are being allocated to centres where research can be carefully conducted. There is still much to be discovered about streptomycin, and both medical men and the public must await the information that will be contained in a report from the Medical Research Council later this year. What worries doctors and patients particularly is the difficulty of obtaining the drug for cases of tuberculous meningitis. There is not enough streptomycin to treat all the cases of tuberculous meningitis that exist—a fact which needs emphasizing. Hospitals providing beds for the treatment of tuberculous meningitis with streptomycin are the Great Ormond Street Hospital, the Postgraduate Hospital at Hammersmith, Guy's, the National Hospital for Nervous Diseases in Queen's Square, the Alder Hey Hospital in Liverpool, and the Glasgow Hospital for Sick Children. The fact that only six hospitals in England and Wales and Scotland are making available only some of their beds for the treatment of tuberculous meningitis is in itself an index of the extremely small quantities of streptomycin available. We understand too, that at present only children up to the age of 7 can be accepted for treatment.

It is hoped to increase the supply of streptomycin, and much will depend on the nature of the report expected from the Medical Research Council. Whether more streptomycin might have been obtained, and whether some better organization for treatment could not have been devised, are legitimate questions to ask. For example it is worthy of note that France is able to obtain more streptomycin than England. Is this because of the doctor's situation, or is it because French administration moves more quickly? Prof. Debré has been able to set aside fifty beds in his hospital in Paris for the treatment of tuberculous meningitis with streptomycin, and apparently he has enough of the drug for the purpose of his investigation. We doubt whether anything on a similar scale is being attempted in any one hospital in Great Britain. It is true that the treatment of tuberculous meningitis is in the experimental stage and doubts have been expressed about its ultimate benefit, but these doubts will not be removed and the problem will not be solved until the research worker is given enough beds and an adequate supply of the drug. The report of the French investigation is eagerly awaited.

PENICILLIN TREATMENT OF GONORRHOEA

A. Fischer¹ reports some interesting facts about the treatment of gonorrhoea in Switzerland. Towards the end of the sulphonamide period only 30% of the cases were fully susceptible, 40% being absolutely, and 30% relatively, resistant. The advent of penicillin changed the outlook as radically as had the introduction of sulphonamides in 1936, since it provided the solution to the problem of the sulphonamide-resistant case. Fischer reviews the results obtained with penicillin in 3,600 cases reported by others and describes those achieved in the treatment of 180 cases in Zurich in 1945. All had a series of intramuscular injections at intervals of two or three hours during the course of a single day. A total dose of 100,000 units gave results slightly inferior to those following 150,000 units. Relapse cases received a further course, sometimes 200,000 units, most of them responded to the second course and all those requiring it to the third. Tests of cure included chemical provocation by silver nitrate instillation and "biological" provocation by a dose of gonococcus vaccine. It is the

⁵ British Museum *Addit. MSS.* 26622 f. 130

⁶ *Indian Ann. med. Sci.* 1854 1 646

⁷ *Publ. Hlth. Rep. Wash.* 1942 57 1727

⁸ *Arch. Path.* 1941 32 632

⁹ *Amer. Rev. Tuberc.* 1942 45 303

¹⁰ *Publ. Hlth. Rep. Wash.* 1943 58 1729

¹¹ *Ibid.* 1942 57 1892

¹² *Arch. Derm. Syph.* Chicago 1947 55 222

¹ *Die Ambulante Tripperbehandlung mit Penicillin* 1946. Thesis for the Dr. of M.D. Zurich

necessity for such tests and for the expert examination of the secretions obtained which maintains the treatment of gonorrhoea in the specialist category. The administration of the drug is simplicity itself, and if an oil preparation is used of which a single dose will really maintain an effect for sufficiently long it becomes simpler still. All complications were found to respond equally well to this treatment except arthritis, which is known to require a much larger dosage. The dose which it is advisable to use in primary gonorrhoea is limited by the danger of obscuring the manifestations of coincident syphilis. Even so, every patient treated for gonorrhoea with penicillin should afterwards be kept under observation for syphilis. In some of Fischer's cases the development of a positive Wassermann reaction was delayed even by the small dose of penicillin used. A commendably large number of partners is included in this series. Evidently the organization in Zurich makes every effort to treat the source of the infection as well as the patient. In women known to have conveyed the disease gonococci were often not found, though whether cultures as well as films were made is not clear, they were nevertheless treated.

THE ROYAL SOCIETY

Sir Robert Robinson, president of the Royal Society, received the guests at a conversazione at Burlington House on May 29. The many scientific exhibits and demonstrations had been arranged for the occasion by individual scientists, industrial firms, and national research institutions or museums. They ranged from an ingenious model illustrating the release of atomic energy by the uranium chain reaction, to the mandible of a giant hyracoid from the Lower Miocene beds of Rusinga Island, Lake Victoria. The uranium model was set up by the Science Museum, and the successive release of table-tennis balls, representing neutrons, made it all appear like a charming game for advanced children. Alongside the giant hyracoid jaw were the skull and antlers of a Pleistocene fallow deer, while in keeping with the atomic toy were demonstrations of plastic optical components made by reproduction from a master mould by what ICI call the "surface-finishing" process, and an apparatus from the Cavendish Laboratory, Cambridge, showing the use of radar techniques for the measurement of the velocity and absorption of ultrasonic waves in liquids.

An item of medical interest from the Clarendon Laboratory at Oxford was a "radiation-fluxmeter" developed after investigation of a number of serious accidents with radiant heat apparatus. This instrument consisted of two thermocouples attached to two blackened disks, one of which was exposed to the source of radiation. The air temperature at both disks was the same and the difference in radiation energy impinging on them could be measured for all frequencies from the visible to the far infra red. A collection of late seventeenth and early eighteenth century microscopes was exhibited by the Wellcome Historical Medical Museum. The Lister Institute showed a crystalline bacterial enzyme. This was the enzyme catalase which decomposes hydrogen peroxide to oxygen and water. It has been isolated from *Micrococcus lysodeikticus* and was said to be the first bacterial enzyme to have been obtained in a pure state. The enzyme is an iron-porphyrin-protein and lysozyme was used in one of the preliminary processes leading to its isolation. The exhibit prepared by the Molleno Institute, Cambridge, included electron photographs of virus crystals. A new plant virus recently crystallized is notable as the only virus known to be transmitted by a flea beetle and the only insect-transmitted virus in this country not carried by a sap-sucking insect. Thus

once again the Royal Society took the opportunity of presenting to its many distinguished guests a series of vivid demonstrations of work that is going on in almost every branch of science.

HOMELESS CHILDREN IN SCOTLAND

In the spring of 1945 the Secretary of State for Scotland appointed a strong committee of lawyers, magistrates, and eminent lay persons, including two women doctors, to sit under Mr J. L. Clyde, K.C., to investigate the existing provision for children who have no normal home life and to suggest the best measures to compensate for their lack of parental care. The committee's report¹ recommends as a first measure that the care of these children, which is divided between three Government Departments, should be transferred to one department. At present homeless children in every local authority area come under the Education Committee, the Public Health Committee, and the Public Assistance Committee. The report proposes that one committee only should look after these children, with powers and duties extended to give it a uniform jurisdiction. The best solution of the problem, in the opinion of the committee, is a good foster-parent system; this is best suited to provide the child with the necessary individual attention and scope for development of independence and initiative. The way to improve the system is to choose and inspect foster-parents with greater care and discrimination, and to employ more highly trained officers. A standard minimum rate of payment to foster-parents should be fixed for all authorities, and financial gain must never be the main motive. Responsibility for the boarded-out child should rest on the boarding-out authority, as at present. This means, admittedly, an undesirable variation of standards where a number of different authorities are boarding children out in the same small area; on the other hand, if the authority of the area of residence were made responsible, it would be tempted to pass on the difficult children to other areas, disregarding their welfare. The authority of the area should, however, have a right to receive previous official intimation and to exclude a child, subject to appeal. Unsatisfactory foster-parents should be immediately notified to the department. Before being boarded out all children should go to a home for medical and other inspection. The progress of each child should be watched and reported on by a suitable person in the area; each foster-home should be visited by an inspector within a month of the child's arrival and thereafter every six months without notice. A member of the children's care committee should be present at these visits. A local practitioner should give a medical report on the child every six months. All children with foster-parents or in homes should have pocket-money. After-care and the selection of suitable subsequent employment should be an essential feature in the care of children. The present control over voluntary homes should be extended, and their staffs should be more highly trained. Institutionalism should be avoided and every encouragement given to the development of the children as individuals. Large institutions should be split up, and no home should be a poor-house or an annexe of one. The children should go to a church and school outside the home. Unsatisfactory parents should be prevented from recovering children from care. Where a petition for adoption of a child is refused the court should have discretion to direct its removal to a place of safety. The maximum age of a child subject to care should be raised to 18. An advisory committee should be set up to advise the Secretary of State on the methods in use.

¹ Report of the Committee on Homeless Children. Edinburgh: H.M. Stationery Office, 1946. 9d.

PRESENTATION TO THE AMERICAN MEDICAL ASSOCIATION

A Gavel and Block made from the mulberry tree which grew in Charles Dickens's home in London now the site of B.M.A. House will be presented by the B.M.A. delegation to the American Medical Association on the occasion of its centenary celebrations in Atlantic City in the second week of June. The block is inscribed with these words

TO THE AMERICAN MEDICAL ASSOCIATION ON THE OCCASION OF ITS CENTENARY

AS A TOKEN OF GOOD WILL FROM THE BRITISH MEDICAL ASSOCIATION
THIS GAVEL AND BLOCK MADE FROM THE MULBERRY TREE
WHICH GREW

IN THE GARDEN OF CHARLES DICKENS'S HOME IN LONDON
WHERE THE BRITISH MEDICAL ASSOCIATION HOUSE NOW STANDS
JUNE 1947

Charles Dickens took Tavistock House in 1851 and the mulberry tree was in the garden; it was still there when the British Medical Association moved into Tavistock House in July, 1925. It has since then had to be cut down but the wood was preserved and out of this wood the gavel and block have been made. Dickens lived in Tavistock House for nine years. At one time Hans Christian Andersen stayed with him, and he describes how, 'On the first floor was a rich library with a fireplace and a writing-table, looking out on the garden, and here it was that in winter Dickens and his friends acted plays to the satisfaction of all parties. Dickens's nine years in Tavistock House formed "the most brilliant period of his career," to quote from an article in the *Journal* of July 18, 1925. It was in Tavistock House that he wrote or began to write *Bleak House*, *Hard Times*, *Little Dorrit*, *A Tale of Two Cities* and *Great Expectations*.

NEW ASPECTS OF INSULIN ACTION

Several interesting points came up in a more or less informal discussion in the Section of Endocrinology of the Royal Society of Medicine when the subject of new aspects of insulin action was introduced by Prof. F. G. Young from the biochemical side and by Dr. R. D. Lawrence from the clinical. One question which arose concerned haemochromatosis described by one of the speakers as a form of diabetes in which there was the pathological lesion and yet a distinct clinical entity was present. If ever there is a form of diabetes which can be attributed to failure of insulin production in the pancreas as Dr. W. G. Oakley pointed out it is the form associated with haemochromatosis and yet this type of diabetes has certain features which differentiate it from all other types. Many of the complications associated with diabetes are never or rarely seen in this condition. Retinitis is said never to develop, ketosis only seldom, a definite coma is extremely uncommon. Thus there is here one form of diabetes in which the pathology appears to be as straightforward as in any of the other varieties, and yet the clinical picture differs from the types customarily considered as being due to primary insulin deficiency. This aspect has not been investigated as much as it might have been.

Some 75 cases have been recently published in French literature and at King's College Hospital London there have been 20 or more. Dr. Lawrence described haemochromatosis as a severe type of diabetes caused by the undue disappearance of the island function of the pancreas owing to the haemochromatotic process. He said that certain of these patients did die in coma but it was true that the ghastly complications commonly met with in ordinary forms of diabetes—arteriosclerotic changes, retinal changes, kidney changes and gangrenous effects in the foot—were never encountered. While in America Dr. Lawrence had tried to interest the American Diabetes Association in the subject in view of their large field of observation, urging that they get together all their cases of haemochromatosis in particular examining those which had had the condition for ten years and finding out whether they were completely immune from the diabetic complications mentioned. If such immunity were established he said another cause for such complications should be sought. These complications

being absent in haemochromatosis there must be some other factor which caused them in ordinary forms of diabetes.

Carbohydrate Oxidation

The question of carbohydrate oxidation was another point raised in the discussion. Prof. Young suggested that there was no reason to suppose that carbohydrate oxidation could go on in the body as a process independent of the presence of insulin, and also of the anterior pituitary hormone, though the process nevertheless, was influenced by them. The suggestion was made a good many years ago, he said, that the action of insulin and the anterior pituitary hormone in this respect could be regarded as somewhat analogous to the action of the sympathetic and parasympathetic on the heart, in other words they did not initiate the process, which went on independently of them but they influenced it antagonistically. A further point arose out of Dr. Lawrence's observation that high blood sugar was the damaging agent on the islands of Langerhans in the pituitary-induced diabetes. This might be so, said Prof. Young, but he could not accept it as proved. He thought it possible that there was an inhibitory action of the hormones on the islands themselves, and that this in turn might cause degeneration when the islands were subjected to this action under conditions of high blood sugar.

In his view the high blood sugar was not the only damaging factor in these cases. The clinical condition of diabetes, and indeed other conditions might arise not necessarily from deficiencies of hormones directly, but from deficiencies of the enzyme system on which the hormones acted. There was a reason why there should not be congenital partial deficiency of the enzyme system. Recent work had suggested that probably there were inherited deficiencies as regards amino acid synthesis because of the deficiencies of the enzyme system originating in our ancestry. Prof. Young also referred to a case recently published in Brussels of a young girl who came for treatment for amenorrhoea, and during three years and a half observation developed acromegaly and then diabetes of a relatively mild type. After a further eighteen months she had a cerebral haemorrhage. Her sugar tolerance was abnormal, high and her fasting blood-sugar level abnormally low. It seemed that the islands of Langerhans had hypertrophied under the influence of pituitary secretion, when possibly some pituitary tumour had developed and had undergone a sudden dramatic remission.

IMPROVEMENTS IN ARTIFICIAL LIMBS
MINISTRY OF PENSIONS DEMONSTRATION

A demonstration of limb fitting which attracted unusual interest was given on March 25 at the Roehampton Limb Fitting Centre attached to Queen Mary's Hospital. It was arranged by the Ministry of Pensions Standing Advisory Committee—a committee set up by Parliament two years ago to initiate research work on improvements in artificial limbs and similar devices. About twenty amputees demonstrated the facility with which they could use their artificial limbs.

Sir Charles Darwin, chairman of the Advisory Committee, said that its work might be divided into research, invention and intelligence, and the research programme into the work done on legs and on arms. The main interest in the leg has been the search for minor improvements, for excellent artificial legs already existed. The arm, owing to questions of muscular control and mechanical adaptation, presented a more difficult problem, and it had been estimated that twenty years were required to attain maximum skill with an artificial hand. In the field of invention the committee had considered over 100 devices, of which some 24 had survived. So far as intelligence was concerned, the most important thing had been the contact which the committee had had with other countries. It was in regular correspondence with a similar committee in the United States and another in Canada, and had undertaken a mission in Europe. A statistical analysis of all artificial limbs cases in this country was being prepared. It was hoped that such a classification would help not only surgeons in arriving at the best methods and sites for amputation, but limb makers in ascertaining where breakdown was liable to occur.

Sir Walter Haward, Director General of Medical Services of the Ministry of Pensions, mentioned that there were now nineteen limb fitting centres in various parts of Great Britain. The influence of Roehampton was apparent in all of them.

Dr J. Craft of the research department at Roehampton, with the help of patients carried through an excellent demonstration. He began with a number of women amputees. Experiments had been made with different forms of corsets, each individually made from which an artificial leg could be suspended. It had been hoped that nylon would be of assistance, but it was a non-extensible fabric and did not wear well so that the corsets had to be made of a stronger material. The corset, which was shaped to the body, took the place of the leather belt formerly worn around the waist. Several women demonstrated the perfect fitting of the limb. One of them with a low knee amputation, was a skater. For men the usual support was a leather waist belt and a strap over the shoulder, but it had been possible to discard the shoulder harness in some cases and to attain a better gait.

The suction socket was the subject of experiment in this country after the war of 1914-18, but was dropped for various reasons. During a recent visit to Germany a remarkable number of suction sockets with no suspension at all were found among war amputees. The principle was a vacuum under the base of the stump. Here again a number of men, some of whom had had their new limbs only for a few weeks, demonstrated their ease in walking with this type of limb. The correct shape of the interior of the socket, Dr. Craft said was being worked out. In the new type the stump was pulled into the socket, whereas in the old type it had to be pushed in, which meant wrinkling around the perineum and the great discomfort.

In the case of the arms the fitting of the socket was of great importance. In the newest limb demonstrated there were nine different locking positions, and there was bisection in the mid-forearm instead of as usual, at the wrist, which was said to be an advantage. Dr. Craft also showed various examples of mechanical hands with attempts at finger control, but he said that the Ministry had come to the conclusion that mechanical appliances attached to the extremity were better for amputees than attempts to reproduce the five-fingered hand. A number of the men with these mechanical devices showed how they were able to perform their toilet, to use small tools, and to undertake drawing and typewriting.

Cineplastic and Krukenberg Operations

Prof. T. Pomfret Kilner then continued the demonstration by showing the results of the Sauerbruch cineplastic amputation and the Krukenberg operation, and some young Germans who had sustained upper limb amputations assisted him. Prof. Kilner said that he had entertained the hope that close co-operation between orthopaedic and plastic surgeons on the one hand and limb fitting surgeons and limb-makers on the other might assist the cineplastic procedure for upper-arm amputations in this country, in this he had been disappointed. There was a general impression that the skin tunnels made in this procedure gave considerable trouble and that the range of movement and motor action was so much restricted as to make the method useless for operating the artificial hand. The Ministry, however, had retained its interest in this subject throughout and inquiries were made of people who had seen such work in Germany and elsewhere.

The Sauerbruch cineplastic procedure consisted in the preparation of one or more skin lined tunnels in muscles which were used to activate the artificial hand. They might be made in the flexor or extensor muscles of the forearm or in the corresponding muscles of the upper arm. They gave sufficient sources of control both to fingers and to elbow in some cases, thus supplying both supination and pronation of the forearm. This operation did give the patient extra motor points. Occasionally the skin tunnel was made through skin only, not through muscle, and was used for suspension or retention of the prosthesis. In the Krukenberg operation the forearm was split longitudinally to produce pincers. The local skin of the forearm was raised to cover the outer digit of the pincers while the inner digit was covered by a skin flap taken from the adjacent wall.

As for the application of these procedures, in the through-wrist amputation the valuable movement of pronation and supination was employed to give flexion and extension of the fingers of the artificial limb, or movement of the jaws of the various gadgets which could be attached to the extremity. When the forearm had been amputated but the stump was long from elbow to extremity—17 cm. and upwards—either the Krukenberg or the cineplastic procedure might be carried out with satisfaction. If the amputation was shorter than 17 cm. the Krukenberg was not indicated but cineplastic procedures might be carried out, forearm flexors and extensors being used for movements of the fingers, while the shoulder harness might be employed to give pronation and supination to the prosthesis.

Both procedures appeared to give stumps capable of resisting ordinary wear and tear, but in Germany no cineplastic case was observed performing heavy manual work. Only clerical work or work calling for fine finger movements was done. The Krukenberg procedure was essentially one for the double amputee, the man with one good limb was unlikely to concentrate on the training of the Krukenberg stump. He saw in Berlin a Krukenberg case of six years standing, and the man was able to lift a 70 lb. (32 kg.) weight, as well as to play tennis and shave. With the cineplastic device it was possible also to pick up matches with forceps, take coins out of a purse, fasten buttons, and so on. It was estimated that from 6 to 8 months was required for operation and training, but where a good Krukenberg procedure could be performed it gave the stump a greater usefulness than any other method. The appearance, like that of artificial limbs in general, was odd, but not repulsive.

A number of young Germans who had undergone operation in their own country then showed what they could do with the cineplastic and Krukenberg devices. One of them when asked why he elected to have the Krukenberg, replied that he wanted to be independent of all types of artificial limbs and other gadgets, but in general the frequency of the Krukenberg procedure was attributed to the lack of artificial limbs, which was very apparent in Germany. It was admitted that the Krukenberg limb caused fatigue pains in the muscles to develop rather quickly during sustained employment.

ESKIMO DENTITION

Dr. P. O. Pedersen, the distinguished Copenhagen odontologist, gave an interesting account to the Odontological Section of the Royal Society of Medicine on April 14 on three expeditions which have gone to Greenland in recent years to investigate the teeth of the Eskimo. On the eastern shore of Greenland Danish colonization and white contact began only some 50 years ago, but western Greenland has been colonized for more than 200 years, its harbours are the doorsteps of Western civilization, and here the natives have settled in permanent dwellings and have drastically changed their dietary habits. At the beginning of the present century the calorie requirements of the West Greenland population necessitated only some 17% of imported food. The latest figures suggest that over 50% of the food is imported. The consumption of sugar in West Greenland has reached or surpassed the high levels of countries like Denmark and the United States. All this is reflected in the state of the teeth of the population. One of the main subjects of study of the expeditions (which were undertaken under the auspices of the Royal Danish Colonial Institute and the Danish Dental College) was the extent of dental caries. An examination of over 500 Eskimo skulls found in an old burial place revealed only two carious teeth out of 5745 teeth examined and it was not entirely beyond doubt that the skull in which these carious teeth were found belonged to the period before the white invasion.

It can be said with a fair degree of confidence that there was no caries in Greenland in pre-Danish times. To-day caries is a common disease among the Eskimo population. Even in the trading posts of eastern Greenland where white contact dates back only for half a century caries has risen to a considerable level and in western Greenland which has known the white man and his ways for a far longer period, the incidence

alarming. More than 50% of the deciduous teeth of the Eskimo children at the trading stations in western Greenland are carious. The incidence is as high as in the old countries of northern and western Europe perhaps even higher. In the villages away from the trading centres and harbours only 5% of the people show evidence of caries. The younger adults are far more frequently affected than the old.

Teeth and Ethnography

Teeth, small and insignificant in themselves as Dr Pedersen said are big with meaning. They are at once the most plastic and most conservative of structures. A close study of dentition is useful not only in indicating social change but in interpreting anthropology and ethnography, and among the still partly unsolved problems of ethnography is that of the origin and migration of the Eskimo. For example shovel shaped incisors are almost universally found among the Eskimo—a characteristic which they share with Mongolian stocks in eastern Asia, but their cusp numbers and occlusal patterns resemble more closely those found in fossil apes than those in any racial or ethnic group known. Enamel extensions from gingival margins are normal among the Eskimo of Greenland and are frequently present to an extreme degree. Supernumerary roots are also frequent. Disturbances of enamel and dentine formation are rare. Some women show a form of dental fluorosis caused by mixing a certain amount of creolite powder into their snuff, and the fluorosis is transmitted to their children. On the other hand gingivitis which is widespread is found with greater frequency and to a more severe degree among men than women—a circumstance put down to the fact that men are more addicted than women to chewing a tobacco quid. Loose teeth are met with in the primitive Eskimo only under very special conditions, such as the loss of the opposite tooth, thereby depriving the other of function.

One characteristic of Eskimo nurture remarked upon by Dr Pedersen (though he did not elaborate its possible bearing upon dentition) is that children frequently remain at the breast until they are six or seven years old. Indeed in the primitive community if the child could not be suckled by the mother or some other woman it would perish. Dr Pedersen said that he had actually seen a boy of six who was still at his mother's breast, but had in the meantime acquired the art of smoking cigarettes.

Nova et Vetera

THE ROTUNDA HOSPITAL BUILDINGS

The Rotunda Hospital. Its Architects and Craftsmen. A study by C. P. Curran with photographs by E. Phyllis Thompson. At the Sign of the Three Candles, Fleet Street, Dublin. 10s. 6d.

Moved by the bicentenary of the Rotunda Hospital, Dublin, Mr C. P. Curran has composed an agreeable essay on the history of the hospital in the 18th century from the standpoint of the arts. In this he has had the collaboration of a skilful photographer, Miss E. Phyllis Thompson. The craftsmen with whom he is mainly concerned are not unworthy to stand beside those others—physicians and scientists—of whom Dr Kirkpatrick has written in his *Book of the Rotunda Hospital* the authoritative work to which this essay is a footnote. Dr Ninian Falkner, Master of the Rotunda, expresses his thanks in a foreword to author and illustrator for having carried out this work as their tribute to the memory of Bartholomew Mosse.

On March 15 1745 Dr Mosse, then a young surgeon and obstetrician of philanthropic turn, opened his private lying-in hospital for poor women, which led directly to the establishment of the Rotunda and was the first charity of its kind in these islands. From the beginning Mosse mixed his own relish for the fine arts with every scheme for the development of his hospital using assemblies, balls, concerts, card parties, and lotteries to catch the fashionable public. He chose the most eminent architect in Ireland for his building, and the most distinguished sculptor available to embellish its corridors and gardens. The foundation stone of the new building was laid on July 9, 1751, and in 1757 the first patients were received.

The architect was Richard Cassells, a German born at Cassel in Hesse. Some of Mr Curran's study is devoted to answering questions which arise concerning Cassells's work. How comes it that a German architect born about 1690 should be so detached from the baroque of his period? Why should he build in a specially severe form of Palladianism? And why should he mix Dutch elements with his Palladianism? In the hospital accounts the main craftsman in plaster is described as both a statuary and a stucco man, his style is distinctive and unlike anything else in Ireland, but Cramillon was not the only stuccodore engaged in or about the hospital—chief among his followers was Robert West.

The round room or rotunda, whose name has gradually passed to the hospital itself, was built by John Ensor in 1764. Though Ensor built no other public building his share in the domestic architecture of Dublin, Mr Curran says, is even more extensive than that of Cassells; he left his mark on the city in the characteristic layout of its squares. The last stage in this building history began in 1784. Richard Johnstone was appointed architect of the new works and he designed the present Cavendish Row frontage. From the outset Dr Mosse planned his New Gardens as a place of fashionable entertainment in support of his hospital, and the proceeds from this venture were very considerable. The direction of the music as of everything else, lay in Mosse's hands, assisted by his nephew, and Mr Curran enters with relish into details of some of the programmes and performances. His Appendix of Craftsmen is followed by a list of 18th century musicians who helped the project. Miss Thompson's photographs are grouped at the end of the book, except that of the bust of Bartholomew Mosse (1757). The frontispiece is from an engraving of the exterior of 'The Lying-in Hospital and Rotunda, Dublin' dated 1830. Mr Colm O Lochlainn, as typographer, has produced a shapely volume, pleasing to the eye.

Preparations and Appliances

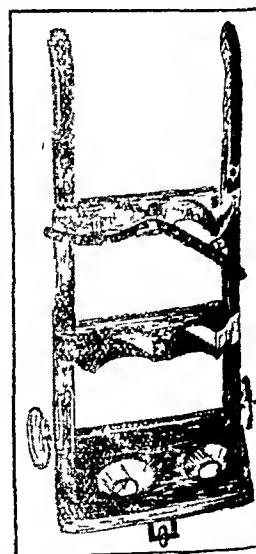
TROLLEY FOR GAS CYLINDERS

Dr G. O. COWDY, The Old Manor, Salisbury, writes

In this large mental hospital the wards are separated by considerable distances, which raised the problem of a convenient apparatus for the conveyance of oxygen and carbon dioxide cylinders from one ward to the other. The difficulty was made more acute by the fact that in many cases the wards are only joined by gravel paths over which it would be almost impossible to push any ordinary four-wheeled trolley. The problem was put to our chief engineer, Mr F. Baum, who has designed a two-wheeled trolley. This has proved so successful that I thought the design might be of general interest.

Basically it is like the hand trolleys used on railway platforms. Two hollows in the base take the lower ends of the cylinders, which rest in grooves in the cross pieces of the trolley. Leather straps secure them near the upper ends and prevent them from falling forward. The two main wheels are rubber-tired and a small wheel at the front of the base allows the trolley to be moved about within the ward in an upright position. The sketch made by a patient shows the general construction.

My thanks are due to the medical superintendent, Dr S. E. Martin, for permission to record the details of this apparatus.



Reports of Societies

THE NURSING SHORTAGE

At a joint meeting of the Society of Medical Officers of Health (Fever Group) and the Medical Superintendents' Society (London and Home Counties Branch) held at B.M.A. House on March 14, Dr WILLIAM GUNN, president of the Fever Group, took the chair. A discussion on the Nursing Shortage was opened by Dr H. STANLEY BANKS, president of the London and Home Counties Branch of the Medical Superintendents' Society, Dr E. B. BROOKE (Surrey), Dr O. W. S. FITZGERALD (Herts), and Dr W. F. T. McMATH (Willesden). At the request of the meeting, the points raised in the discussion were embodied in a memorandum, drawn up by the openers, which is here summarized.

Character and Incidence

There are said to be more nurses in the country to-day than ever before. This may be so for nurses are now employed much more than formerly in attractive jobs outside hospitals. Further, the shorter hours now worked in many hospitals necessitate an increase of some 10 or 12% in the number of nurses staffing a given number of beds. It is in the local authority hospitals, the special hospitals and the smaller voluntary hospitals that the acute shortage exists. Most of the local authority general hospitals in London have had to close down about half their beds, and the fever hospitals even more. This affects thousands of cases and also the fever hospital training of medical students and graduates.

The great London voluntary hospitals are said to have no shortage of nurses. This is doubtless, partly due to the inherent attractiveness of these hospitals. These discrepancies in staffing as between different kinds of hospitals have been greatly exaggerated since the Rushcliffe scales of salary were introduced in 1943. The Rushcliffe policy of uniformity of salary scales for all hospitals, regardless of their varying appeal to prospective nurses, is a major factor in the shortage.

The average female population from which nursing recruits may be drawn dropped from 361,000 in the quinquennium 1922-6 to 301,200 in the quinquennium 1942-6, a decrease of 16% in 20 years. Owing to the continued low birth rate during the years 1930-45 the available population is likely to decrease further, and for the next few years the female population available as potential nursing recruits will be some 20% less than that available a quarter of a century ago.

Alternative Employment

From this diminished female population the proportion attracted to industry, to the Services and to clerical and administrative work has increased as compared with that entering hospital nursing. The reasons usually advanced for this include higher wages, shorter hours, and home life or unrestricted private life. On the other hand, the nurse's life has been represented for years as one of genteel poverty, hard domestic work, long hours, and semi-monastic existence. In fact remuneration (except for student nurses) has been substantially increased, ward orderlies are being recruited for the more menial tasks, there is minimal interference with the nurse's private life and any qualified nurse may live out. These facts should be publicized in every possible way.

The shortage of nurses at present is one mainly of entrants to the profession. All our observations indicate that, in London at least, the foremost reason for this shortage is the low salary offered to nurses in training. The Rushcliffe Committee rightly considered the nurse's prospects after training to be more important than an attractive salary during training. But the salary of trainees was fixed at figures which are now below the economic level, and require subsidy from private sources, at least in London, if a reasonable standard of existence is to be maintained.

Salary Scales

The Rushcliffe salary scales for student nurses, although slightly increased since 1943, have been rendered out of date by the rising cost of living and by the "Hetherington" scales for female domestic staff and the "Mowbray" scales for male

domestic staff. The "Mowbray" scales recognize the principle of a "loading" of about 15% for London. This principle should certainly be applied to nurses' remuneration.

Weekly Wages of certain Resident Staff (plus board, lodging and laundry)

	£	s	d
Student Nurses, 1st year	1	1	2
" " 2nd year	1	5	0
" " 3rd year	1	8	10
Staff Nurse (Fever Trained) 1st year	2	2	4
" " (General Trained) 1st year	2	6	2
General Trained Student Nurse (Fever)	1	14	7
Ward Orderly	2	9	6
Domestic Assistant	2	7	6

A student nurse has to work and study for at least five years before she attains to the remuneration of a ward orderly or of a ward maid aged 18 over whom she is set in authority. When superannuation, insurance and other necessary contributions are deducted she has some 17s or 18s a week on which to clothe herself, travel, entertain herself on her day off, meet personal items of expenditure, buy textbooks, pay examination fees, etc.

It is clear that a higher salary (or training allowance) for student nurses is needed in those hospitals which cannot now attract recruits. It should not be applied uniformly everywhere for that would not cure the maldistribution of student nurses that now exists. In order to preserve the balance higher salaries—for example, £100 plus emoluments—are needed in the less attractive hospitals and in London there should be a loading of 15% to 20% as in the Mowbray scales.

Formerly the sense or spirit of vocation was one of the most powerful motives in the recruitment of nurses. This motive should be fostered in recruitment especially among senior school girls. In these times of economic stress however it is useless to rely upon the vocational motive alone without at the same time offering reasonable monetary inducements.

The Gap in Training

Many potential nurses are lost because their interest is not sustained between the school leaving age and the age of entry as a student nurse. To obtain adequate numbers of suitable educated nurses education authorities will have to set up pre-nursing training schools for suitable girls. A small maintenance grant would be necessary in most cases, especially in London. Subjects of instruction should include mothercraft, nursing, anatomy, physiology, hygiene, dietetics and domestic science. Visits might be made to day nurseries and hospitals and in the last year of the course the girls might be fully employed in day and residential nurseries. An admirable scheme of this sort is in operation in Dundee.

Basic Practical Courses

The regulations of the General Nursing Council are too exclusively directed towards the enhancement of the professional status of the nurse and too little towards the production of sufficient practical nurses to care for the sick. The number of nurses required is so large that it is wasteful to try to train them all to undertake the most highly skilled work. The hospitals demand large numbers who need no more than the basic skills of practical nursing and only relatively few with an advanced theoretical training. But the former group must be thoroughly trained in practical bedside nursing must be accorded the status of nurse and not assistant nurse and have remuneration adequate to their status. The regulations of the General Nursing Council should be re-designed to this end, and the Council should be responsible for ensuring that its regulations for training are compatible with an adequate flow of recruits to the profession.

A shortened practical basic course of two years' duration should be undertaken by all nurses. This should include three or four months' whole-time theoretical training in elementary physiology, hygiene and dietetics but the main emphasis should be on bedside nursing. The examination should be entirely practical and should lead to qualification as an enrolled nurse. The practical training should be taken in any general or special hospital of suitable size. The status and remuneration attached to the grade "enrolled nurse" must be sufficient to attract the large numbers who would elect to remain in this grade. For those who wish to rise to the rank of ward sister there should

be one year's higher training followed by a theoretical and practical examination leading to qualification as a State Registered Nurse. The minimum age of enrolment as a nurse should be 20 years, and of registration 21 years.

Foreign Trainees

The reduction in potential recruits and the great demand for female labour in industry point strongly to the need for foreign immigrants sufficiently educated to train as nurses. There are still large numbers of suitable young women on the Continent willing and anxious to come to Britain for such a purpose. Trained nurses, whether of foreign or national origin, are never likely to become a burden on the community through unemployment but are likely to remain as permanent assets. The employment of part-time nurses, on the Gloucestershire model or otherwise, should also be encouraged.

TUBERCULOSIS OF BONES AND JOINTS

The Spring Meeting of the British Orthopaedic Association was held at University College, Exeter, and the Princess Elizabeth Orthopaedic Hospital on April 25 and 26 under the presidency of Mr GEORGE PERKINS, M.C.

A symposium on the surgical treatment of tuberculosis of bones and joints was opened by Mr G. R. GIRDLESTONE, who stressed the importance of strict criteria in the estimation of results and remarked upon the rarity of dissemination by operation if well timed and if preceded and followed by immobilization. He condemned concern with the local lesion to the exclusion of the tuberculous patient as a whole, and emphasized the importance of prolonged care after discharge from hospital. He attached much importance to serial estimations of the erythrocyte sedimentation rate in assessing progress.

Mr NORMAN CAPENER reviewed tuberculous disease of the spine in 351 cases, emphasizing the difference of the disease and response to treatment in children and adults. In the first 15 years lower thoracic (dorsal) disease predominated, afterwards lumbar. 177 cases were treated by arthrodesis, with no mortality in the first 9 months, the tibia providing the graft fractured only once in contrast with the experience in traumatic cases. He thought that the key to the treatment of thoracic spinal disease might be treatment of the abscess.

The Hip-joint

Mr M. C. WILKINSON, speaking of tuberculous disease of the hip joint, had found an unstable hip in 22 out of 50 treated conservatively alone. The value of operation was measured by its success in securing stability and in safeguarding against recurrence. His operative mortality in 75 cases was early 2 and late 2. He had particularly practised osteotomy with medial displacement of the distal fragment but lately he had supplemented this with an extra articular femoral graft slid along the upper border of the neck. Operation was performed in the presence of active disease after the patient's resistance had been raised by conservative treatment and the re-ossification which ensued might be ascribed to auto-inoculation or to the decompression of tuberculous foci. Bony ankylosis might take as long as two years though the hip usually became quite stable before this. Mr Wilkinson's view that displacement osteotomy was often of great value in the treatment of tuberculous hip-joints was supported by Mr D. WAINWRIGHT who showed how a combination of osteotomy and an ischio-femoral graft produced rapid bony ankylosis and he showed also the result of supplementing long oblique osteotomy by traction so that not only was apparent lengthening produced by angulation but also real lengthening by distraction. Dr J. DELCHEF advocated early arthrodesis while the disease was still active. Mr H. A. BRITAIN considered that the hip demanded different treatment from the other joints of the lower limb because it could be short-circuited from weight-bearing by ischio-femoral arthrodesis.

Mr J. P. CAMPBELL reviewed 89 cases of tuberculosis of the knee-joint treated at Harlow Wood Orthopaedic Hospital. A quarter of the cases were purely synovial in type. Some cases with osseous lesions developed a serviceable range of movement. Intra-articular arthrodesis resulted in bony fusion much more quickly in cases of more than three years standing than in more recent cases similarly treated. Bone-grafting operations

were reserved for adults in whom they supplemented intra-articular arthrodesis, or were used to promote bony fusion where resection of the joint alone had failed. Dr J. MORTENS, reviewing 76 cases, concluded that arthrodesis should be postponed to the age of 13 or 14 if an epiphysis was involved, but that otherwise 9 years was not too young an age for the operation.

In considering 118 cases of tuberculosis of the foot and ankle Mr B. L. MCFARLAND contrasted the very good though slow response to conservative treatment in children with the frequently poor result in adults in whom dissemination or sinus formation frequently determined amputation. Conservative treatment with or without arthrodesis might be indicated in some younger adults but in the older patient with tuberculosis of ankle or tarsus amputation was not merely justifiable but often imperative.

Mr J. A. CHOLMELEY reviewed 94 of 100 cases of tuberculosis of bones and joints of the upper limb treated in the Royal National Orthopaedic Hospital (Country Branch) in the years 1924-46. The parts affected were shoulder in 36 cases, elbow in 25, wrist in 22, metacarpals and phalanges in 10, and humeral shaft (local lesion) in 1. All patients received conservative treatment supplemented in a few by operation. Arthrodesis of 8 shoulders in adults, excision of an elbow and partial excision of another with drainage for secondary infection, local excision of the local humeral lesion. Arthrodesis of the shoulder, which was often determined by occupation, gave good results in adults, with bony fusion in every case whereas recurrence took place in 3 of the shoulders not operated upon. Two elbows including that excised showed recurrence. There was none in the wrist, metacarpal, phalangeal or humeral cases.

Sir REGINALD WATSON JONES concluded that tuberculosis of bones and joints presented from the viewpoint of treatment two diseases—that in children and that in adults. Both demanded conservative treatment in children; this sufficed but in adults it should often be supplemented by surgical fusion after quiescence of the disease. The position was reversed in the case of the spine which should be more often arthrodesed in children and more rarely in adults because in children conservative treatment of dorsal disease left an unstable spine with increasing deformity whereas in adults lumbar disease nearly always led to spontaneous ankylosis.

Smith-Petersen's Cup Arthroplasty

Dr M. N. SMITH-PETERSEN, who was elected an Honorary Fellow of the Association, gave a lucid account of his operation of cup arthroplasty of the hip illustrated by slides and films. The restoration of shapely smooth cartilaginous articular surfaces was convincingly demonstrated. Mr W. ALEXANDER LAW had found that some 80% of Dr Smith-Petersen's cup arthroplasty operations gave a result satisfying to patient and surgeon, but it was essential that the former should co-operate actively with exercises for two years.

Other Communications

Mr H. G. S. KORVIN concluded from radiological evidence that the pathological changes in pseudocoxalgia were those of ordinary aseptic necrosis and that destructive changes were the biological consequences of the mechanical damage of weight-bearing. Mr F. C. DURBIN had followed up 525 cases of sciatica and selected 147 cases of sciatica with neurological signs treated without operation. Of 123 receiving plaster jackets 19 patients were relieved or cured. Mr G. BLUNDELL JONES had investigated the penicillin content of the synovial fluid of knees with open war wounds 48 hours after a single instillation of 100,000 units. He found retention in adequate concentration provided the effusion was not diminishing. Absorption of effusion led to more rapid disappearance of intra-articular penicillin but at this stage penicillin was no longer needed in the joint. Penicillin given intramuscularly was not found in adequate concentration in the synovial fluid of the joint if completely immobilized.

Mr A. L. EYRE-BROOK showed a patient with bilateral cneplastic forearm stumps and two patients with Krukenberg forearm stumps. The success of the operations (performed by German surgeons) was undoubted, and function appeared particularly good in the Krukenberg stumps on account of the preservation of sensation.

Correspondence

Tudor Edwards Memorial

SIR,—Subscriptions are invited to a fund for the establishment of a memorial to the late Mr Arthur Tudor Edwards, M.D., M.Ch., F.R.C.S., who died on August 25, 1946, at the age of 56.

The remarkable progress of chest surgery in this country is in large measure due to Tudor Edwards's work. His pioneering in this branch was in the main the chief stimulus to its expansion. His singleness of purpose, and the high standard which he set for himself and all those who worked with him, raised a small but important branch of surgery to its present position as one of the great surgical specialties. As the result of this development, men and women have been restored to life and health for whom previously medical science offered no effective aid. Tudor Edwards literally devoted his life to his work. He was unsparing in his service to his patients in all walks of life and many came to him from other countries. On the outbreak of war, in addition to his other work, he undertook the organization of thoracic surgery for the Emergency Medical Service of the whole country and for the Army and Royal Air Force. He carried this heavy burden throughout the war despite the gravest warnings and with the full knowledge that his life thereby would be shortened. One of his greatest contributions was his training and inspiration of younger men who came to him from all parts of this country and from abroad.

There could be no better memorial than to continue this work which was so close to his heart: the training of young surgeons to build on the foundations he so securely laid. It is proposed that a Travelling Scholarship shall be founded in Tudor Edwards's name to enable suitable candidates to study thoracic surgery in special centres. This also will fulfil an urgent national need. For this purpose, a capital sum of at least £10,000 will be required. The Royal College of Surgeons and the Royal College of Physicians have agreed to administer the fund and carry out the conditions of the Trust. Donations and subscriptions under deed of covenant should be sent to The Hon. Treasurer, The Rt. Hon. Lord Courtauld-Thomson, K.B.E., C.B., Brompton Hospital, London, S.W.3.—We are, etc.,

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Calories

SIR,—The claims that we are seriously short of calories are, at least exaggerated but it is unfortunate that Government spokesmen should continue to claim that the average calories per head per day are in the neighbourhood of 2,900. It is fully explained in "Food Consumption Levels in the United States, Canada, and the United Kingdom" that these figures are derived from estimates of the amounts of food imported and produced in the country. The surveys of the Ministry of Food are made on representative families. They show that the average per head ranges from 2,300 to 2,400. Meals taken outside cannot raise the total to more than 2,650. The gap between the amounts that we can get and 2,900 is only too obvious.

The calculations of Bransby and Magee in the *British Medical Journal* of April 19 (p. 525) show how difficult it is to reach the standards of the League of Nations without excessive consumption of potatoes and exchange of points for B.U.s, and 2,900 per head per day as an average for the whole population, is well above this standard. The figures given by J. C. Drummond (*Sth. med. J.*, 1946, 39, 18) show that the average 2,273 calories consumed in 1944 amounted to just under 97% of requirements: very similar figures were found in similar surveys made before the war.

With the larger amounts now eaten outside the home the average in representative families must be well up to require

ments. But that does not justify the claim that we are getting as much as 2,900 calories, nor does it mean that bread rationing does not make it difficult for some individuals to get enough calories—I am, etc.,

London

JOHN MARRAS

"Costoclavicular Compression"

SIR,—The paper by Prof. E. D. Telford and Mr. S. Mottershead (March 15, p. 325) raises again the question of the cause of disappearance of the radial pulse with certain positions of the arm in some cases of cervical rib. Are the effects on the main artery of the limb mechanical, due to its compression by the scalenes as suggested by J. B. Murphy in 1906 and Wingate Todd in 1911 or to its being squeezed between the clavicle and the rib as claimed by K. C. Eden in 1939 and supported by Wilfred Trotter? Are they due to the effect on sympathetic nerve fibres in the lowest trunk of the plexus produced by stretching over the rib as Wingate Todd postulated in 1913 and Telford and Stopford elaborated in 1930? Or are they, as Telford and Mottershead have now recently suggested, caused by the two heads of the median nerve gripping the artery when the arm is pulled downwards? Most surgeons who have had experience of these cases will probably agree with Telford and Mottershead that there is no one cause common to all cases. These writers have shown that forcible depression of the shoulder widens rather than narrows the costoclavicular interval but lest it be thought that costoclavicular mechanical compression cannot therefore be a cause, we would refer to a recent case which came under our observation.

A boy aged 15 was seen in September, 1946, with a pulsating swelling above the inner end of the right clavicle which proved to be the subclavian artery rendered unduly prominent as it passed over the lower splayed out end of a complete cervical rib. There were no symptoms and it was decided to leave well alone. The boy then began work on a machine which involved much use of his right arm and soon found that from time to time the arm began to ache. He was re-examined, and it was found that elevation of the shoulder obliterated the radial pulse. It was clearly demonstrated that this was due to the inner end of the clavicle moving upwards and slightly backwards towards the large cervical rib and compressing the artery at this level. At operation this was verified, there was an aneurysmal dilatation of the artery with some perianeuritis at this site. Removal of the lower end of the rib freed the artery from compression by the moving clavicle.

Our object in referring to this case is to emphasize that costoclavicular compression of the subclavian artery may occur from upward and backward movement of the arm and in certain cases such movement may be as effective in obliterating the main artery as may depression of the shoulder girdle in other cases.—We are, etc.

Cardiff

I AMBERT ROGERS
ARNOLD S. ALDIS

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The Vole Bacillus

SIR,—Your timely leader (May 31, p. 770) on the recently published monograph on the "Murine Type of Tubercle Bacillus" (the vole acid fast bacillus) by A. Q. Wells, the discoverer of the vole bacillus vaccine merits the closest attention of all interested in the subject of active immunization against tuberculosis. Having last year paid a visit (sponsored by the Public Health Committee of the County Borough of Luton) for whom I acted as consultant physician for tuberculosis and diseases of the chest and to whom I am greatly indebted to the Scandinavian countries I had the opportunity of studying for myself the work done there. The enthusiasm for B.C.G. in Norway, Sweden and Denmark was widespread but nothing I saw impressed me more than the work of Prof. Arvid Walleröf of Stockholm who has certainly been the pioneer of B.C.G. vaccination in Sweden where he began his work at Gothenburg in 1926. His confidence in the value of B.C.G. persists although it is pertinent to note with reference to your leader that he himself urged that it would be of greatest value if we

in this country were to use the vole vaccine. He gave me the impression that he believed it would eventually supersede BCG.

I think there is good evidence for the belief that both methods of inoculation (a) are harmless to humans (b) increase resistance to tuberculosis (c) are of value only in tuberculin negative subjects. While it is true to say that BCG has stood the test of time in many countries and its harmlessness has been established by its practical application on a large scale in many parts of the world nevertheless there is good evidence that the vole bacillus has the following advantages over BCG: (a) it is apparently a more potent immunizing agent, (b) its virulence is more stable (the varying virulence of BCG in Norway, Denmark, and Sweden was significant and I was told on more than one occasion that some of the strains were losing their virulence), (c) there is reason to believe that tuberculin allergy following vaccination with it was greater and occurred earlier than that following BCG.

The time seems surely to have arrived when an authoritative body such as the Medical Research Council should institute a clinical trial with control experiments for statistical purposes of what they regard as the most effective method of tuberculosis vaccination. We may then be able to fill in the gaps which Continental and other workers, often through lack of opportunities, have omitted.

One final word you say in your leader that the multiple puncture method is now considered the best method of inoculation with BCG. This is contrary to my own impressions for wherever I went the intracutaneous method devised by Wallgren was, when correctly performed, regarded as the quickest most valuable and practical, and it certainly afforded a more accurate measure of the dosage. Certainly the multiple puncture method with the Birkhaug-Rosenthal instrument seemed to meet with little favour in most of the clinics I visited—I am, etc.,

London W 1

PHILIP ELLMAN

Nicotinic Acid Tolerance Test

SIR—In their excellent paper (May 17, p. 672) on their nicotinamide saturation test Drs P. Ellinger and S. W. Hardwick note that, in pellagrins, there is a markedly low response on the administration of nicotinamide but that this response can be increased, in pellagrins only, by the administration of methionine.

In therapeutic tests with nicotinic acid (the precursor of nicotinamide) in hepatitis cases it was noted that the usual vasodilatory response seems to be very much delayed. To investigate this a nicotinic acid tolerance test has been devised in which the patient or control takes 200–300 mg nicotinic acid orally. If there is no response in 15 minutes, further 100 mg is given every 15 minutes until the flushing of the face is reported. The work has not yet reached the stage of publication. However the preliminary results noted on over 120 cases seem to endorse and also amplify Ellinger and Hardwick's findings.

The following conclusions seem to be justified so far:

(1) In 'normal' subjects—that is, in patients and controls with out evidence of hepatitis—there is a response on 200–300 mg, so much so that much higher values justify further investigations of the liver functions. Two unsuspected cases of chronic amoebiasis were so detected.

(2) The tolerance seems to be within normal limits in cases of sprue, congestive heart failure (only early cases could be tested), chronic mild cholecystitis, and in one case of liver secondaries.

(3) There is a marked, increased tolerance in cases of infective hepatitis (with or without jaundice), infective mononucleosis, homologous serum jaundice and in subacute and chronic amoebiasis. The tolerance figures range between 500 and 1,200 mg. No cases of cirrhosis or pellagra were available for the test so far.

(4) The tolerance seems to be proportionate to the inflammation of the liver parenchyma, as judged by gravity of the condition of the patient and size and tenderness of the organ, but there seems to be no connexion between the deepness of the jaundice and the tolerance figure.

(5) Tested only in generalized inflammatory conditions, the tolerance seems to be more sensitive than the usual liver functions tests. The Takata-Ara reaction will be hardly positive (+) under a tolerance figure of 1,000 mg, and signs of a deranged carbohydrate metabolism are rare under a tolerance of 700 mg. The test is useful

as a ward test, and is of some help in the diagnosis of obscure epigastric symptoms especially in the exclusion of chronic amoebic hepatitis in soldiers returning from overseas. Like any ward test or any test it is probably not perfect and does not give more than a useful hint.

(6) The same tolerance values are obtained if the test is repeated eight hourly. There is, however, a sudden decrease in the tolerance when recovery sets in, and this change can be quite dramatic—e.g., after 1–2 emetine injections.

Here a word of warning must be given. Massive doses of nicotinic acid (200 mg t.d.s.) combined with high protein diet (shakes of household milk and dried eggs or soya flour) seem to have some therapeutic effect in cases of infective hepatitis. If higher doses are given, or the test is repeated daily, thiamin and riboflavin (6–8 mg each) should also be given. In one case, myself acute sprue symptoms were provoked by repeated nicotinic acid tests amounting to 1,800 mg daily for 5 days. The symptoms quickly cleared up on massive doses of riboflavin.

In trying to interpret the mechanism of the increased nicotinic acid tolerance one is inclined to assume that the compound is either retained by the liver for the purpose of utilization in repair, or else its release by the liver is delayed by the lack (or increased utilization) of sulphur containing amino acids—Ellingers and Hardwick's 'methyl donors'. Ellingers and Hardwick's findings seem to support the latter assumption. They noted increased urinary output of nicotinamide methochloride on the exhibition of methionine in pellagrins, and no doubt the liver parenchyma suffers in that disease. On the other hand the fairly constant tolerance figures in the nicotinic acid test, and the constant urinary output of nicotinamide methochloride in the saturation test, do not confirm the assumption that the delay in passing the liver is caused by the lack of 'donors' only, if this was the case one would expect daily increasing tolerance. Probably much more work will have to be done on the subject before the role of the liver (and that of the kidney) in the nicotinamide metabolism will be understood—I am, etc.

Colchester Essex

A. ERDEI
Capt. R.A.M.C.

Physical Therapy of Mental Disorder

SIR—A careful perusal of Dr D. W. Winnicott's paper (May 17, p. 688) has led me to the conclusion that he intended it to be provocative rather than wholly serious. Dr Winnicott's main objection to physical methods of treatment in psychiatry is that they are 'unscientific,' and he states, 'Much of the objection to convulsion therapy would disappear if the mechanism by which results are obtained were understood. Would Dr Winnicott, on similar grounds, say fifty years ago have withheld digitalis in a case of cardiac oedema or quinine in a case of malaria, or would he to-day withhold malaria fever in a case of general paralysis?'.

The practising psychiatrist of to-day must answer the question: Shall I allow this melancholic patient to remain indefinitely in acute depression with all its mental suffering not excluding risks of suicide or death from inanition due to refusal of food or from aspiration pneumonia due to tube feeding? Shall I give him ECT and restore him fit and well to his family in approximately six weeks? Or again, when faced by a case of acute delirium (manic or melancholic), shall the psychiatrist withhold ECT and assure the relatives that death is almost inevitable, or shall he give ECT with at least a three to one chance of success? Or again, should a psychiatrist subject an anxiety neurotic mother to months of psychological investigation with the almost unbearable strain of her symptoms on her children and husband, not to speak of risks of suicide or infanticide, or should he not rather prefer to restore her to complete happiness and health with five or six convulsions?

A young man is suddenly stricken with an acute schizophrenic illness. The 'scientific' psychiatrist must tell his father that nothing can be done and that almost inevitably the patient will rapidly drift into a condition of profound dementia. The 'empirical' psychiatrist will immediately adopt treatment by insulin shock with at least a fair prospect of success. In cases selected for leucotomy (almost always mental hospital cases where both insulin shock and ECT have failed but where the residual mental capacity appears reasonably good) the choice



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again between the "scientific" method of doing nothing, thereby condemning the patient to lifelong incarceration, and the "empirical" method of leucotomy with its reasonable prospect of success

Surely Dr Winnicott cannot defend many of his statements as being either "accurate" or "scientific"—e.g., "convulsion therapy inevitably leads away from the psychological approach to a biochemical and a neurological one" This I submit is a highly controversial statement My own experience is that all these physical methods require for their correct use accurate case histories, precise observation of their effects, and a sound psychological insight into the patient's mentality both before and after treatment To delegate these treatments to junior medical officers in a sort of hit-or-miss fashion is of course *bad psychiatry* which no reputable psychiatrist would defend

Dr Winnicott's greatest objection, however, appears to result from the implied threat such treatments have to his apparently beloved "analytical" psychology This is too big a subject to dilate upon here, but I would ask Dr Winnicott to consider whether he is not himself "unscientific" in assuming that the many amazing concepts of Freud (which, by the way, are outside the realm of scientific proof or disproof) are the only ones of value in the psychological approach? For example, modern child guidance, with its right insistence upon the emotional development of the early years and the importance of "security and affection," appears to derive nothing from Freudian theories but to be based upon the work of Adler (who rejected Freud's teachings) and of Cameron and others in England

Lastly, I am of the opinion that such misconceptions as are evident in Dr Winnicott's paper must to a great extent be placed at the door of psychiatrists themselves When we as individuals become less "aloof" and "mysterious," and when we cordially invite all neighbouring practitioners and specialists to visit our hospitals at any time and to see their own or other patients undergoing such treatments, we shall hear very little of the "unconscious hate" that notoriously coloured the management of the insane up to recent times—I am, etc.,

Armagh N Ireland

ROBERT THOMPSON

Allergic Reaction to Penicillin

SIR—I wish to report the following case history showing a marked allergic reaction to penicillin therapy which occurred in the maternity department of Dorking County Hospital

CASE REPORT

A primipara aged 40 was admitted as an emergency with the history of early rupture of membranes 76 hours previously, uterine inertia, and commencing foetal distress, as evidenced by passage of meconium, though heart sounds were regular and of fairly good quality Rectal examination showed the cervix half dilated, head in brim not fixed

Lower segment caesarean section was performed under general anaesthesia shortly after admission Much meconium in uterus Baby shocked but responded well

In view of the history and expected stormy convalescence penicillin therapy was instituted immediately after delivery The preparation used was penicillin in oil, given intramuscularly with a preliminary dosage of 400,000 units followed by 200,000 units 12 hourly On the second day after delivery paralytic ileus developed Treatment consisted of morphine, half-hourly duodenal aspiration through a Ryle's tube acetylcholine intravenous drip, radiant heat to abdomen, and turpentine enemata Response to treatment occurred within 48 hours On account of a sustained low grade pyrexia during the puerperium due to a mild genital tract infection, penicillin in oil in the above dosage was continued for 16 days, the total dosage being 6,400,000 units

On the day following cessation of penicillin therapy a severe urticarial reaction occurred It affected the face and limbs and later involved the trunk also It was unaccompanied by fever or tachycardia but caused such severe pruritus as to keep the patient in the next bed awake by the vigour of the scratching Adrenaline, calcium gluconate, and local sedatives gave some relief, but fresh patches kept appearing for a total duration of 6 days, and then cleared up completely Mother and baby were sent to the hospital on convalescent home and discharged well and thriving 5 weeks following delivery

I would add that this patient had not previously had any penicillin therapy—I am, etc.,

Dorking Surrey

J C CUTHBERT

"Benadryl" Treatment of Penicillin Allergy

SIR—Accounts of the allergic response to penicillin have appeared recently in the journals These reactions have been both to intramuscular and local applications of the drug The commonest reaction is urticaria alone but occasionally a full anaphylactoid response is seen with fever, hydrarthrosis, enlargement of the lymph glands and bronchial spasm This often occurs 10 to 14 days after the commencement of penicillin treatment and resembles serum sickness The intense pruritus which accompanies the urticaria is usually the most troublesome feature, causing scratching and inevitable insomnia

A patient of mine (G A), a girl aged 19 years, developed a paronychia, and I first saw her with pus under the left thumb-nail and slight lymphangitis The nail was removed, penicillin in oil, 125,000 units in 1 ml, was given daily for three days, and the thumb healed uneventfully

Ten days after the commencement of penicillin she developed an urticarial rash on the back and shoulders, this was associated with intense itching She had no family or personal history of allergy, and as far as could be ascertained she had not been exposed to any other allergen The following day, after a sleepless night, she had a temperature of 100° F (37.8° C), there was generalized urticaria, which was most marked about the face, and she was also dyspnoeic On examination the axillary and inguinal glands were enlarged, on auscultation of the chest there was a marked expiratory wheeze there was no evidence of hydrarthrosis Calcium lactate 30 gr (2 g) and phenobarbitone 1 gr (65 mg) were given six-hourly, but the following day the symptoms had increased

Having used "benadryl" (dimethyl aminoethyl benzhydryl ether hydrochloride) successfully in angioneurotic oedema, I commenced treatment with 100 mg (two capsules) at once and a further 50 mg six-hourly The response was most dramatic within an hour all urticaria had disappeared, the itching and dyspnoea ceased, and the patient was symptom free There has been no relapse

While further cases will have to be described "benadryl" appears to be the drug of choice in the long term treatment of anaphylactoid phenomena, "benadryl" being perhaps to adrenaline what trinitrin is to amyl nitrite—I am, etc.,

Liverpool

GEOFFREY DEAN

Pruritus Ani as an Allergic Condition

SIR—The association of pruritus ani with allergy is hardly investigated The unsatisfactory results of treatment in many cases, however, make it desirable to get better information on aetiological factors in these conditions A case of a man who came into my observation first on July 8 1946 illustrates this well

The patient was 66 years old There was a family history of allergy, the son suffered from asthma a daughter had attacks of urticaria The patient has had sinus and antrum operations for "sinus infections" from 1898 on, the last time in 1929 In 1943 piles were operated and "proctocaine" injected The skin proved to be allergic to skin disinfectants All these years the patient suffered from severe irritation of the anal region which "made life miserable" to him Three weeks before he saw me first he again had piles removed by operation A slight attack of pruritus had occurred 40 years earlier He has also suffered from urticaria and eczema on his head, otherwise he has been a healthy man all his life

On examination I found a scar on his right forehead due to the operation on his right frontal sinus The anal region was in an irritated state, excoriation, thickening, and oedema of the skin were marked, and there were cracks and slight fissures in the perianal region The middle lobe of the prostate gland was moderately enlarged A differential blood count showed a hyper eosinophilia of 6%, basophils, 4%, polymorphs 67%, lymphocytes 23% Skin tests gave positive results to moulds, cheese, and other food proteins His condition was worse when constipated

From his faeces *Bact coli* and *Staph aureus* were cultured and used for an autogenous vaccine together with a desensitizing mixture of the positive allergens Apart from that the patient was given vitamin E and testosterone tablets Local treatment was discontinued His condition started to improve after three weeks and the anal findings showed a normal picture and normal skin ment The patient was last re-examined on May 8 and was found absolutely well and the anal region normal As repetition

of his blood count elsewhere had given no signs of hypercosinophilia I had it re-examined in October, when a "hypercosinophil phase" of 11% was found

F R Rugeley published a paper on allergic causes of pruritus ani recently (*Annals of Allergy* 1946 4 374 and 396) and reported about 14 cases of pruritus ani in which a connexion with allergic causes was revealed and rapid improvement achieved by treatment on these lines, whereas the conventional treatment, tried before, had proved to be unsuccessful. He holds the opinion that excoriations, oedema of the skin, thickening or exudation vary in intensity and that papillitis fissures, and other changes thought to be causative factors are often secondary and not primary changes. He recommends strongly that allergic causes of pruritus ani should be investigated before radical procedures are suggested, such as surgical interference, x-ray treatment, local injections, divisions of nerves, or tattooing of the anal margins with anaesthetics—I am, etc.,

London W1

E M FRAENKEL

Congenital Hepatic-duct Malformation

SIR—Length of survival may warrant recording the following case. A female child 10 months old had been jaundiced since her normal birth. Weight records were 7 lb (3.1 kg) at birth, 9 lb (4 kg) at 6 months, 12 lb (5.4 kg) at 10 months. Absence of breast milk had resulted in cows milk feedings. Three older children were healthy.

The child was lively and profoundly jaundiced. Her spleen extended three fingerbreadths below the ribs, and the nodular liver extended below the umbilicus. The urine was dark, contained bile, and the stools were light. Her haemoglobin was 65% red blood count 3 000 000, white blood count 5 100, and the Wassermann was negative in mother and child.

On Dec 12, 1946, the abdomen was opened in the hope of finding a gall-bladder for anastomosis. A small amount of bile-stained fluid appeared. The enlarged liver was hobnailed and had rounded borders. No gall-bladder and no extra-hepatic ducts were present. The spleen surface was granular. Prof J H Fisher examined a biopsy specimen and reported obstructive biliary cirrhosis. Post operative condition was good until Dec 18, when hepatic failure developed. On Dec 23 the wound disrupted with bowel prolapse. The child was unconscious, and the wound was closed with through and through silkworm sutures without anaesthesia. The child died eight hours later having lived ten months and eight days—I am, etc.

Arkansas U.S.A.

FRANK RIGGALL

De Morgan's Spots

SIR—I was much interested to read the paper by Capt A R Murison, Lieut J W Sutherland and Flying Officer A M Williamson on De Morgan's spots (May 10, p 634). Their observations on a very large number of patients are a valuable addition to the literature on the subject and incidentally a confirmation of earlier findings by other authors. I would however like to point out that the literature on the 'ruby spots' is by no means extremely meagre and the erroneous impression that 'there is an entire absence of precise information on their significance' is obviously due to some confusion in the terminology.

'De Morgan's spots' is an obsolete term almost wholly unknown outside this country and rarely met with even in the British literature. The more or less generally accepted name for this type of telangiectatic skin lesion is angioma senile. This term is generally used in the international literature, but also by English authors (e.g. Colcott Fox, *Brit J Derm* 1908, 20, 145) and in English textbooks of dermatology (McLeod Sequeira). Less common synonyms are angioma eruptivum, angioma tuberosum, angioma nodulare cutis, senile ecstasia, perles sanguines. The pathology of angioma senile, including its relationship to malignant disease, has been the subject of comprehensive investigations mainly by French and German authors. In my monograph on Haemangiomata and Telangiectasias of the Skin (Jadassohn *J Handbuch der Haut- und Geschlechtskrankheiten* Vol 12 Pt 2, Berlin, Julius Springer, 1932) I dealt exhaustively with angioma senile (pp 379

398, 404). May I be allowed to quote just a few passages from what I said then:

'These tiny multiple angiomata are of interest also because under the name of Leser-Trélat's symptom, their presence has occasionally been regarded as indicative of internal carcinoma. Trélat de Bouciud and subsequently Leser believed that the incidence was higher in patients with internal carcinoma. The authors (not De Morgan) suggested therefore that senile angiomata had a certain diagnostic significance, especially when present in early adult life and in great number. This concept, has however, been disproved by Gebele, Raff, Reitzenstein, Rosenbaum, A Symmers, and Wolff. Summing up I said:

There is little evidence to support the view that they [i.e. senile angiomata] are of pathognomonic significance in the diagnosis of malignant tumours.

As for the histological structure of angioma senile, it seems not quite correct to say that the lesions have the character of simple haemangioma. More aptly they may be described as telangiectasias because—I am quoting again from the above monograph—'there is no evidence of a formation of new blood vessels. Development and enlargement of the minute tumours are entirely due to dilatation of (pre-existent) capillaries or small veins. In addition, pathological changes of the cutaneous tissue, such as destruction of the elastic fibres and degeneration of the collagen are often though not in all specimens found to be present in the neighbourhood of the dilated vessels—I am, etc.,

Manchester

L WERTHEIM

Prognosis of Primary Pleural Effusions

SIR,—I read with great interest Dr Brian C Thompson's article (April 12 p 487) on the prognosis of primary pleural effusions. I would like to suggest a fourth factor which seems of equal importance to the three that he describes as being necessary in the correct assessment of the development of the effusion over a period of five years. This is the nature and duration of the initial treatment of the pleural effusion. Figure quoted by Coope suggest that a period of several months treatment under sanatorium regime when the pleural effusion is first manifested greatly reduces the incidence of tuberculosis subsequently. He states that in cases thus treated there is less than a 10% incidence of tuberculosis, whereas in untreated cases figures up to 60% are quoted.

It would be very interesting to learn whether Dr Thompson's cases underwent any sanatorium treatment when the pleural effusion first developed, and, if so, how this group compared with those who had no initial treatment with regard to the development of tuberculosis subsequently—I am, etc.

London N 6

J D L REINHOLD

REFERENCE

Coope Robert (1945) *Diseases of the Chest* Edinburgh

Acute Non-specific Diarrhoea and Dysentery

SIR—I was surprised to read Dr G R Kershaw's article (May 24, p 717) because I had not heard such views expressed by anyone of the present generation. I can only say that some of us slept for two months in a troopship to the Far East without at most a pair of short pants for cover, with a louver directed at our naked forms without ill effect. In India many of my acquaintance slept almost nude under fans through very hot weather and they reputedly were less frequently troubled with epidemic diarrhoea than others who slept in a more temperate way.

Any epidemics of local "tummy rot" could well be ascribed to the lack of hygiene in Indian cooks and cookhouses. In fact one was persuaded that the less covering to which one could accustom one's body the more resistance one achieved to local minor diseases—a view which received the approval of Army authorities—I am, etc.

Bournemouth

G DALLEY

SIR—I read Dr G R Kershaw's article on acute non-specific diarrhoea (May 24 p 717) with interest. From my own experience I am convinced that chilling of the abdomen is a common cause not only of acute diarrhoea but of chronic locomotions. During six years in South China I was able to state the effects of chilling on the abdomen, often after violent

exertion such as digging or mowing a rough lawn with an old lawn mower. The abdominal wall felt icy to the touch, and after such exertion I would have an acute attack as described. It could not be put down to icy water as we had no refrigerator and usually the water remained tepid after boiling. Stools were negative.

Apart from these acute attacks I normally had three or four loose stools daily during the hot weather. I eventually found that a 'belly pad' consisting of about a square foot of woollen vest, lined on the inside with an old piece of 'lock-knit' cotton material, tied round the neck and waist, was almost specific. The Chinese (Hakka) people dress their small children in a 'belly pad' in the hot weather—I am, etc.

Leisburn, Yorks

ALAN A. CROOK

Acid Drinks and Sulphonamide Therapy

SIR—Dr Petronella Potter (May 10, p. 654) raises a theoretical point on the effect of fruit-juice drinks on the urinary pH, but I don't think she can have taken the precaution of testing it in practice. The same point occurred to me when working with heavy doses of sulphadiazine in a country whose climate required a large fluid intake to maintain adequate urinary output. The intake was largely of fresh orange- and lemon-juice drinks. To test their effect on urinary pH, plain water was substituted for them in one group of patients. There was no significant difference in the urinary pH of the two groups as tested by universal indicator. There therefore seemed no practical justification for withholding the fruit drinks—a welcome conclusion, since the patients' general condition suffered on the water regime, which they did not enjoy taking and would avoid if possible.

As citric and tartaric acids and their salts are organic and liable to catabolism in the body, even Dr Potter's theoretical arguments are in doubt—I am, etc.

Oxford

C. W. M. WHITTY

Post-operative Pulmonary Atelectasis

SIR—Dr M. H. Armstrong Davison (May 17, p. 695) says that I am tilting at illusory windmills in emphasizing the importance of the routine use of simple postural coughing in the avoidance and treatment of post-operative atelectasis. I was not trying to instruct Dr Davison himself, I think that would indeed be tilting at an illusory windmill because clearly we are in general agreement, but I am certain that we can all do a most important service by emphasizing the principles of simple prophylaxis and treatment which are not yet sufficiently known.

Bronchoscopic aspiration has many advantages in proper circumstances. The object of my letter was to protest against the fostering of the belief that when confronted with a post-operative atelectasis one should at once perform or ask for a bronchoscopy. It is true that anaesthetists should be able to perform bronchoscopic aspiration, but it is going to be a long time before there are enough anaesthetists up and down the country skilled enough to do so. In the meantime post-operative sputum retention is a very common occurrence in all hospitals, great and small. Its ill-effects can be avoided or overcome in the majority of cases by a simple drill available at once in every one. I find that there is very widespread ignorance of this fact and I think that all teachers have a duty to emphasize to house officers and nurses that an efficient remedy lies in their own powers and should be used. Bronchoscopic aspiration should be reserved for the small proportion of cases that fail to respond at once—I am, etc.,

London W 1

R. C. BROCK

Use of Drugs in Asphyxia

SIR—For the correct use of drugs in asphyxia it is at least desirable to know something of the physiology of respiration. Prof Barcroft's recent researches into foetal respiration have shown us a whole new mechanism of respiration which is hardly hinted at in the normal physiology textbooks. They serve to emphasize the essentially reflex nature of respiration. So far as the brain is concerned normal ordered respiration involves a number of centres at various levels in and above the medulla—asphyxia "blackouts" (in flying, etc)—these centre from above downwards, and in cases where the onset of respiration

is postponed the possibilities lie in the establishment of a reflex gasp involving some cutaneous or other peripheral stimuli acting at the lowest level—i.e., low down in the medulla. When once respiration is properly established and the brain fully oxygenated, the respiration is thenceforward regulated by the well known mechanism described by physiologists. Incidentally Prof Barcroft shows that in the foetal sheep the earliest respiratory movements are elicited by touching the snout area alone, and this is, of course, the area on which the lamb normally drops when it is born, thus providing the maximum cutaneous stimulus to the most sensitive area.

In view of Barcroft's researches, the most effective way to combat asphyxia neonatorum would seem to be to apply a cutaneous stimulus—as in the traditional slapping or by directing a vigorous jet of oxygen on to the nose or into the mouth—or, if that failed, to give some drug which would enhance the sensitiveness of the nervous system so that it will respond to stimuli to which it otherwise would not—in other words, to give something in the nature of a convulsant. This justifies the old-fashioned recommendation of giving as much as 1/400 gr (0.16 mg) of strychnine (now, I think, never used though I refer to this again later) and the more modern use which I have described several times, of cardiazol-ephedrine. Cardiazol is a well known convulsant, and in cases in *extremis* I have used it successfully in doses which, in a fully oxygenated baby, are certainly convulsant. (The largest dose I have used, and with complete success, was for a baby who failed to make any response for 15 minutes but finally did so after receiving 0.5 ml intramuscularly and then two doses of 0.5 ml intracardially.)

This theoretical discussion, with its slight experimental demonstration, clears the way for a consideration of the possible bearing of Barcroft's work on the drug treatment of asphyxia in later life. We all know that asphyxia or high dosage of carbon dioxide depresses the sensitivity of the respiratory centre in the medulla, so that finally respiration ceases whatever the concentration of carbon dioxide may become. The question then becomes: Does the original basal or protopathic mechanism of respiration—i.e. responding to cutaneous stimuli instead of to asphyxia—still persist, or is it also abolished with the more normal pattern? I have already mentioned that Barcroft found that at a late stage in foetal life the cutaneous response persists in the foetus when the oxygen tension in the cerebral circulation is almost inconceivably low—i.e. when the response to asphyxia is practically abolished. There are various clinical observations which suggest that in adult life an early developed mechanism may be capable of functioning even though the normal later one is not—e.g., in insensibility due to cerebral haemorrhage, etc. the involuntary basal functioning of certain organs (bladder, etc.) shows itself even though it may have been suppressed in man for more than half a century while in some types of heart disease the ventricle may reassume its own fundamental rhythm even though for 70 years or more it has followed quite a different one impressed by the auricle. If this is so, the logical way to treat a case of asphyxia would be to try to utilize the original but dormant cutaneous method of stimulation until the re-oxygenated brain reasserted its normal method of control.

I have described in the *BMJ* and repeated at the A.M.C. the case of a boy who was immersed in the river for about 15 minutes and who was responding hardly, if at all, to efficient artificial respiration. I injected 10 ml of cardiazol-ephedrine and 1/30 gr (2.1 mg) strychnine sulphate turned him over and gave him a few vigorous slaps, with the result that within a minute he was crying lustily and continued to do so for an hour or so. He finally made a complete recovery in spite of a rising pneumonia. This is only one case, but it does suggest that the injection of convulsants in cases of asphyxia may prove a most valuable and rapid method of treatment. I stress the importance of rapidity, for though cases have recovered after prolonged artificial respiration, all the evidence we have shows that the brain is extremely liable to damage from complete lack of oxygen, and if we can reduce the period of asphyxia we can—if it is not tautology to say so—hope for a much greater percentage of complete recoveries.

It is worth mentioning in this connexion that our fathers constantly used injections of strychnine as a respiratory stimulant but this practice has fallen into desuetude since the physiologists proved that in the laboratory strychnine has no such

stimulating effect. Barcroft's work suggests that it may well be of the greatest value where the normal mechanism is failing and the organism possibly having to rely on a more primitive one. If this is so it is but one more example of the clinical acumen of our forefathers which has been discredited not because it was wrong but because its mode of action was misunderstood, or because the conditions of the physiological experiment were such as to prevent its giving a correct answer. "The proper study of mankind is man," and though cats and dogs are useful, they can never replace the acid test of human experiment. I suggest that those with the requisite opportunities might try the application of Barcroft's work in the way I have indicated—I am, etc.

Winsford, Cheshire.

W. N. LEAK.

Artificial Insemination

SIR—Dr Eustace Chessers letter (May 24, p. 738) is a valuable contribution towards a correct assessment of the problem of heterogeneous insemination. He admits having dealt with cases of homologous and heterogeneous insemination and now condemns the latter.

Recently in Newcastle we were addressed on the legal problems of this matter, which was dealt with from every aspect. We were informed that the donor should be a married man with one or two children and of proved health. I made, *inter alia*, the following remarks: "Artificial insemination of cattle is justifiable as it involves no ethical problem. The majority of the males are castrated and it is only reasonable for commercial purposes that the remainder may distribute their favours, as after all we eat the progeny. I have never done homologous insemination but I would consider it ethically correct to aid fertilization if, for example, coitus was impossible owing to vaginismus or some other abnormality. Heterogeneous insemination brings in a special factor which revolts one. What type of individual can the donor be who hawks his seminal fluid round the countryside at so much per c.c.?"

Judging by the way a large mixed audience received my remarks from personal talks, letters, and phone messages, I am sure that the bulk of them felt as I did. Dr Chessers' letter strikes me as being written by one with deep conviction—I am, etc.

Newcastle-upon-Tyne.

FARQUHAR MURRAY.

Infant Deaths

SIR—With reference to Dr S. Waddy's letter on infant deaths (May 24, p. 737), in which he draws attention to the danger of too great a weight of blankets on an infant's cot, a recent necropsy which I performed may be of interest.

A healthy baby aged four weeks was found "panting for breath" one morning in its cot and died before the arrival of a doctor. A necropsy revealed all the signs of asphyxia in an otherwise normal infant. At the subsequent inquest the mother was asked about the clothing and bedclothes of the child. The disclosure that on the warmest night of this year the unfortunate babe was bedecked in (1) a woollen vest, (2) a woollen coat, (3) a woollen night-dress and (4) woollen bootees and had as covering four woollen blankets and an eiderdown—the blankets being well tucked in—left no doubt as to the cause of the asphyxia. Comment is unnecessary—I am, etc.

Northampton.

RUBY O. STERN.

Keeping Mother and Baby Together

SIR—We have read with much interest and pleasure the paper by Prof. J. C. Spence on 'The Care of Children in Hospital' (Jan. 25, p. 125) and note that he approves of the method we have been using as much as possible for the last 20 years and exclusively for the past 6 years in a small special hospital—namely, encouraging every mother to nurse her own baby (*vide BMJ*, Feb. 3, 1945, p. 159 and Sept. 7, 1946, p. 337). Given the right conditions the system works well and gives excellent results. Babies want constant attention and 'mothering' to break the bond between mother and baby in order to introduce an unnecessary hurdle into treatment which may spell the difference between success and failure. We have noted also the objections of Drs W. E. Crosbie and J. Lorber (Feb. 15, p. 266) to the mother-and-baby system of nursing.

We in our work are of course frequently up against the same trouble of a mother finding it difficult to leave her home and family. But here is where grandma or auntie will nearly always step into the breach, someone can invariably be found to look after the home. The only insuperable difficulty is when the mother herself is ill and possibly in hospital. In such a case we get a 'foster mother,' if possible again an aunt or grandmother or other relative, and it is astonishing how soon the foster mother and baby get fond of each other and it is this bond of fondness which is so valuable to the baby patient, in its time of trial.

Again we would emphasize it is of no use putting a mother with her baby in a ward. They must have a little room to themselves which is their own private room and under these conditions the classical description by Prof. Spence of a children's ward commencing 'The room is vast—is never applicable. The simple fact is that there are not enough nurses and not enough time for baby patients to be given all the attention they require—We are, etc.

H. P. PICKERILL,
CECILY PICKERILL.

Wellington, N.Z.

Health of Children Attending Day Nurseries

SIR—The observations made by Dr Margaret E. McLoughlin as stated in her preamble (May 3, p. 591) cannot lead to definite conclusions, owing to the impossibility of assessing the relative effects of economic and environmental factors on such a survey unless the obvious course is taken of studying these vital social factors simultaneously with the purely pathological ones attempted. Out of many points which require further investigation that reading "The inference that there were no significant physical differences at the start of nursery life between day nursery children and those living at home may reasonably be assumed to apply also to the present survey" requires more evidence than that afforded by examinations by a variety of observers on 290 children "scattered all over the country" and then statistically compared to the 4,297 children in the major groups studied.

From my experience of the basis of admission to day nurseries priority is invariably reserved for mothers forced to work, the reasons leading to this necessity operate before and after pregnancy, therefore their level of nutrition and take-up of extra rations and vitamin supplements (owing to lack of free time and financial stringency) is lower than that of the normal home living mother. One would not expect the babies born to this group to have the optimum physique and resistance obtainable. Day nursery care would have to overcome this initial inferiority before any reasonable comparison could be made between them and other groups. If the statement I refer to can be scientifically proved I suggest the whole of our nutrition policy for expectant mothers must be based on a fallacy.

This report emphasizes the vital importance of good staffing and management and should reinforce the struggle to raise the standard of training in child welfare to a national university level as advocated by the report issued in 1946 by the National Society of Children's Nurseries. These "extensions of the home" must and can be made safe in order that they may assist the solution of a multitude of acute social problems—to quote a few the work of the Marriage Guidance Council—to enable the mother to meet the psychological needs of toddler, school child, and adolescent with the obvious bearing on the problems of juvenile delinquency, promiscuity, and venereal disease and to enable the mother to obtain the maximum benefit from the provision of the National Health Service for treatment for herself and young family. For all of these I welcome the suggestion that the attendance of children 'for two or three half days a week is a question worthy of investigation'—I am, etc.

Farnham, Surrey.

NORA M. JOHNS.

Food Poisoning

SIR—I was much interested to read the paper in your number of April 5 (p. 442) about an epidemic of food poisoning traced to staphylococcal contamination of sandwiches. It recalled to me a case that was clinically typical Asiatic cholera that occurred in a country practice in the Orange Free State in the year 1922. I published it in the (since defunct) *South African*

Medical Record 1922, 20 209 and asked if any similar cases had been observed in other places, there being an epidemic of "paracholera" reported about that time. Nobody took any notice of my short paper and I was disappointed not to hear of any similar cases.

As I said, the case was typically Asiatic cholera, with very violent vomiting, diarrhoea, cramps, and collapse, with rice-water stools but bacteriologically no organism was found but pure streptococcus. I wonder if such symptoms have often been associated with pure streptococcal infection. It is very interesting to note the great difference from the clinical manifestations of staphylococcal infection as reported in the paper recently published—I am, etc.,

Durban

C LUNDIE

Undernutrition

SIR—The letter from Dr Martin Herford (May 17, p 696) is extremely valuable and demonstrates the real existence of subclinical undernutrition, which is not by any means fully appreciated.

For years before this latest of wars I fed my stomach as both it and I thought satisfactorily and we both thrived. Then came the war—meals now only three courses! We—my stomach and I—assimilated these new conditions protestingly and gradually and now after all these years we have adjusted ourselves. But has my body benefited or worsened under the difference? Do I suffer from lack of calories and vitamins, or am I benefited from a compulsory deprivation of a surplus of purins and fats? Shades of Nat Gubbins dialling "Tum"! I only know that I get more indigestion than I used to do and that I tire more easily. Therefore I believe that my diet as a hard working man is inadequate and that the old scale of large and more varied meals suited me best though I doubt if Tum would now digest them—such is habit and the adaptation of the human body. Saliva flows at the thought of a pre-war meal but does carcinoma lurk in the background?—I am, etc.

London SW1

DESMOND MACMANUS

Planning for Health

SIR—I ask for space for a matter of importance in the world of positive health and to air a flouted first principle in the pursuit of planning. In 1932 I selected a camping ground for boys at Snettisham Beach, Norfolk. It had much to recommend it. It was far from houses, yet within a mile of a station, it had a good water supply, was within the 'dry belt' was the nearest seaside place to some of the East Midland towns, the bathing and sailing were fairly safe, and at low tide there were miles of sands, a gloriously healthy arena for games, cockling, and other noble sports. For seven years many hundreds of boys from all over the country enjoyed free camping there and during the war half the camp, about nine acres, was taken over by some 800 Americans.

After the war the camp was handed over to the Workers' Travel Association, a non-profit-making concern with an excellent record which provides holidays for workers. With increasing holidays with pay this body has an extra job of work to do and it was thought that they would utilize this camp to the best advantage. When however, they applied to the local planning committee for permission to raise the necessary buildings, our modest ones having been levelled by the Allies, they met with a refusal.

The grounds for my committee's decision are to prevent danger or injury to health arising and further detriment to the neighbourhood in view of the low lying nature of the land which is liable to flood.

If this ill conditioned sentence means anything it means that the land is liable to flood and that the sewage from the camp might spread round and infect the neighbours. But there are none and in any case the slope of drainage from the camp is down to marsh land where there is no house for miles. Moreover the camp land has never been flooded within living memory nor could it be unless eight miles of marsh land lying 20 feet below were flooded first. That sentence was written in January of this year then came the floods over much of the country and county but this land was not flooded nor was the marsh land below.

In these circumstances I wrote and asked the local planning committee the names of their health experts, these men who were so demonstrably wrong and who in my view used the excuse of health to prevent workers gaining health. The reply was "I am not at the present time, in a position to supply you with the information you request or to offer a further opinion on the matter."

Now this may be a local affair, but I suggest that a principle of first importance is involved. Planners and experts must not be anonymous, otherwise we have no guarantee of their ability or that they are not stupid or self interested or both—I am etc.,

Rye, Sussex

C G LEAROLD

Entry to Dartmouth

SIR—I had hoped that someone more learned than I would have raised this matter of the change of the age of entrance to Dartmouth from 13½ to 16. I have had considerable experience of schoolboys of all ages and classes. It seems physiologically unsound to transfer a boy to the strict discipline of the R N C in the middle of adolescence. The present method whereby a boy enters the Navy at the onset of adolescence or at the end, or at least when it is stabilized, is sound, and the results are admittedly good very good. At present a number of boys are taken from elementary schools at the lower age with, I understand, satisfactory results. It is hard to see what advantage is to be gained by removing a boy at this most unstable period into a strange milieu—I am, etc.,

Clifton Bristol

R G COOKSON

Tobacco

SIR—In your recent leading article (April 26 p 570) on this burning (!) topic you twice referred to tobacco smoking as a habit. This is a common but in my view a serious error. Tobacco smoking is not a habit but a drug addiction, a disease. Untruthfulness is an outstanding symptom of the drug addictions. It is well recognized in morphinism and cocaineism but it is not generally realized that, on matters concerning tobacco, tobacco smokers are exceedingly untruthful. The untruth that smoking is a habit is perhaps the most important. Other fundamental untruths circulated by smokers are that smoking is a vice and tobacco a luxury, and I would be grateful if you would allow me space in which to 'nail' them.

The essence of a habit is that it is acquired by repetition and references to tobacco smoking as a habit carry the implication that the repetitive act of administering tobacco smoke—puffing—is the essence of tobacco smoking, not intoxication with nicotine, carbon monoxide, and pyridine bases—the main constituents of tobacco smoke. Even in bringing about the administration of tobacco smoke habit is much less important than craving for tobacco, as anyone cured of tobacco addiction knows. Is opium smoking also a habit and intoxication with the alkaloids of opium of secondary importance? Clearly the essence of tobacco smoking is the tobacco and not the smoking. Satisfaction can be obtained from chewing it, from snuff taking, and from the administration of nicotine. The majority of diseases are intoxications of one kind or another and the intermittent intoxication induced by tobacco smoking must surely be accounted a disease. The terms "drug habit" and "smoking habit" ought also, in my view, to be forsworn.

The untruth that smoking is a vice is somewhat nearer the truth. Vice or moral deterioration is an essential symptom of drug addiction. It is merely however a symptom (secondary to craving) the disease is drug addiction. It is revealed in the case of tobacco smoking in frequent non observance and sometimes obliteration of non-smoking notices in abuse of those who ask that these be observed in untruthfulness about tobacco, and in the frequent failure of smokers to honour their obligations. An example of this much to the point is the failure of our tobacco addicted profession to prevent this serious disease which is no more difficult to prevent than addiction to opium. Tobacco is treated in this country not as a toxic drug of addiction which it is but as a luxury which it is not. It is not included under the provisions of the Dangerous Drugs Act, it is sold to the public in almost unlimited quantities, and its

high taxation leaves no room for any doubt about the Government's view, a view for which we must accept the main responsibility. To the craving addict his drug seems a luxury, to individuals who do not crave it has no value, unless it be a medicinal value when given to non-addicts.

Innumerable variations of these and of other untruths about tobacco circulate freely but the truth about tobacco is generally taboo. Even this last budget has failed to raise this powerful drug taboo to any important extent. Untruths about tobacco proceed from smokers' delusions. The delusions of tobacco smokers are systematized, and localized to matters concerning their drug. Outside their delusional system smokers are perfectly rational. Their delusions are, however fixed by craving for tobacco and undeception is therefore exceedingly difficult.

Drug addiction, according to Glover, 'borders on a line between psychoneurosis and psychosis'.³ It seems to me, however, that it is a form of toxic psychosis. What better evidence of national insanity than the spending of one-third of our American loan on bringing into this country hundreds of tons of toxic and therapeutically useless drug?—I am, etc

Walfasey

LENNON JOHNSTON

REFERENCES

¹ Dixon W E (1927) *British Medical Journal* 2 719² Johnston L M (1942) *Lancet* 2 742³ *British Encyclopaedia of Medical Practice* (1938) Vol 10 p 221 London

NHS Act and Split Services

SIR—Recent views of experienced tuberculosis officers of a large county and borough—Dr G Lissant Cox and Dr H Vallow (April 26, p 577, and May 17, p 693)—confirm objectionable features of split services and dual control, which I, too, drew attention to, not only on tuberculosis but also in relation to mental health, maternity and child welfare and sick visiting. Such control will not only affect officials but also existing multifarious committees.

"Tuberculosis-care Work," published (*Tubercle* 1920, 1, 317) as a then tuberculosis officer, largely helped to model in Leeds a committee for the care and employment of tuberculous subjects (later largely financed by the city council), without it no tuberculosis scheme can be adequately controlled. Since 1930, as the only medical member of the Leeds city council and chairman or deputy of its mental health committee dealing with defectives, one is aware of the usefulness of the Mental Care Committee for home supervision and training of defectives. Our experience in Leeds of a separate mental health committee has proved that the defective problem has been more efficiently controlled than it would have been by a subcommittee of a health committee or of a large joint board. Again, as a former chairman of a maternity and child welfare health subcommittee I appreciate the activities of local welfare centres and nurseries for the efficiency of that service.

The central and regional administrative structure is undoubtedly a compromise to placate the conflicting interests of local authorities, voluntary hospitals, and the profession. Unless existing local machinery is more utilized and unified, day-to-day management will be ineffective. It will be almost impossible for the proposed small set up to cope with routine work of vast areas and added population.

The West Riding Mental Hospital Board (of which I have long been a lone medical member) administers lunacy for the county and for five large and five small boroughs with 54 elected members and four large hospitals. We have eight large and twenty routine committees two or three half-days fortnightly and manned by half the board for the month. Patients look up to their local representatives with requests on visiting and discharging days, also municipal hospitals, tuberculosis maternity work and other institutions take several half days for established routine. I am sure it will be impossible for many medical members to spare this time.

Active participation by the profession on policy, planning and regional staffing is undoubtedly necessary. But for local management and routine the Minister may be well advised by regulations to continue to use existing machinery of large authorities whose usefulness has been proved by including a quota of the regional members and their executive staff—I am, etc

Leeds.

Z P FERNANDEZ

POINTS FROM LETTERS

Volvulus of Small Intestine in Hernia Sac

Dr W E HADDEN (Bansang Hospital, The Gambia) writes. M M, an African male of 35 years, was admitted to Bansang Hospital with the diagnosis of strangulated right inguinal hernia. Herniotomy had been performed here three years previously on the left side. The patient stated that the right hernia had appeared very soon after the operation on the left side. The day before admission he had felt pain in the right hernia at 2 p.m. while cutting grass with a bill hook, and had gone home. Next morning the pain became worse and he appeared at hospital at 12.30 p.m. He had not vomited. On examination, temperature, pulse, and respiration were normal. There was a painful swelling of the right scrotum about the size of a grapefruit. Reduction was not attempted. Operation was performed at 2 p.m. the same day, the anesthetic being 2 ml heavy nupercaine intrathecally. On opening the hernia sac a loop of plum coloured small intestine presented and on being brought out of the wound was seen to be strangulated by rotation of the loop on its mesentery. This loop of bowel was viable. Further exploration of the sac showed two normal loops of small intestine to be also in the sac with a small quantity of fluid. The loops of intestine were returned to the abdomen and the sac excised after ligating its neck. Repair was performed and the sac closed. The patient was discharged after twenty-one days, the only complication being a stitch abscess. This case is interesting in that volvulus occurred in a hernia sac and that two other loops of bowel in the sac were normal. No cause could be found for the volvulus, unless the rhythmical semi rotary motion of cutting grass with a long knife all day had initiated it. I am indebted to Dr C W F Mackay, Senior Medical Officer The Gambia, for permission to publish this case.

The Nursing Crisis

Dr G C PETHER (Colchester) writes. Is it not possible that one factor influencing the desire to escape from hospital is this. Some years ago I had the opportunity to observe the change in atmosphere when a municipal hospital was taken over by a county authority. Now under the old employers the nurses and doctors met the municipal representatives on many occasions, social and otherwise. It was not difficult to feel loyalty and affection for an organization of limited size and which had local roots. Pay and conditions were fairly good. When the county authority took over they tended to improve, but so many of the intangibles were lost. The personal touch disappeared. It was more difficult to feel either loyalty or affection for an enormous organization, and this organization was not distinguished for its good manners in handling its staff. These things happened in a large city—one of the loneliest places in the world, as we all know. Many a time a young nurse would weep from sheer loneliness and sry, 'I've been here five years and I haven't been in anyone's house once'. No doubt there were many pious and kindly people near by who were engaged in supporting missions to the heathen in foreign parts. The strain of this kind of institution life could nevertheless be tolerated if members of the staff felt a happy family with their local loyalties and affections. If you take these away and make a nurse No XYZ 54879 of the Southern Hospital Regional Authority, how can she continue to give such devoted service? Are not our planners planning away all our personality and all our affections? Surely these matters have something to do with our present discontents.

Strange Encounter

Dr J SULLIVAN (Manor Park, Essex) writes. In the early hours of the morning I was recently called to an emergency maternity case in a 'pre fab'. On opening the door a pallid woman swayed forward into my arms (reminding me of one of those American films in which someone opens a cupboard door and a corpse falls forward). I tried to get her back to bed and on the way to the bedroom I became aware of another woman crouched behind her, dogging her footsteps and holding a newspaper parcel in her arms. In the bedroom I saw a loop of umbilical cord hanging from the parcel and realized that it contained the newborn baby. A panic stricken and completely helpless husband hovered in the background. On inquiry I found that the woman had delivered herself of the baby into the lavatory basin. The mother (a primipara) and the baby are doing well. No midwife was available at the time.

The Pemmican Journal

Mr H A BRUCE FRCS (Toronto) writes. I appreciate very much your kindness in sending me the abbreviated copy of your *Journal* published on Feb 22 of this year, which will be of great historic interest. When I have finished with it I will pass it over to the Academy of Medicine in Toronto for their records. I wish to commend you for your enterprise in not failing your subscribers when you are faced with a shut-down by the Government.

Obituary

Dr CLAUD FRANCIS DRUITT, of Walton-by-Clevedon, Somerset, died suddenly at his home on April 11 at the age of 77. Dr Druitt was a student at the Royal Hospital and University College Bristol, where he qualified in 1896. He was assistant house physician and later casualty officer at the Bristol General Hospital before settling in general practice in Derby. After he had been in practice there for thirty years he retired and went to live in Somerset. He had been on the town council at Derby for several years and was a lay reader at St Mary's Church, Boulton.

F G B writes. He was much loved at Clevedon. He was vicar's warden at Christ Church, where he will be sadly missed. He was deeply interested in home and foreign missions and was ever ready to lend a hand in helping them. A great lover of nature, he was an accomplished ornithologist, and during his lifetime made a large collection of British birds and insects, which he presented to Halesowen Grammar School. He gave talks on nature subjects to children at schools and started a nature club for boys. Claud Druitt was a great Christian and he left a deep impression on those who knew and loved him.

Dr JOHN MCGREGOR HARTLEY REID died suddenly on April 30 at the age of 55. John McGregor Reid graduated M.B., Ch.B. from Aberdeen University in 1914, and took the D.P.H. a year later. In France in 1915 at Ypres he suffered in the surprise gas attack. After recovery in England, he returned to France until 1918, and then served in Egypt and Palestine until 1920. On being released from the R.A.M.C. he held various resident appointments at the Leicester Royal Infirmary. Subsequently he was house surgeon to Sir Robert Jones at the Royal Southern Hospital, Liverpool, and then assistant medical officer in the Aberdeen asylum. His mother lived in Italy, and two sisters in France, and frequent visits to these countries and a period of study in Paris with his natural facility for languages, made him fluent in both French and Italian. In 1925 he settled in the West End, where he built up a large practice, especially in connexion with clubs, hotels and the stage. Not long afterwards he became a medical officer to the Shaftesbury Homes and Arethusa Training Ship, and began to interest himself in dermatology. He was attached to St John's Hospital for Skin Diseases for fifteen years, latterly as the senior registrar. Every member of the visiting staff knew him well, and there were frequent calls upon him to act as deputy. He had charge of the varicose vein clinic, and its organization was entirely his own. During the recent war he was in residence in London. Mrs Reid remaining with him throughout. They suffered heavily from bombing without receiving actual physical injury. Windows were repaired several times and their furniture was all lost, but they remained to hold together the skeleton practice of those times and to keep on with the work at St John's Hospital. Unfortunately those raids told on Reid's health affecting the chronic bronchitis from which he had suffered since he was gassed in France. His health began to decline. In spite of this he responded with tenacity to every call made upon him by patients and hospital doing a full day's work almost to the time of his death. He was a man of character whose loss will be felt by many and a heartfelt sympathy is extended by all to Mrs McGregor Reid.—H C.

Dr GEORGE SMITH BANKS, formerly regional tuberculosis medical officer for the City of Aberdeen and the counties of Aberdeen and Kincardine, died at his home at Musselburgh on May 9 at the age of 67. The son of a school master in Dumfriesshire he graduated at Edinburgh University in 1905 and after holding various house appointments obtained the D.P.H. in 1909. Soon afterwards he was appointed resident physician and assistant medical officer of health at the City Hospital, Aberdeen. In 1911 the tuberculosis scheme began to take shape under the then M.O.H. the late Prof M. Hay. Dr Banks with the late Dr Arthur Hugh Lister, started the tuberculosis dispensary in Aberdeen and the first wards devoted entirely to the treatment of tuberculosis were opened. In 1912 he became tuberculosis officer and when the regional public health services were initiated in 1928 he became the chief regional officer. He rapidly developed an extensive tuberculosis service and except for a short interruption during the 1914-18 war was continuously engaged in his specialty. Eventually in the city alone he had some 220 beds available for his patients. In 1919 he was appointed lecturer in tuberculosis at Aberdeen University. He had been a member of the British Medical Association throughout his whole professional

life and an active member of the Tuberculosis Society of Scotland. It would be difficult indeed for those who have not worked daily with Dr Banks to realize his enormous capacity for work, his clinical acumen, and his loyalty to the public health department which he so ably served for thirty-five years. He is survived by his wife, a married daughter, and a young son.

Dr SAMUEL ALLAN SHIACH died at the age of 77 at Ardgilzean, near Elgin, on May 2. After graduating M.B., C.M. at Edinburgh in 1891, he took his M.D. in 1893 with distinction. His first appointment was as senior house-surgeon at Bradford Infirmary, and there followed some three years as pathologist and assistant medical officer at the county asylum, Lancaster. He then entered general practice in Llanishen, near Cardiff, in 1898. For thirty years Dr Shiach carried on an extensive practice. Many have cause to remember his shrewd guidance and willing advice in all manner of problems. His sound character and blunt kindness instilled confidence in all those who sought his aid. For many years he was an enthusiastic supporter of the Cardiff Medical Society, of which he was an ex-president. Indifferent health led him to retire from practice in 1928 and he settled in Guildford, where he soon made many friends and continued to take an active interest in medical and worldly affairs. During the war Dr Shiach returned to his native Scotland, where after some five years of failing health, he died, leaving a widow and one son.

Dr CHARLES PERCY WOODSTOCK died suddenly on May 18 at his home in Bournemouth. He had been in failing health for some time yet kept at work for as long as his physical strength allowed. A student at Anderson College and the University of Glasgow, he qualified in 1899, afterwards occupying various house appointments, then sailing East on several voyages as a ship surgeon before settling in general practice in Bournemouth. Except for the period of the 1914-18 war, during which he was on military service, he continued to practise for forty years. For thirty-five of these he was honorary medical officer to the Firs Home for patients with advanced tuberculosis.

S W S writes. Woodstock's love for the sea persisted all his days showing itself in the invariable nautical blue suit with reefer jacket he wore while doing his practice. He was a bachelor and for years he had been a 'living landmark' about the Talbot Woods district of Bournemouth. He was held in great esteem by his colleagues and by a host of patients and friends, by whom he will be much missed.

Universities and Colleges

UNIVERSITY OF LONDON

The title of Professor Emeritus of Obstetric Medicine in the University has been conferred on Francis James Browne, M.D., Aberd. F.R.C.S.Ed., F.R.C.O.G., on his retirement from the University Professorship of Obstetric Medicine at University College Hospital Medical School.

Alan Kekwick, M.B., F.R.C.P., has been appointed to the University Chair of Medicine tenable at Middlesex Hospital Medical School as from Oct. 1, 1946.

E. S. Horning, D.Sc., has been appointed to the University Readership in Experimental Pathology tenable at the Royal Cancer Hospital from May 1.

UNIVERSITY OF LEEDS

On July 16 the honorary degree of Ph.D. will be conferred upon Henry Alvin Mahony, L.D.S., Principal Dental Officer, Ministry of Health, and William Goodwin Senior, L.D.S., Dental Secretary of the British Dental Association, on the occasion of the annual congress of the British Dental Students Association at Leeds.

ROYAL COLLEGE OF PHYSICIANS OF LONDON

P. C. P. Cloake, M.D., F.R.C.P., will deliver the Humphry Davy Rolleston Lectures at the College, Pill Mall East, S.W., on Tuesday, July 15, and Thursday, July 17, at 5 p.m. His subject is 'The Treatment of Disseminated Sclerosis by Artificial Pyrexia and Prolonged Administration of Arsenic'.

SOCIETY OF APOTHECARIES OF LONDON

On Tuesday, June 17, the Society is to confer its Gold Medal, in triplicate, upon F. H. S. Curd, D. G. Davey, and F. L. Rose in recognition of their joint research which culminated in the discovery of piludrine. The ceremony is called at 8 for 8.30 p.m. and will be followed by a soirée.

Medico-Legal

WILFUL REFUSAL OF INTERCOURSE

[FROM OUR MEDICO-LEGAL CORRESPONDENT]

Since the passage of Herbert's Act in 1937 wilful refusal of sexual intercourse from the beginning of the marriage has been a ground for a decree of nullity, but once the marriage has been consummated the remedy of nullity is not available and wilful refusal is not in itself a ground for divorce. A recent decision of the House of Lords¹ has defeated a husband's plea that it should be treated in law as a form of desertion which is a ground for divorce if it continues for three years. A sergeant in the Royal Air Force aged 22, married during the war a spinster of 30 and lived in the wife's two-roomed flat when he was on leave. Sexual intercourse took place for the first four or five months, but when the husband next came on leave the wife said that she had prepared a separate bed for him and did not wish to resume marital relations, because she thought sex was beastly and did not want any more of it. In other respects they lived together as man and wife, taking their meals together and going out to clubs and entertainments. In spite of the husband's repeated requests the wife would never again allow intercourse.

Desertion has never been defined either by statute or by a judge, and Lord Jowett, Lord Chancellor, declared that he would follow this example. In 1924 Sir Henry Duke (afterwards Lord Merivale) laid down that refusal of sexual intercourse was not desertion, and this ruling was followed many times before Herbert's Act in 1937 made desertion a ground for divorce. The Lord Chancellor did not think that Parliament, in passing Herbert's Act, could have intended the word "desertion" to bear a meaning which it did not naturally bear and which judicial authority had so recently denied to it. He disagreed roundly with Lord Justice Scott's dissenting judgment, given when the Court of Appeal by a majority decided against the husband. The Lord Justice had reasoned that marriage, wherever it took place, was to be regarded as Christian marriage, the Prayer Book stated that one of the objects of marriage was the procreation of children, sexual intercourse for the procreation of children was fundamental to the marriage state, therefore the wife who refused sexual intercourse deserted her husband. This dangerous and fallacious argument, said the Lord Chancellor, proceeded on the basis that any fundamental breach of the obligations of holy matrimony as laid down in the Prayer Book constituted desertion under Herbert's Act. It would apply to a marriage duly consummated in which one spouse was unable through physical infirmity to procreate children. The law of the land could not be coextensive with the law of morals, the civil consequences of marriage could not be identical with its religious consequences. Marriage meant different things to different persons according to their upbringing, outlook, and religious belief but must have the same legal consequences for all. The solution to the present question must be found not in a consideration of the Christian doctrine of marriage but in a true construction of the relevant Acts of Parliament. Further, it was most undesirable for a court to inquire into the secret intimacies of the marriage bed in such cases as the present and if refusal of intercourse could constitute desertion it might do so if it were tolerated only on rare and exceptional occasions. The husband's petition therefore failed before their Lordships' House, as it had failed at the first instance and in the Court of Appeal.

¹ *Weatherley v. Weatherley* 1947 1 All ER 563
- *Jackson v. Jackson* 1924 P 19

The 1947 edition of the *Register of Speech Therapists* has just been published. The register is arranged in geographical order and includes three groups—practising, non-practising and retired speech therapists. Medical practitioners may obtain a copy free on application to the Registrar, Board of Registration of Medical Auxiliaries, British Medical Association House, Tavistock Square, London, WC1.

The Services

Majors A H MacC Eaton and G A W Neill, R.A.M.C. have been awarded the Efficiency Decoration of the Territorial Army. The Prince Regent of Belgium has conferred the Croix de Guerre 1940, with Palm upon Captain R L Rees R.A.M.C., in recognition of distinguished services in the cause of the Allies.

The President of the Czechoslovak Republic has conferred the Order of the White Lion, Third Class, upon Major General (temporary) Sir Henry L Tidy, KCB, late R.A.M.C. and the Medal for Merit, First Class, upon Lieutenant Colonel H Ross, CIE OBE, IMS, in recognition of distinguished services in the cause of the Allies.

The President of the U.S.A. has conferred the following decorations in recognition of distinguished services in the cause of the Allies.

Legion of Merit Degree of Commander—Major General W C Hartgill, CB, OBE, MC, KHS late R.A.M.C.

Legion of Merit Degree of Officer—Brigadier (local) D B McGregor, OBE, R.A.M.C.

Bronze Star Medal—Lieutenant Colonel (temporary) A J King and Major (local) H G McQuade, R.A.M.C.

Medal of Freedom with Bronze Palm—Major (local) W J Wiles R.A.M.C.

DEATHS IN THE SERVICES

Major-General O L ROBINSON died at his home at Walton-on-Thames on May 21 at the age of 80. Oliver Long Robinson was educated at Trinity College, Dublin, where he was demonstrator of anatomy. He qualified in medicine in 1890, and a year later joined the R.A.M.C. and was secretary and registrar of the Royal Victoria Hospital, Netley, for a time. He saw active service in the Near East during the 1914-18 war, having been promoted to lieutenant colonel in 1913. He was promoted to colonel and appointed an honorary physician to the King four years later. He was mentioned in dispatches and made a C.M.G. in 1916 and a CB in 1919. In 1923, the year following his promotion to the rank of major general, he was appointed Director of Medical Services in India, a post held alternately by officers of the British and Indian services. He retired from this position and from the Army in 1927. He was appointed colonel commandant of the R.A.M.C. in succession to Lieutenant General Sir Charles Burchfield in 1932. He retained this office until 1937. General Robinson had been a member of the British Medical Association for over fifty years. He was a member of the Council in 1908 and at different times had served on the R.A.M.C. subcommittee and on other central committees.

Medical News

The next meeting of the Middlesex County Medical Society will be held at North Middlesex County Hospital, Edmonton, on Saturday, June 14, at 3 p.m., when there will be a demonstration of cases and a short talk by Dr Chapman on "Haemolytic Anaemia."

The annual general meeting of the Research Defence Society will be held at 26, Portland Place, London, W., on Tuesday, June 17 at 3.15 p.m., when the chair will be taken by the President, Lord Hailey, supported by Prof A V Hill, Chairman of Committee. The sixteenth Stephen Paget Memorial Lecture will be delivered by Prof G H Wooldridge, F.R.C.V.S., on "What Animals Owe to Experimental Research."

The Middleton and North Manchester Medical Society announces that a golf competition, open to all members of the British Medical Association in the Manchester, Oldham, and Rochdale Divisions will be held on Wednesday, June 18. Particulars may be obtained from Dr James A Strachan, 566, Broadway, Chadderton, Lancs.

The Medical Women's International Association will hold its fifth congress at Amsterdam from June 24-30. At the scientific meeting on June 25 there will be a discussion on the "responsibilities of medical women in world reconstruction."

An English surgeon's bleeding bowl in solid silver with a pierced triangular handle of 1682, a silver medicine spoon with lid and spout of 1810, and ancient pottery medicine spoons from China will be among the exhibits at the Antique Dealers' Fair at Grosvenor House, Park Lane, London, W., from June 11 to 27.

On May 31 the headquarters of the Greater London Blood Transfusion Service were transferred to 10, Collingham Road, S.W.5 (Tel Frobisher 6477/8 (2 lines), day and night).

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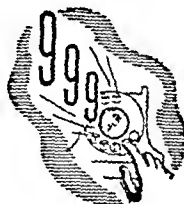
The use of Mersalyl B D H is indicated for the relief of acute oedematous conditions if it is reasonably certain that there is no severe renal impairment and when the administration of a diuretic over prolonged periods is necessary. When cardiac action is impaired, premedication with digitalis may be advisable.

Mersalyl B D H conforms with the specification for Mersalyl B P and is issued in solution (Injection of Mersalyl B P) in ampoules, in tablets (0.08 grm) for oral administration and in suppositories (0.4 grm) for rectal use. Further information will be supplied on request.



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The annual general meeting of the British Association of Urological Surgeons Home and Overseas will be held at the Royal Faculty of Physicians and Surgeons, 242, St Vincent Street, Glasgow, on Friday and Saturday, June 13 and 14. The provisional arrangements are as follows: June 13, 10 a.m., business meeting, 11 a.m., (a) short papers, (b) films, 2 p.m., operating sessions, 5.30 p.m., Reception by the Principal, Sir Hector Hetherington, at the University, 7.15 p.m. for 7.45 p.m., Association dinner at Central Hotel (Tickets, approximately 17s 6d each, exclusive of wine). June 14, 9.30 a.m., at the Faculty Hall, discussion on 'The Treatment of Serious Tumours of the Bladder,' to be opened by the President, Mr R Ogier Ward, 2 p.m., short papers and films. Members should make their own hotel arrangements direct, mentioning that they are members of the association. Any member in difficulty over accommodation is invited to write to the local secretary, Mr W S Mack, 20, Royal Terrace, Glasgow, C3.

Mr Anthony Eden was the guest of honour at the Annual Dinner of the University of Birmingham Medical Society, which was held on Friday, May 9. Other guests included the Lord Mayor and Lady Mayoress of Birmingham, Mr Sydney Vernon, Pro Chancellor, Dr Raymond Priestley, Vice Chancellor, Mr Newton, Treasurer of the University, Sir Leonard Parsons, Dean of the Faculty of Medicine, and other members of the University Council. The chair was taken by the President of the Society (Prof A C Frazer).

Donal Sheehan, M.D., D.Sc., professor of anatomy and lately acting dean of the New York University College of Medicine, has been appointed general director of the Commonwealth Fund, in succession to Mr Barry C Smith, who will retire on Sept 1.

As already announced the Fourth International Cancer Research Congress will be held at St Louis, Missouri, from Sept 2 to 7, under the joint auspices of the Union Internationale Contre le Cancer and the American Association for Cancer Research. Headquarters will be at Jefferson Hotel, 415, North 12th Street, St Louis 1, Mo., U.S.A. A programme is being drafted to cover the general biology of cancer, aetiology (viruses, chemical carcinogens, hormones, and environmental factors), biochemistry, radiotherapy and the development of nuclear physics, chemotherapy, and various clinical aspects. Further information concerning the congress may be obtained from Prof Alexander Haddow, M.D., Chester Beatty Research Institute, The Royal Cancer Hospital (Free), Fulham Road, London, SW3.

The Secretary of State for India and for Burma has appointed Brigadiers S M Hepworth, M.B., Ch.B. (Radiologist), G W Bamber, M.D., FRCP (Dermatologist), E E Prebble, M.B., Ch.B. (Venereologist), D McAlpine, M.D., FRCP (Neurologist), E A Bennet, M.D. (Psychiatrist), H K Ashworth, M.B., Ch.B. (Anaesthetist), The Hon G F O Bridgman, M.C., FRCS (Ophthalmologist), Grant Massie, CBE, M.S., FRCS (Surgeon), and J D S Cameron, CBE, M.D., FRCP (Physician), to be Honorary Consultants to the India and Burma Offices in recognition of their valuable service as Consultants to GHQ, India, during the war.

On the appointed day for the National Health Service the Vaccination Acts will cease to have effect and the compulsory vaccination of infants against smallpox, as well as the functions and appointments of public vaccinators and vaccination officers, will come to an end. The powers under which local authorities now undertake diphtheria immunization will also cease. From the appointed day local authorities will be solely responsible for making arrangements with medical practitioners for free vaccination and diphtheria immunization for all in their area who desire these services. The present effort at securing immunization of children under the age of 5, and especially of infants, should continue, and it is thought that local authorities will have only to review carefully existing arrangements in order to ensure that they are adequate. Supplies of diphtheria antitoxin will be made available through the hospital service, and its administration will be within the terms of service of medical practitioners providing services under part IV of the Act. The Minister of Health intends publicly to encourage vaccination and revaccination against smallpox, and invites the co-operation of all local authorities. In addition if a local authority on the advice of its medical officer of health wishes to make arrangements with regard to any other disease the Ministry of Health will consider its proposals. General practitioners performing vaccination or immunization under the local authority's arrangement will be entitled to a fee which will be fixed by negotiation with representatives of the profession. The Ministry of Health will provide vaccines and prophylactics free of charge.

The Council of the Royal Society of Arts has awarded the Albert Medal to Sir Robert Robinson for his outstanding contributions to the advancement of organic chemistry, in particular his work on antibiotics.

Sir Lionel Whitby, Regius Professor of Physic at Cambridge University, has been elected Master of Downing College.

The British Empire Leprosy Relief Association announces that, following the retirement of Dr Ernest Muir, Dr Gordon A Rytte has been appointed Medical Secretary of the Association.

Dr W N MacLay has succeeded Dr Ronald Jarman as the President of the Chelsea Clinical Society.

The Royal Medical Foundation of Epsom College announces that Henry Duncalfe Annuities of £30 per annum each for spinsters in need of assistance will shortly be awarded by the Council. Candidates must be daughters of registered medical practitioners and must have attained the age of 50 years. Pensions for impecunious medical practitioners or widows of medical men, and Foundation Scholarships providing education, clothing, and maintenance free of cost for the necessitous sons of medical practitioners, are also available from the funds of the Foundation. Forms of application for the above annuities, pensions, and scholarships may be obtained from the secretary, Epsom College, Surrey.

EPIDEMIOLOGICAL NOTES

Smallpox

Since the beginning of the year information concerning 59 confirmed cases of variola major has reached the Ministry of Health. This compares with 56 for the whole of 1946, which was the highest incidence since 1934 (179 cases, mainly variola minor). These cases arise from two distinct sources. The first which was not identified, resulted in 15 cases in two generations in a common lodging-house and public assistance hospital at Grimsby (Lincs.) with dates of onset between Feb 16 and March 2. The second source was a highly modified attack in a soldier flown home from India on compassionate leave. He developed the disease at Bilston U.D., Staffs., on March 2 after landing in England on Feb 23.

Cases in direct succession to these two sources are still arising. The present outbreak at Barnsley, in the West Riding of Yorkshire, is almost certainly related to the Grimsby episode. The disease introduced from India continues to occur in Bilston and in the adjacent urban district of Coseley. Associated with the Grimsby source there have been foci at Stepney M.B. (London), 2 cases in two generations, Scunthorpe B. (Lincs.), 7 cases in two generations, and Doncaster B. (Yorks.) 1 case, but these appear to have been eradicated.

In connexion with the Bilston source, a single case occurred in Birmingham on May 1. Three cases in two generations at Sheffield may also have been associated with Bilston.

Barnsley—The first generation numbered 5 cases (3 deaths) at Barnsley and 1 at Bermondsey. There has been no spread from this latter case, doubtless as the result of the prompt action taken by a practitioner who diagnosed the disease at sight on the first day of rash. The second generation at Barnsley so far numbers 4 cases detected since May 29. They are in the line of contact either at the common lodging-house (24A Doncaster Road) or at St Helen's Hospital and do not indicate that the disease is out of control. The only alarming feature is that some of the common lodging-house contacts have not been traced and may give rise to other foci, particularly along the tramp routes across England through Lincolnshire, West Riding of Yorkshire, Derbyshire, Cheshire, and Lancashire.

Bilston and Coseley—The mother and sister of an unvaccinated girl who died on May 16—four days after onset—were removed to the smallpox hospital on May 31 (onsets May 29 and 30). The mother of a kitchenmaid at Moxley Infectious Diseases Hospital, removed from her home in Coseley on May 19, has now developed the disease (onset May 28, rash and removal May 30).

Discussion of Table

In England and Wales there were increases in the notifications of measles 2,544, diphtheria 49, and smallpox 10. A small increase was recorded for scarlet fever 26, and there were decreases in the incidence of whooping cough 102 and of dysentery 45.

Only small variations occurred in the local trends of scarlet fever. The rise in the incidence of diphtheria was due to small increases throughout the country and no large change occurred in any locality. A small decrease in the notifications of whooping cough was recorded in most areas, the only exception of note was an increase of 60 in Surrey. The largest rises in the notifications of measles were Yorkshire West Riding 316, Derbyshire 231, Glamorganshire 224, Warwickshire 184, Kent 165, Surrey 151, Staffordshire 105, Gloucestershire 104, and Cheshire 100.

The fall in the number of cases of dysentery was due to the experience of Lancashire with 47 fewer cases than in the preceding week. Of the 25 cases of dysentery in Lancashire 19 were notified from Prestwich M.B.

With the exception of the 13 cases notified five weeks ago, the returns of smallpox were the largest of recent years: the notifications were Yorkshire West Riding Barnsley C B 6, Staffordshire Bilston M B 4, Warwickshire Birmingham C B 1, London Bermondsey 1 (a contact from Barnsley).

In Scotland increases were recorded in the notifications of measles 29 cerebrospinal fever 18 scarlet fever 17 and diphtheria 11. The rise in the incidence of cerebrospinal fever and of diphtheria occurred in the western area: half the total notifications of these diseases in the country were recorded in Glasgow.

In Eire a rise occurred in the notifications of measles 30 whooping-cough 23 and scarlet fever 13. New outbreaks during the week were measles at Wexford, New Ross U D 17 and whooping cough at Mayo Clarcormorris R D 12.

In Northern Ireland measles declined to 14, the lowest total for recent months but scarlet fever increased by 12.

Quarterly Returns for Northern Ireland

The birth rate during the December quarter was 21.8 per 1 000 being 0.3 above the average of the fourth quarters during 1941-5. Infant mortality was 53 per 1 000 registered births and was 17 below the average of the five preceding December quarters. Maternal mortality was 2.9 per 1 000 births, being 0.3 above the five years average. The general death rate was 11.8 per 1 000 and was 0.6 above the rate for the corresponding quarter of 1945 but 0.8 below the average of the five preceding fourth quarters. There were 204 deaths attributed to respiratory tuberculosis and 54 to other forms of tuberculosis, these were 7 above and 10 below the average of the fourth quarters 1941-5. There were 67 cases of typhoid fever notified in Armagh city and county during the quarter. This outbreak of typhoid fever was due to contaminated milk, and altogether 77 cases, of which 5 were fatal, were traced.

Quarterly Returns for Eire

During the December quarter a birth rate of 20.7 per 1 000 was recorded. Infant mortality was 62 per 1 000 registered births and was 10 below the rate for the fourth quarter of 1945. Maternal mortality was 1.5 per 1 000 registered births, being 0.1 below the rate for the corresponding quarter of the preceding year. The general death rate was 12.5 per 1 000 and was the lowest fourth quarter rate since 1941. For the whole year the birth rate was 22.6 per 1 000 and was 0.2 above the rate for 1945. Infant mortality was 63 per 1 000 and was the lowest rate ever recorded. The general death rate was 13.9 per 1 000 and was 0.4 below the rate for 1945. Deaths from diphtheria were 101 below the total for 1945. There were 903 deaths attributed to diarrhoea and enteritis of these 461 were registered in Dublin C B. The death rate for pulmonary tuberculosis was 0.9 per 1 000 and 0.2 for other forms, the rates for 1945 were 0.9 and 0.3 respectively.

Austria

The following table is an extract from the April issue of the *Monthly Report of the Allied Commission for Austria* (British Element) comparing the rates for 1939 with those of 1945 and 1946 for Austria and Vienna.

	1939	1945	1946
Birth rate			
Austria	20.8	13.6	15.2
Vienna	14.8	9.6	10.3
Infant mortality			
Austria	69.6	164.9	77.0
Vienna	12.6	188.2	78.8
Death rate all causes			
Austria	15.3	23.4	14.2
Vienna	16.4	32.8	19.0
Death rate tuberculosis			
Austria	0.95	1.28	0.99
Vienna	1.22	2.62	1.95

A comparison of the figures for 1939 with those for 1945 suggests that Vienna fared rather worse during the war than the whole of Austria. The death rates from all causes and from tuberculosis in 1946 fell to pre-war levels for Austria but remained considerably above pre-war level in Vienna. The very low infant mortality recorded for Vienna in 1939 is an error: the infant mortality in this city during 1937 and 1938 was 71 and 51.

Week Ending May 24

The notifications of infectious diseases in England and Wales during the week included scarlet fever 782 whooping cough 1 879 diphtheria 197 measles 12 830 acute pneumonia 557 cerebrospinal fever 65 dysentery 47 acute poliomyelitis 11, smallpox 8 paratyphoid 6, typhoid 3.

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended May 17.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year for: (a) England and Wales (London included) (b) London (administrative county) (c) Scotland (d) Eire (e) Northern Ireland.

Figures of Births and Deaths recorded under each infectious disease are for: (a) The 126 great towns in England and Wales (including London) (b) London (administrative county) (c) The 16 principal towns in Scotland (d) The 13 principal towns in Eire (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1947					1946 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	57	3	37	—	2	49	6	25	2	—
Deaths	—	2	—	—	—	—	—	3	—	—
Diphtheria	243	23	66	15	3	369	35	105	53	16
Deaths	—	—	1	—	—	5	2	1	1	—
Dysentery	65	8	9	—	—	120	19	59	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Encephalitis lethargica	—	—	—	—	—	—	—	—	—	—
acute	2	—	1	—	—	1	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Erysipelas	—	—	41	3	—	—	—	44	4	1
Deaths	—	—	—	—	—	—	—	—	—	—
Infective enteritis or	—	—	—	—	—	—	—	—	—	—
diarrhoea under 2	—	—	—	—	—	—	—	—	—	—
years	—	—	—	—	—	—	—	—	—	—
Deaths	80	7	15	33	3	52	5	13	37	4
Measles*	12 78	532	186	82	14	2 658	836	625	64	3
Deaths	8	—	—	—	—	1	—	1	1	—
Ophthalmia neonatorum	85	10	19	2	—	68	6	12	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Paratyphoid fever	3	—	—	—	—	2	—	1(A)	—	1(B)
Deaths	—	—	—	—	—	—	—	1(B)	—	—
Pneumonia influenzal	578	36	3	6	5	461	22	9	3	4
Deaths (from influ	11	3	—	1	—	6	1	—	—	1
enza)	—	—	—	—	—	—	—	—	—	—
Pneumonia primary	—	—	180	27	12	—	20	197	24	1
Deaths	—	30	9	—	—	—	—	4	—	—
Polio-encephalitis acute	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Poliomyelitis acute	11	—	1	1	—	8	—	—	2	—
Deaths	—	—	—	—	—	—	—	—	—	—
Puerperal fever	—	1	15	—	—	—	3	21	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Puerperal pyrexia†	139	8	11	3	—	124	13	27	2	—
Deaths	—	—	—	—	—	2	—	—	—	—
Relapsing fever	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever	1 028	91	146	34	41	1 112	74	154	12	2
Deaths	—	—	—	—	—	1	1	1	—	—
Smallpox	12	1	—	—	—	5	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhoid fever	9	2	—	1	—	5	2	—	4	—
Deaths	—	—	1	—	—	2	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough*	2 120	263	231	63	20	2 306	188	112	39	2
Deaths	11	1	6	3	2	10	1	—	—	—
Deaths (0-1 year)	413	52	74	26	18	338	53	59	37	1
Infant mortality rate	—	—	—	—	—	—	—	—	—	—
(per 1 000 live births)	—	—	—	—	—	—	—	—	—	—
Deaths (excluding still	4 445	669	597	195	113	4 494	662	666	213	11
birth)	—	—	—	—	—	—	—	—	—	—
Annual death rate (per	—	—	12.4	12.3	—	—	—	14.7	13.6	—
1 000 persons living)	—	—	—	—	—	—	—	—	—	—
Live births	10 140	1606	1203	434	303	8 570	1295	1005	526	71
Annual rate per 1 000	—	—	24.2	27.4	—	—	—	20.2	33.7	—
persons living	—	—	—	—	—	—	—	—	—	—
Stillbirths	270	41	34	—	—	263	28	31	—	—
Rate per 1 000 total	—	—	—	—	—	—	—	—	—	—
births (including	—	—	27	—	—	—	—	30	—	—
stillborn)	—	—	—	—	—	—	—	—	—	—

* Measles and whooping cough are not notifiable in Scotland and the returns are therefore an approximation only.

† Includes primary form for England and Wales (London (administrative county) and Northern Ireland).

‡ Includes puerperal fever for England and Wales and Eire.

Any Questions ?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Oranges, Bananas, and Dates

Q—(a) Oranges and bananas are shipped unripe from the countries of origin: this often means that only partially ripe fruit is distributed in this country. Family practitioners are kept busy treating children glutted by such fruit. Has not sentiment outweighed dietetic discretion in this exclusive allocation to children? (b) What is the nutritional value of the date? What vitamins are involved and are they of any value?

A—(a) Oranges and bananas are allocated as follows. Oranges on any ration book, what is left over of the allocation after five days, without ration books. Bananas on green ration book (R B 1—up to 5 years) and on blue ration book (R B 2—from 5 to 18 years) only. Oranges are therefore not allocated exclusively to children. The quantity of bananas distributed is so small that unless their parents have access to irregular sources, children have little chance of being glutted.

(b) The main value of dates, apart from adding to the variety of the diet is to provide calories, 100 g provides about 240 calories, mainly as sugar. Estimates of the amounts of vitamins vary. According to *Nutritive Values of War-time Foods* (H.M. Stationery Office, 1945) the vitamin-A potency is 100 i.u. per 100 g, and no vitamin B₁ or C is present. According to other estimates the vitamin A is higher, but is still not enough to make an important addition to the daily supply. The vitamin B₁ is enough for the metabolism of the carbohydrate of the date, and the amount of riboflavin in 1 oz (28 g) of dates is about one third of that in 1 oz. of milk.

Palpitations

Q—What is the treatment for palpitations? Standard text books dismiss this condition in a few lines.

A—There can be no uniform treatment for palpitations. It is not a morbid entity but a symptom, and occurs in a wide range of conditions. The cause must first be determined. In young people it rarely represents heart disease, in older subjects it may be associated with arrhythmia, hypertension, or heart failure. It may be due to toxic or infective conditions or it may follow the administration of drugs. Mediastinal tumours or abdominal distension may provoke palpitation by mechanical means. The symptom is common in nervous people, in whom it may cause real discomfort or even a painful sensation. It is not of itself an indication of heart disease, but fear of this may aggravate the symptom through anxiety. Patients complaining of palpitation should be thoroughly examined to exclude any organic cause, and this in itself is part of treatment, as it goes far in gaining the confidence of the patient and lending weight to the opinion and advice given. Any underlying cause—such as anaemia, oral sepsis, or fatigue—should be corrected. If heart disease is present it should be treated appropriately. If it is absent, firm reassurance on this point should be given. Palpitations due to overaction of the heart may be alleviated by small doses of bromide or phenobarbitone given twice daily. Palpitation associated with premature beats is most likely to be relieved by checking the arrhythmia with a pill containing quinine sulphate gr 3 (0.2 g) with ext. nuc. vomicae gr 1/4 (16 mg) thrice daily.

Enterogastrone

Q—What is known in this country of the preparation enterogastrone?

A—The story of enterogastrone begins as long ago as 1929, when three Chinese workers—Feng Hou and Lim—demonstrated the presence in the intestinal mucosa of a substance which inhibited gastric secretion. Kosaka and Lim gave this substance the name 'enterogastrone' in 1930. The inhibition of gastric secretion by olive oil was shown to be effected

through the action of enterogastrone. Additional work was done by Ivy and Gray in Chicago, and Gray described a substance in the urine which depressed gastric secretion, he called this 'urogastrone'. Despite the passage of eighteen years no practical application of enterogastrone or urogastrone has been devised. It might be worth consulting an annotation in this *Journal* (Aug 10 1946 p 204), in which Morrison's work on hog's stomach is described. An extract of the mucosa and submucosa of fresh stomach—not intestine—appeared to protect dogs from the peptic ulcers induced by the administration of yellow cinchophen.

Treatment of Epilepsy

Q—A single woman aged 25 has suffered from epileptic fits for the past seven years. These were at first controlled by bromides, then, because of repeated attacks by a combination of bromide and phenobarbitone. This succeeded for a year, then there were a series of attacks despite increase of drugs. Hydantoinates then proved satisfactory for a year or two but were followed by a rapid succession of fits. A combination of phenobarbitone and hydantoinates had a similar result. Can you recommend further treatment?

A—Combinations of phenobarbitone and hydantoinates in carefully balanced doses are capable of controlling the great majority of cases of major epilepsy. With regard to the latter it may be necessary to give full doses—that is, 1½ gr (0.1 g) four times in the twenty-four hours. As this dosage is near the level of toxicity it cannot be increased. If the attacks are of the petit mal variety then drugs of the 'tridione' class will be indicated.

Oedema at High Altitudes

Q—When she climbed Skiddaw eight years ago a woman's hands became so swollen that she was unable to close them. On the descent the swelling subsided. She has a tendency to hay-fever and two of her relatives are asthmatics. In view of this history, is there a possibility of serious consequences (such as oedema of the glottis) arising from a visit to the Swiss mountains and is there any preventive treatment?

A—It is most unlikely that the lowered barometric pressure was responsible for the symptoms which occurred in climbing Skiddaw (a nearly equal fall in barometric pressure may occur at sea level in severe winter depressions). The anoxia experienced would be difficult to detect and, as a physiological stress, negligible in comparison with the other stresses of such an expedition. It is therefore not considered that this is a contra-indication to a visit to Switzerland, so long as only moderate altitudes (up to 5000 feet) are attempted and so long as the patient follows a normal regimen suited to her age and history.

Stilboestrol to Control Libido

Q—Can stilboestrol be used to control excessive libido in the male? As oestrogenic treatment of carcinoma of the prostate is followed by atrophy of the genitalia and loss of sexual function it occurred to me that similar treatment may control an undue degree of spermatogenesis in the younger male.

A—Yes, it can even to the point of complete suppression. Its use is justified in extreme cases, temporarily or intermittently, but it interferes with the structure of the testis, and therefore intervals are required for recovery. It is difficult to say if a dose can be found which inhibits functionally without structural damage, or to know clinically when such a dose is arrived at, and it may be that the 'all or none' law operates. Incidentally, libido is related to interstitial cell function, and not to the degree of spermatogenesis.

Otosclerosis and Malaria

Q—A patient became hard of hearing after an attack of malaria and subsequent bouts increased his deafness. Investigation revealed otosclerosis, there were no family history and no quinine deafness. Did the malaria cause the onset or increase the deafness of otosclerosis? What would you advise?

A—It may be confidently assumed that the malaria increased the deafness of otosclerosis. The cause of the latter is inborn,

not acquired post natus. Deafness is always more marked during fatigue or illness because the subject is then unable to make the extra effort normally needed to overcome his handicap. Nothing is at present known which will arrest the progress of the disease. The increase of deafness may be offset by learning to lip read and by the use of a valve amplifier hearing aid. Recently fenestration of the labyrinth has been revived, this subject was reviewed in the *Journal* of Sept. 29, 1945 (p. 430). The present-day technique has given much better results in selected cases, though how lasting the improvement will be remains to be seen.

Arterial Thrombosis

Q—A man aged 68 was suddenly awakened with severe pain in his left calf rubbing eased it but the calf remained tender and painful for about a fortnight. Since then he has had intermittent claudication in the leg after walking some 100 yards and numbness and ungluing of the foot. X-ray examination shows scattered calcification of the arteries in both legs. How would you treat this condition?

A—This account leaves no doubt that thrombosis of one of the main arteries has taken place. The most common sites for such obstruction are the femoral artery in the mid-thigh, and the popliteal artery. The symptoms suggest that in this case the block was somewhat lower. The therapeutic indication is to try to increase the collateral arterial circulation in the leg, this may be done by intermittent venous occlusion, by intravenous injections of saline or plasma, or by lumbar sympathectomy. For the precise indications and details the standard textbooks should be consulted.

Penicillin and Bismuth in Syphilis

Q—A man and wife who contracted syphilis twenty five years ago have just completed a prolonged course of arsenic and bismuth they are now symptom-free but serologically still positive. They want to try penicillin. What course of this drug plus bismuth and arsenic would you recommend? At what stage of the arsenic-bismuth treatment should the penicillin be given and what is the expectation of cure?

A—A good deal depends on what is meant by a "prolonged" course of arsenic and bismuth, and how soon treatment was started after infection. Assuming that each patient has received at least 25 g. of neoarsphenamine or its equivalent and 10 g. of bismuth metal, and that the patients have reached the age of 50 or thereabouts, no further treatment is necessary provided their spinal fluids are negative. Penicillin is not recommended since this antibiotic is not very effective in reversing resistant serum reactions. However, if the patients insist on its use, a total dosage of about 10 mega units is advised. This may be administered by daily injections of 300,000 Oxford units contained in a slow release vehicle, bismuth may be given concurrently in doses of 0.25 g. once a week for ten weeks, there is no object in giving arsenic. The expectation of cure, in the sense of reversing the serum reactions, is poor, but, provided their spinal fluids are negative and there is no evidence of cardiovascular disease, there is no reason to suppose that syphilis will materially shorten the life of either patient.

INCOME TAX

All inquiries will receive an authoritative reply but only a selection can be published

Expenses arising from Requisitioning of Premises

D B was called up for naval service in August, 1939, and served until April, 1947. His house has been requisitioned and requests to de-requisition it have proved fruitless. In the meantime his family have to live in the country and as he holds an appointment in London he is put to considerable expense in visiting his family. Can any deduction be claimed in these circumstances from his income tax assessment?

*No, with the possible exception of the fixed £10 special 'war' allowance. The expense would not be regarded as being incurred in carrying out the duties of his employment but rather in his private capacity as head of a family.

Letters and Notes

Vitamin B₁ for Herpes

Dr S J Gross (Chirala, British India) writes. With reference to the treatment of dermatitis herpetiformis as recommended by Dr R. Milton and Dr T H K. MacLaughlin (March 22 p. 402) I should like to suggest another method which to my knowledge has not been described yet. It has been suggested that in herpes the virus passes down the sensory nerves to the skin and produces the lesions there. Vitamin B₁ has been recommended and has been used in the treatment of herpes with doubtful results. Herpes is due to a localized nervous irritation and not to a systemic affection. Therefore I thought that a local application of thiamine might be more successful, and that when applied locally the vitamin B₁ might proceed along the nervous pathways from the skin to the affected nerve ganglion. The following mixture was used for the topical application: 1 ml. of thiamine hydrochloride containing 50 mg. dissolved in 3 ml. glycerin. This medication is applied three times daily to the skin lesions. Soon after the first application the patients notice a soothing sensation, and after the second application they experience a great relief, the itching ceases, and the pains disappear. The following cases may serve as illustrations. (1) A woman 8 months pregnant was admitted with a painful herpes of the lower lip. A number of local applications had been tried unsuccessfully. I painted the lip with vitamin B₁ glycerin. After the first application she felt better and was able to bear touching of the lesions. After the second application it was noted that the blebs started to burst and to dry up. Patient had no pains any more and was able to eat again. Simultaneously the swelling of the lip began to decrease, and on the next day patient was perfectly well and went home. (2) A nurse 25 years old was admitted with a very painful herpes and herpetiform dermatitis of the buttock and of the inguinal area. On account of the pain she was given morphine injections, and she had different local applications with no improvement. On the third day of the eruption vitamin B₁ glycerin was applied locally. After the first day she had still some pain, but the itching had decreased. After the second day of local applications pain and itching had disappeared. No new vesicles had formed, and the old eruptions began to dry up and to heal. For the last six months I have been using the topical application of vitamin B₁ glycerin in these and a number of other cases with the same good results. Thus I have come to regard vitamin B₁ in glycerin as a specific for the treatment of herpes and of herpetiform manifestations. No other treatment was given concurrently.

Nocturnal Enuresis

Mr H P WINSBURY WHITE (London, W 1) writes. The answer to the question on enuresis (May 24, p. 749) prompts me to add that the urethra should be carefully examined in obstinate cases. It is essential that urethroscopy is included. The latter procedure can be carried out in all children with this complaint. Residual urine from bladder-neck fibrosis, granulomatosis or polypoid changes in the posterior urethra, generalized or localized contractions of the anterior urethra, all play their part and are easy to remedy, moreover the enuresis improves if the local pathology is properly treated. The examination and treatment which I have carried out of several hundreds of these cases along these lines have convinced me of the importance of this approach. If any one of your readers who has not the facilities for urethroscopy in children, but who has the means of making this examination in adults wishes for conspicuous evidence of urethral pathology in association with enuresis, let him seek out and examine several cases in which the incontinence has persisted into adult life, for urethral changes when present are usually very obvious in such patients.

Tuberculin Tests Correction

In the *Journal* May 31, at p. 793, under the heading 'Tuberculin Tests' the statement 'If no reaction is obtained after two hours' should have read 'after two days'.

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THE MEASUREMENT OF HUMAN SKILL^{*}

BY

F C BARTLETT, CBE, FRS

The Nature of Skill

Perhaps the beginnings of skill are to be found in the graded response. As has often been pointed out, it is a characteristic of a good many very early and very simple kinds of reaction to be of the "all or none" type. There is some evidence, which will have to be considered later, that a "trigger-like" character of effector response, in which nothing happens until a stimulus exerts a certain "pressure" and nothing more happens even when the stimulus exerts much more "pressure," remains to play a little regarded or understood part in quite complicated expressions of mental and bodily behaviour. But it is certainly the case that most of our everyday actions seem to be more or less accurately graded in amount, direction, duration, and other respects in agreement with corresponding variations in the stimuli required to produce them. And such graded action, however simple it may be, has at least one of the fundamental marks of skill—an effector response is not merely set off by a receptor function but is guided and determined by it. The receptor functions that are important in the case of skilled behaviour, however, are, I think, never those alone which indicate changes in shape or volume of muscle. They are always of that kind which claims to register something that is going on in the outside world. So they come to be particularly identified with the operations of the special senses, and especially of those distance receptors which are the basis of tremendous development of the central nervous system. Skill, then, whether bodily or mental, has from the beginning this character of being in touch with demands which come from the outside world. This is what gives it its strong cognitive nature and makes it possible to use phrases such as the one coined by Elliot Smith—"the intellectual respectability of muscular skill."

Whenever we talk of skilled behaviour, however, we mean much more than this simple and basic fact of detailed determination by receptor function. We mean behaviour in which a good many different receptor and effector functions are interlinked, all joined in the pursuit and achievement of some task which, when it is achieved, seems at first sight as if it can be discussed, criticized, evaluated, and even measured in its own right, apart from the means used to bring it about.

Let us consider a few instances of what everybody agrees to call skilled performance. Since it was wartime experience which revived for me a long-standing interest in the nature and conditions of human skill I will begin with two cases which have been a subject of much experiment in recent years.

The bomb-aimer in the aircraft, peering intently through his bomb sight, watches and interprets a series of visual cues coming from successive clusters of landmarks some of which are of predominant importance. From time to time he issues directions to the pilot and receives the answering confirmation. He judges at length that the series has reached its culmination, presses his bomb switch, and the operation, so far as he is concerned, is complete. If the bomb falls within the effective target area the task may be adjudged well and truly done. The visual cues predetermined and so laid out and seen that one leads to the next and does not merely precede it, may differ every time, though their significant order remains relatively the same. The attendant effector responses may differ also right up to the final pressing of the switch. Yet the criteria of the success or failure of the task seem to remain constant.

The pilot, airborne and flying on his instruments, must be alert to an almost incredibly complex mass of incoming signals—visual, auditory, tactile, thermal, proprioceptive. These, at the appropriate moments, his actions must match. The whole performance, from take-off to landing, is a long-drawn-out interlinkage of receptor and effector functions, forming a veritable series and not merely a succession each item a step to another step, right to the end. Yet it has often been claimed that an informed observer sitting by the pilot, knowing nothing, or next to nothing, of the terrific play of his senses and muscles and mind can criticize, rate, and measure his achievement. More than this is sometimes claimed, for it is said that an observer who never sees either the pilot or his aircraft, but is merely supplied with an objective record of what the machine has done, especially during critical manoeuvres, in the course of its flight, can with reasonable success measure or assess the pilot's skill. Even beyond this, though possibly with some exaggeration, it is often considered that the skill of the pilot can be correctly criticized and judged if nothing more is available than an accurate objective record of the landing.

And we could take any other case of admitted human skill and find that exactly the same sort of fundamental considerations apply. The good player of a quick ball game the surgeon conducting an operation, the physician arriving at a clinical decision—in each case there is the flow from signals interpreted to action carried out, back to further signals and on again to more action, up to the culminating point of the achievement of the task. From beginning to end the signals and actions form a series, not just a succession. The items in the series have, within wide limits, a fluid order and varying qualities. Moreover, there are always plenty of people—we all do it—who are willing to pronounce a verdict on the achievement alone, sizing it up, placing it in

^{*} The first of two Oliver Sharpey Lectures given at the Royal College of Physicians of London on Jan. 21.

relation to other achievements of the same sort. Can it be that the measure of skill is really a measure of the achievement which skill attains?

As soon as that question is put difficulties will occur to everybody. If the bomb drops in the effective target area once, and the next fifty times drops outside it, in ordinary speech—which may be fickle, but is generally of some psychological interest—we call it a lucky shot. It is clear that measure by achievement must have a lot of achievements to work on, and even then is statistical only. This is an upshot which is openly accepted, or ought to be, by all those who pin their faith to those measures of skill by tests which have become enormously popular of late. I cannot, within the limits of these lectures, consider this kind of measure, but it is certainly not very satisfying to the experimentally minded, who if they wish to avoid or supplement it are forced back upon studies internal to the skill performance itself.

There appears to be something level and uniform in skill performance which is consistent with considerable variations in skill achievement. W. R. Hammond,* a witness of some merit—to speak mildly—says that his most skilled innings was one which gained him a mere 32 runs. When we search the skill performance to find what these uniform characters are and how we can use them to obtain the measures we want, we can, I think, set the problems into three main groups.

There are, first, problems of the linkage of receptor and effector functions, second, problems of the grouping and stability of the constituent items in the full performance, and finally—for we cannot really get away from the “task”—problems of the relation of achievement to means.

Each of these groups can be approached experimentally. If in attempting to describe this approach I deal in the main with work developed during the last few years in the Cambridge Psychological Laboratory, it is not from any lack of appreciation of significant developments made elsewhere, but for two main reasons. First, I cannot well help knowing more about it myself, secondly, for obvious reasons some of it could not be widely reported before, and may therefore be of greater interest to others.

Linkage of Receptor and Effector Functions in Skill Performance

There is one characteristic which crops up over and over again in descriptions of expert skilled performance. The operator is said to have “all the time in the world to do what he wants.” This has nothing to do with the absolute speed of the constituent movements, bodily or mental. These may be almost incredibly quick, or they may be leisurely and slow. What is impressive is the absence of any appearance of hurry in the whole operation. There is no jerkiness or snatching, no obvious racing to catch up in one part and forced sauntering to make up in another. The “time” that is spoken of is really “timing,” and if we could understand the simple timing mechanisms which the human body and mind must obviously be able to use, and how they work, we should have got some way, at least, towards a measure of degree or level of skill.

Perhaps this is what has made most investigators who have set out to measure skill turn to the classical reaction-time experiment. Considering that every possible skill that can be studied consists of a set of actions and reactions between receptor and effector processes, this seems a sensible thing to do. Yet it must be admitted that not one single investigation of reaction times in the classical manner, however elaborate it has been, has thrown any

important light on the problems of how to achieve a measure of skill.

The technique of the reaction-time experiment was worked out by the Dutch physiologist Donders in the 1860s. It has not been varied in any important respect since then, except in regard to instrumentation, which has of course enormously improved. Donders did not set out in any sense whatever, to investigate skill. His aim was simply to measure the time elapsing between the presentation of some simple form of stimulus and some single simple muscle response. Naturally and rightly, therefore, he chose responses which, so far as the experimental measure is concerned, literally begin and finish at the same instant. The finger lifted from a Morse key may rise an inch or a mile—it makes no difference. In any conceivable form of skill, however, circumstances of this kind do make a tremendous amount of difference. This is because a given movement has to be followed by another and the second has to be spaced correctly in regard to the first. The time we need is the total reaction time, including that required for the full completion of a given movement, and the recovery time which the organism must have in order that a successive movement should be efficiently performed. This recovery time may have to take account of latent effects produced by the original stimulus whether on the receptor or the effector side.

For example, as is well known, it can be experimentally shown that when a muscle is operating against resistance certain latent effects remain, when its operation is completed, which will automatically interfere with a succeeding reaction of that muscle, or muscle group, and perhaps with related muscle groups. More important still, very likely, every constituent action in the case of most psychophysical skills must grow out of a setting of bodily or mental posture. This posture must be reset before the succeeding movement can be effective.

Timing of Constituent Reactions

It is, I think, vitally important, if we are to understand the simple timing of constituent actions in the continued exercise of skill, to study and determine the normal limit of duration of these latent effects, of after-contraction in the case of muscle, of the after-effects of certain receptor sensory processes, and of the reset of posture required from move to move in almost all forms of bodily and mental skill. Experiments at Cambridge have recently shown, for instance, that where after-contraction is lacking or excessive certain kinds of skill—those involved in piloting aircraft—are learned with difficulty and when learned are easily broken up.

Now there seems to be a considerable amount of evidence which suggests that in general the recovery time for receptor processes is shorter than that required by effector processes. For example, a year or two ago we set out to study some of the phenomena of visual accommodation. The display consisted of a series of Landolt rings, or broken circles, with the gap north, south, east, or west, in relation to the observer. The rings were presented alternately near and far distance, and a simple four-way switch was designed by which the operator could indicate the assigned position of the gap. The time and duration of appearance of each item in the display were automatically recorded, and similarly the beginning and end of every reaction and the intervals between successive items, both of display and of response. When the operator was fully used to the situation he was allowed to determine his own preferred rate of working. His first response sets up the second stimulus, his second response the third stimulus, and so on. Naturally the preferred rate fluctuated somewhat for

* *Cricket—My Destiny* 1946 p. 128 London Stanley Paul

given operator, but not by very much. Preferred rates of different operators varied considerably. We now determine the upper tolerance limit of speed for the whole population, taking as our criterion the occurrence, and perhaps recurrence, of half a dozen closely contiguous errors or omissions. In this case, of course, the rate of exposure of the rings is determined by the experimenter. There is some evidence that the upper tolerance limit remains approximately constant for different operators at an increase of speed proportional to the preferred rate. But the most interesting result is that the study of the records shows that when the operator breaks down he is, in almost all cases, trying to respond, not to the circle that is immediately before him, but to the preceding circle, or to the second or third preceding circle. The receptor and effector series have got out of step, the latter lagging behind. We have some evidence that much the same happens in tracking a rapidly moving target, and dealing with radar displays in extremely quick sequence. And, indeed, this only confirms much common observation. In reading, the eye interprets far ahead of the voice, and if an effort is made to read exceedingly swiftly, "by whole paragraphs," as H. G. Wells used to say, it can be effective only if much of the usual effector association is short-circuited or suppressed. Perhaps the case is most striking of all when posture has to be reset. For then it is the accessory movements, of which normally the operator remains totally unconscious, which markedly and obviously go wrong. The footwork, which may settle the whole body balance, lags and sets everything else out of time. It is extremely tempting to suppose that often when this kind of thing happens, and when the operator is struggling to deal with receptor signals which are no longer present to him, these signals have got on to a rapidly accelerating phase in the curve of immediate forgetting. We have evidence in favour of this, but it is not yet conclusive.

Nothing in the whole course of the total reaction time is rigidly set. Like every other measure of human function this turns out to be a measure of range. There are limits, upper and lower, within which the timing can rapidly fluctuate and the essential adaptive spacing of actions still be maintained. Outside those limits only the skill breaks down.

To a psychologist this is singularly interesting, because most of the conditions that determine the extent of the range can at present be dealt with in psychological terms only. This is not always the case. For a simple objective increase of urgency—in speed, for example, or in the resistance opposed to movement—will be met swiftly by an almost reflex-like increase of effort. Skill that is threatening to deteriorate can, paradoxically, often be restored by an objective increase in the difficulty of the situation. Precisely the same effect, however, can be produced and on a high level more frequently is produced, in definite volition. How this is done still remains largely unknown, but it is certainly in part achieved by the suppression of flourishes which have become uneconomical, though this essentially does not mean that they always are so. That they are not can indeed be seen in the curious circumstance that on the whole it is easier to shorten than to lengthen the customary overall response time. We have many experiments which show that slowing of skill is very hard to tolerate, and I suspect that this is because suppressing flourishes is less difficult than inventing them.

Another condition which can produce shortening of response time is anticipation. Perhaps this is largely responsible for the demonstrated fact that real experts train their skill under conditions which defeat the beginner and the performer of ordinary ability. For example,

receiving and sending wireless messages at speed can be adversely affected by a steep rise of temperature and humidity. But whereas the upper limit of effective temperature for the average performer comes rather sharply at 83° F (28.3° C), the expert continues without serious disturbance for another 17° F (9.4° C). Yet the overall response times for all performers remain closely comparable under all ordinary conditions.

Finally, anything that can arrest the speedy decay of immediate memory will tend to lengthen the overall effective response times and keep receptor and effector functions sufficiently in step for long periods. The conditions which promote this seem to be largely on the display side, in the ordering of the signals for skill which have to be dealt with by the senses, and especially the distance senses. A degree of novelty just enough to combat the peripheral processes of adaptation and the central tendencies of habituation is desirable. Little is known about these conditions as yet, but it has become clear that the placing of signals, especially towards the upper and leftward parts of a visual field, their movement and direction of movement, and the utilization of contrast and colour are all of them important.

The Phenomenon of "Lowered Standard"

On the other side, and working all the time towards increased liability for items in skill behaviour to get awkwardly out of phase one with another, are adaptation and habituation, and something different from both—the curious phenomenon of "lowered standard." Like a lot of other things in behaviour, once this is defined and clarified under experimental control abundant illustrations can be found in everyday experience. This often lays the psychologist under the charge of discovering only what everybody already knows, but that kind of discovery is in fact as important for exact knowledge as any other. We first noticed the case of "lowered standard" when we were studying the kind of deterioration which can be expected to affect the skill of the air pilot who is flying on instruments for long periods without rest. The operation, like that of every other instrument reader, is essentially an exercise in the discrimination—usually the visual discrimination—of alignment and misalignment. The operator must notice the coincidence of a pointer or other indicator with, or its variation from, some mark or member of a series of marks on his instrument. For two reasons it is no use at all taking a measure of absolute visual or other spatial discrimination threshold and deducing anything from that. The observer has to respond not only to the misalignment but to the direction of it. He has not only to notice the appropriate mark on the instrument but to identify it among a number of other marks. It has been known for years that either of these requirements will push up the discrimination threshold, and if the amount of the rise depends at all on the absolute discrimination threshold their functional relations are certainly unknown. On top of this it is still no use allowing for these matters and then getting a measure of effective threshold outside of the skill in any succession of isolated graded tests. For within the skill there are always two thresholds—one a measure of what the observer can do and the other of what is treated as *worth doing*. These can, and constantly do, vary quite independently. At the beginning of exercise they normally approximate to the same value though they are never quite identical. With continued exercise, or under a variety of other conditions they diverge more and more. The threshold of discrimination—what the operator can do—is little affected, except in extreme cases, the threshold of indifference—what is treated as *worth doing*—may rise to double, treble, or

quadruple its original value. Moreover, however this standard of work is set it may be, though it is not necessarily, entirely a neurological affair. The operator may know nothing about it. He may assert that his skill is exactly as it was, and if he is stopped and his threshold of discrimination measured he may appear to be right. For a genuine measure of his skill he needs to have both these thresholds determined within the operation itself.

Results of These Experimental Studies

Let me now try to sum up the main results of these developing experimental studies of skill so far as the linkage of receptor and effector functions is concerned. By far the most important one is that no measure of isolated function can throw any light upon skill or immediate skill potentiality. The crucial point in the linkage with which we are concerned is the accurate timing of the constituent items within their series. So far as the sensorimotor characteristics of the process go it seems that the important thing is the determination of the overall response times—including the recovery time—in the march from interpretation to action and from action to interpretation. There is a tendency for effector response time to lag and for action to get out of step with signals for action. This can be arrested within limits by increased objective urgency, by volition, and by anticipation, provided it does not run very far ahead. It will be facilitated, unless special precautions are taken, by a rapid fall of immediate recall and by the automatic increase of indifference threshold. Looking at the whole matter from the point of view of classical psychological experiment, the field is now set for a thorough reorientation of the traditional study of reaction times and of the functions of latent after-impulses.

[The second lecture will appear in our next issue]

A CONCEPTION OF INDUSTRIAL HEALTH*

BY

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At any moment of time, and especially in a relatively free-thinking community, the volume of public support lent to an idea is often as important as the intrinsic novelty of the idea itself, and when the pressure of opinion surpasses a certain critical value action leaps from latency to life. The conception of industrial health now has reached this point. It is, however, always a salutary exercise, on starting a new venture, to consider whether its aims and outlook are really original, whether they represent a step in a process of thought which started long ago, or whether they are merely the return of a cyclical fashion.

Some Preliminary Thoughts

It is also appropriate now to put forward some preliminary thoughts about this new Nuffield Department in King's College, and about the methods of approach which it is intended to adopt in order to study some of the facets of this very wide problem of industrial health. But first, perhaps, the very word "health" itself requires some consideration, as we must remember that the classical conception, which the Greeks called *hygieia*, had in their day a

limited application, usually to the soundness of the body only, and now, like so many other words of like derivation it has lost caste and become our English "hygiene" with its stereotyped suggestion of soap and water, teeth and tooth-brushes, forms and files, strictly departmental thinking, and rather dull courses of lectures.

But health surely means, among other things, freedom from disease, good performance at the job, whether of mind or hand, the right rate of growth, and the happiness born of a satisfactory wholeness of existence. Moreover in their wisdom the founders of this Chair intended to indicate a breadth of interest, especially in the direction of the causation and prevention of disease, which would not have been clearly shown by the use of any other word. It is, then, worth while taking trouble to define what is meant by health, because when a new subject or a new attitude towards an old subject comes into view it is only too easy to be under a misconception about what is meant, or even to say that there is no such thing, and, indeed, the most recent attitude towards medicine, which is often thoughtlessly criticized along these lines, is that of social medicine, which some people deny exists at all, and which others even think is medicine in relation to the State.

It may, therefore, be suggested now that the field of study of our new department here may be considered to be the reciprocal and triple relation between job and health, the social state, and it is worth while noting at this point that this contrasts somewhat with a conception based upon industrial *medicine* or *disease* as usually conceived, because there is, of course, no true dividing line between industrial and non-industrial illness.

Foundations of Industrial Health

As long ago as 1670 the Italian doctor Ramazzini laid the foundation stone of industrial health with his book *De Morbis Artificum Diatriba: A Dissertation on the Diseases of Workmen*. Ramazzini was not only a bedside doctor but spent much of his time visiting workshops and mines, noting especially the conditions of work, and his conception of industrial health was wide, as shown by the later editions of his book, which included chapters not only upon the diseases of learned men but even upon the health of nuns—an investigation which we may well imagine to have taxed his ingenuity to a high degree and to have involved secret methods, perhaps including even personal disguise.

After a long interval this work was followed, in the middle of the eighteenth century, by a most brilliant practical demonstration of preventive medicine applied to a small community by the naval captain James Cook, who on a voyage which lasted more than three years, which stretched from latitude 52° N to 71° S, and which meant, therefore, going through the Tropics, lost through illness but one out of his crew of 118 men. The Royal Society appropriately marked this feat by awarding him the Copley medal for his paper entitled "The Method taken for Preserving the Health of the Crew of His Majesty's Ship the *Resolution*, during her late voyage round the world." Now Cook's outstanding demonstration, the more notable because he was a layman, was not so much due to his having made any new discoveries in the science of preventive medicine, but can be ascribed almost entirely to his making the fullest application of the principles which were known at the time, to his attention to detail, and to the fact that he had complete charge of a small and isolated community.

The next step forward in this subject came in 1831 with the publication of a book entitled the *Effects of the Atmosphere*.

* An inaugural lecture delivered at King's College on Feb. 24, 1947.

approach but also some simple principles of anatomy and physiology. These do not, of course, compete with the aesthetic point of view, but supplement it, because surely a thing purposely designed to fit the healthy human body is no less beautiful than one which does not do so. If, for example, a machine is needed, it is necessary to make it fit the sizes of the range of men or women working it. It must be the right width and height, and attention must be given to the method of control, the handles must be so placed that smooth direction can be obtained, and they must turn in the most natural way so as not to be too easy or too stiff. Thus, examples of the type of questions which arise are: Is it better to have a push-pull lever or a turning handle? and, How must the controls themselves be shaped so that they do not rub the hands and cause breaches in the skin surface which may afterwards become infected? If the machine has indicators to tell the man or woman working it whether it is on or off, whether it is going too fast or slow or in what direction, then these too must be designed and placed for easy reading, and this at once raises the whole problem of the best way to display a piece of information to the human being. Many points here come to mind. What information is it necessary to display at all? Is it better to combine a system giving information both to eyes and to ears? Should the display be round like a clock face, or should it go up and down or from side to side? Is it better to use coloured lights, remembering that about 8% of men cannot distinguish red from green by colour alone, and that therefore indicator lights must have another clue, perhaps in their position or their spacing?

One of the great problems of interest in this whole field of the relationship of functional physiology to industrial design is how to plan and perfect experiments to give objective methods of assessment, and how to use the human being experimentally as a yardstick against which to measure the machine.

Service experience during the war was in advance of present civilian practice on this subject, and machines, like aircraft, were designed by a number of small committees composed of engineers, manufacturers, pilots, anatomists and physiologists, so that at least an attempt was made to fit machine and man together. It may be thought at first that this method may be cumbersome and slow, but it is surely clear that if it was efficient enough to work in a war of such rapid evolution as the last it is efficient enough to serve civilian uses now.

The results of this type of work in the department, all of which is fairly long-term, with the year as a unit of time, will of course be made generally available to all concerned, and I should like to feel that it will represent the joint co-operation of employer, working man, and college—in short, of Tyneside as a whole.

In addition to the interesting problems already mentioned it is important to think of health, or lack of it, as a personal and individual state to be studied at the bedside in that relationship between doctor and patient which still contains all that is best in medicine, for when a sick person comes to see a doctor, what he wants is help, and not a learned statistical analysis of his condition. It follows, therefore, that one of the fundamental difficulties to be faced in a department of this sort is how to combine the coldly critical scientific outlook of the laboratory with warm humanitarianism at the patient's bedside.

The Social Aspect

In the present way of practice in a hospital there tend to be two big gaps in our information which cannot adequately be filled by merely questioning the patient, and

they can perhaps be indicated here by asking: What social influences have been acting on him in the past before he came, and what is going to happen to him when he leaves? In other words, we usually have little detailed knowledge about his home or job, or about his progress on return. To provide this knowledge, a special type of visitor is needed, based upon the hospital and operating as a member of a team from a self-contained unit which has male and female patients, medical, nursing, and social staff all in one small area and under unified control.

The duties of this visitor or social worker will be to bring information about the patient's home surroundings and economic background, and, if possible, about his industrial environment as well, and to follow him up on his recovery and return to work. But it may be that we must have a visiting team of two—one for the home and the other for the job.

There are a number of possible trainings which fit a woman for this job of social visiting—those of almoner, psychiatric social worker, or health visitor come at once to mind—but the ideal perhaps would be an almoner with a factory inspector's training in addition. Here personality precedes training in importance, and it is essential that she should work as a member of a team and consider the social information gained objectively under a number of defined headings. There is a tendency for some types of this work to become wordy, diffuse, and sentimental, it is proposed, therefore, that the worker in this outlined department shall spend part of her time upon a specific problem which will provide as a basis something concrete and scientifically planned.

Indeed, the time is now passing when the social work of a large hospital can be adequately performed by an autonomous department functioning without a well marked chain of responsibility, either to the patient or to the patient's doctor. Moreover, this type of work at its best is time consuming and personal to the patient or his relatives, surely the social worker should undertake it in direct co-operation with the physician or surgeon who is in charge, and she should act as a full liaison officer between the patient's hospital and home, and in addition should take her share in teaching.

Some of the patients will be suffering from industrial disease within the narrow meaning of the term, which will demonstrate the effect of job on health, but a small proportion will have general medical illnesses, thus linking our specialty closely to the main subject—medicine—and, at the same time, allowing us to study the relationship between returning health and the job.

The Ward as a Co-ordinating Point

The ward, then, will be the co-ordinating point where information from the patient's home and from his work is welded on to the impression gained by the usual bedside methods. This synthesis may well take the form of a small conference attended by representatives of the four groups of people having contact with the patient—the medical, nursing, and social staff and students—because each will have something to add and, in exchange, something to learn.

When, therefore, the patient arrives in hospital he/she will be examined by the doctor in the usual way, but in addition permission will be sought by the social visitor to go to the home, and also to the patient's job, information from both these will be added to his notes, which will also contain a statement on the progress made after he/she is left with special reference to such things as how long

takes to return to his full job, and whether he maintains it or changes to another. In this way it is hoped to link together the technical excellence of the teaching hospital with the social slant of the family physician and with the industrial slant which only the factory doctor on the spot usually can have, and so to permit the passing of knowledge from one medical compartment to another. This means three diagnoses—home, job, and patient—instead of one, together with a follow-up, in one set of patients' notes.

There will also be an out-patient department, working closely in conjunction with the ward, where people will be seen who are not ill enough to be in bed, and where they and their doctors can be advised about their illnesses. It is most important that a department which spends the greater part of its time upon research should keep its feet firmly on the ground of everyday medicine, and it should therefore share, even if only to a small extent, the hospital's daily work.

From time to time students and assistant doctors will accompany the social worker on visits to gain first-hand knowledge of home and working life, because it is clearly illogical that the first time that a medical student sees a patient in his own home (with the exception of a brief training in midwifery) is as a general practitioner after he is qualified, and the same is true of seeing the patient at his work, which he may never do unless he becomes an industrial doctor. It must never be forgotten that a man is the same man whether at his work or in his home, and, ideally, the same doctor should know about both parts of his life. It is important, moreover, that a university department such as this should attempt to practise and to preach that which is biologically true rather than that which seems at the moment to be administratively expedient, and that it should also try to do something to offset the increasing compartmentation which is spreading so quickly through medicine as a subject.

This conception is, of course, entirely experimental, and there are clearly a number of potentially weak points which will need watching. For example, the proportion of time spent travelling to homes and factories may prove too great, patients or their wives may resent a visitor intruding into houses already somewhat over-visited, and the same may happen at the places where they work, but these are only stimulating difficulties to be overcome with tact and the right approach.

The New Department and the Student

The laboratory in the new department will be used as a tool in the investigation of the more intricate and the more fundamental relationship between man and machine, and here also will be studied those problems in mechanical design already mentioned. This has a practical as well as an academic interest, because it is directed towards better mechanical control, less fatigue, and fewer accidents.

Now health, like charity, should begin at home, and in the future it may well be that the college student's health becomes the responsibility of this department. But care must be taken to distinguish between the detection of a disease and its prevention. One of the most important functions of any students' doctor will be to act as health adviser to the college. He must consider it as an industrial organization, have a good knowledge of the physical and psychological conditions of each faculty, and thus know something about the educational and other loads which press upon the various groups of men and women. He will then in time be able to advise upon such things. On the whole, good organization of work, play, food, and lodgings will prevent more disease than detective methods working relatively late, routine medical examination must of course

be done only after it has been decided to admit the student, and the dulling effect upon the doctor of examining large numbers of normal young people must be considered. We know little about the liability of young men and women to disease, or how they spend their money or their time, and surely there is here an opportunity to combine both prevention and research.

You will no doubt have noticed that, apart from a few passing references little has yet been said about teaching, and this is because from our departmental terms of reference it must stand second to research. Nowadays the layman rightly expects the doctor to have a wide intellectual horizon and more knowledge of the cause and prevention of disease, and a better appreciation of what is common and important and of what is uncommon and unimportant, however technically interesting the uncommon state may be, yet it may well be doubted in this case whether the customer really is getting what he needs. Mental flexibility is not encouraged by an overcrowded course which teaches too many facts that are of little use, and which does not stress enough the scientific method of their collection, and still less their orderly arrangement and rearrangement in logical argument. Reflective thought flourishes only when there is leisure and free informal discussion among small groups of people—and the medical student is at present allowed too little of either. Indeed, sooner or later the present method must be left behind wherever students are given a course in what is really gross clinical pathology of the museum type and then an attempt is made to undo the wrong with some sort of postgraduate technical diploma. The aim should be to produce the type of mind which can design a way of life instead of merely prescribing physic, which knows something about what is inside and what is outside the normal environmental range, and which thinks in terms of prevention rather than of so-called cure. Industrial health is not a specialty within the usual meaning of the term but is a reorientation of the general subject, and it is highly doubtful whether in the future it will be wise to organize it as a narrow-minded special service. After all most places of employment are small and could, and should, be looked after by the general practitioners in the area, with advantage both to doctor and to patient since the doctor will have a wider type of interest and the patient will be cared for by a man who has a better chance of knowing both his job and his home.

How, then, in the light of these considerations should industrial health be taught? It is surely clear that it may perhaps one day replace in the general medical course some dead wood which must be cut away, and that it must not be made an additional subject to be loaded on the already groaning student. A game is learned best by those who play it, and it is proposed, therefore, that students should be allowed to co-operate in the experimental work, when they will learn something about the scientific method and about the application of physiological principles to practical problems. Again, visits to workplaces and home should rank as part of the usual course in medicine, and it may well be that it should be compulsory for every student to attend a number of the small case conferences and clinical discussions already mentioned so that he can see an attempt being made to print the whole picture of a patient's health. The formal lecture will not rank high in our teaching plans, because in a course like this the need is not for facts but for food for thought, and this is best imparted informally to the smallest number possible. Much of the teaching of this subject will be oblique, using visual methods of display by photographs and other changing demonstrations. For example, there

may well be staged, in some convenient place, a selection of protective industrial clothing. A miner, after all, wears a hat, a lamp, and sometimes knee-pads, but few students know exactly why, and still less do they realize that these represent elementary steps in preventive medicine.

Staffing the Department

I have dealt to some extent with what this department has to do, and now can outline briefly the staff needed to undertake the task. In the early stages of the bedside work full clinical responsibility should be borne by the departmental head, but later, as the work increases and plans mature, a competent clinician capable, if necessary, of bearing the full load must be employed. He should, moreover, have another interest in some investigation of his own. Under him would come two junior assistants, spending part of their time on clinical work and part on fundamental research, and part again in helping with the routine departmental teaching. These men or women will be at the stage of deciding whether, or how, they intend to advance themselves, and, if so, in which of the branches of activity displayed before them in the department, and one of them will join the social worker as a small combined team of two. Finally will come a house-physician of some previous medical experience who may one day become an assistant in his turn.

On the laboratory side it is most necessary to have a man who combines a knowledge of statistics with a social or biological outlook and who will perhaps in time develop a small subdepartment of his own, there are needed, too, a physicist or engineer who can plan and make machinery to study our problems of design, and a non-medical but biological assistant to use this machinery as a tool to answer the questions posed. Occasionally, but very rarely, one man can do both of these, but usually the purer type of scientist has difficulty in dealing with the variability of response of human beings, and, vice versa, few biologists have the necessary technical knowledge to design the apparatus used. Finally there must be, of course, ample help in computation and secretarial work, because otherwise much time will be wasted.

The "foreign policy" of a department such as this should be to maintain the closest contact with both employer and employed, to eschew politics and compensation questions like the plague, and to avoid the role of expert witness. It should, moreover, work in close connexion with the local department of public health, and with the sister—perhaps one should say the elder sister—Nuffield Department of Child Health.

Conclusion

To summarize the story, it can perhaps be said that an organization such as this should have five main duties: (1) to its patients, which it must treat as persons as well as members of an industrial or social group, (2) to its subject which it may advance a little, chiefly by affording a seed-bed for the germination of potential workers in this field, (3) to the students, by reorientating their medical horizon, (4) to its college, by concentrating mostly upon research, and only slightly upon teaching, and (5) to employer and employed by maintaining a tactful, fair, and independent attitude in its outside work.

May I now conclude with some words of John Dryden's which do, I think, foreshadow this new spirit in preventive medicine?

Better to hunt in fields for health unbought,
Than fee the doctor for a nauseous draught,
The wise for cure, on exercise depend,
God never made his work for man to mend

SURGICAL EMPHYSEMA DUE TO COMPRESSED AIR

BY

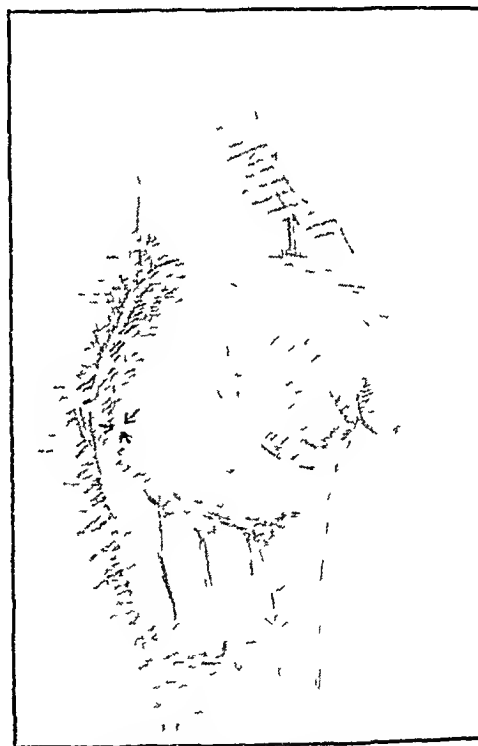
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In the last twenty years compressed air has been employed in industry on an increasing scale, and the hazards associated with its careless use are now well recognized. Emphasis has been placed particularly on injuries of the rectum and colon, and Wyllys Andrews (1911) and others have given excellent surveys of this aspect of the subject. One feels, however, that the occurrence of tissue emphysema in the presence of even the smallest wounds has not been sufficiently brought to notice, and for this reason the following case is considered worth recording.

Case Report

A metal miller aged 16 years was working on the "mille, and a small piece of metal shaving (referred to in the trade as 'swarf') punctured the ulnar side of the palm of his left hand about 1 in. (2.5 cm) proximally to the base of the little finger. He removed it, and the minute pin point wound bled a little. He then, in an attempt to remove the remainder of the 'swarf', directed the nozzle of a powerful air compressor pump on to his hand, which instantaneously became ballooned and painful. He was examined within two hours, and complained only of the swelling and pain.

The ulnar side of the palm was diffusely swollen and tender, the swelling roughly conforming to the size and shape of the palmar space, with ballooning of the webs between index, middle, ring, and little fingers (see Fig.). The palmar creases



Showing the ballooning of the palmar tissues. The puncture wound is indicated by arrows.

over the area involved were almost obliterated. No crepitus was elicited. The remainder of the hand, the fingers, and the forearm were normal, there was no swelling of the dorsum. There was a pin point puncture wound in the position described above and scattered over the surface of the hand were multiple cuticular abrasions. An x-ray photograph showed air in the

oft tissues of the ulnar side of the hand and of the webs between the fingers, but none on the thenar side. The emphysema thus appeared to be confined mainly to the palmar space and its lumbrical extensions.

He was treated by local heat, sling immobilization, and a prophylactic course of sulphadiazine, 1 g by mouth every four hours. Next day the hand remained swollen but was less painful. There were slight pyrexia (99°F , 37.2°C) and some redness around the puncture wound. Sulphadiazine and immobilization were therefore continued. The following day the swelling had completely subsided, there was full function and no pain. A further x-ray examination showed a normal soft tissue shadow, and he returned to work six days after the accident.

Discussion

The air compressor responsible for this accident is one used for blowing the metal filings and chips away from the metal being cut, so that the field of work is not obscured. It is similar to the familiar automatic pump used in garages for inflating tyres, and pumps air at a pressure of 75-90 lb per sq in (5-6 kg per sq cm). When directed on to the unabraded skin it causes no discomfort but is sufficient to make a deep indentation in the tissues. Whitwell (1944) published a somewhat similar case, in which subcutaneous emphysema occurred in the middle finger from an identical cause, but he was able to elicit the typical crepitus of surgical emphysema. In his case the condition subsided without sepsis. Another use of compressed air is as a method of cooling when using a lathe, etc. A third, and more extensive, use is in compressed-air tools such as pneumatic drills, riveters, etc. Parker (1937) records a case of extensive emphysema of the whole hand in which a workman, having a deep wound, accidentally pressed his palm over the exhaust opening of a pneumatic drill. In this case, too, the emphysema subsided without complications.

The present case is of interest for two reasons. First, in spite of the extremely small wound, a large quantity of air penetrated even to the deep subfascial tissues, secondly, the extraordinary manner in which the air inflated the palmar space. It will be remembered that this space is bounded by the intermediate palmar septum laterally, and that this septum lies between the flexor tendons of the index finger and the second lumbrical muscle. The skiagram showed that the air in the tissues reached exactly to this point and did not encroach on the thenar space. It will also be remembered that the palmar space communicates distally with the subcutaneous tissues at the webs between the fingers along the lumbrical muscles. The air was well shown in these extensions in the x-ray picture. The palmar boundary of the space is the dense palmar fascia and the common flexor synovial sheath. This adequately explains why crepitus was not elicited. The dorsal confines of the space are the third, fourth, and fifth metacarpal bones, the fascia covering the interosseous muscles of the third and fourth spaces, and the fascia covering the medial part of the transverse head of the adductor pollicis. These would prevent extension of air into the dorsum of the hand. Medially the boundary of the space is the medial palmar septum, lying close to the lateral side of the opponens minimi digiti and passing deeply to be attached to the anterior surface of the fifth metacarpal bone. The septum extends distally to become continuous with the fibrous tendon sheath of the little finger on its ulnar side. Proximally it reaches the hook of the hamate and the pisohamate ligament and is pierced by the deep branches of the ulnar nerve and artery. This may possibly explain the presence of air in the subcutaneous tissues around the ulnar styloid process and in the subcutaneous tissues on the medial aspect of the base of the little finger in the x-ray. However, there appeared to be some more superficial air in the hypo-

thenar region, and it is probable that it penetrated the subcutaneous tissues here before the larger quantity entered the palmar space.

These accidents are well known in industrial medicine, and no record of any untoward results could be found in the literature. However, should infection occur, it is conceivable, if not probable, that the consequences might be more serious to the patient. Whether the accident could occur in an already infected wound, walled off by tissue reaction, it is impossible to say, but, if so, a spread of infection would be practically inevitable. It would appear to be of utmost importance that the condition be recognized early and prophylactic treatment undertaken. Furthermore, the workmen should be warned of the possibility of the occurrence. Not one workman at the small metal milling factory at which this incident occurred was aware of these dangers.

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DIGITAL FOREIGN BODIES IN SPOT-WELDERS

BY

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Of the countless varieties of injuries sustained by the human body in this industrial age the hand receives perhaps more than its fair share. An unusual type of lesion has come to our notice lately. This is an industrial injury to the hand and fingers sustained by those engaged on the job of spot welding.

Resistance welding, or spot welding as it is more popularly called, is a process by which two or more pieces of metal are joined together by a combination of mechanical pressure and the heat which is generated in the metal by the passage of an electric current. The pieces to be welded are held under pressure between two copper electrodes and a current is caused to flow. As an example of this, when spot-welding two thicknesses of mild steel sheet each 0.04 in (1 mm)



Fig 1—Girl using spot welding machine showing the use of the right hand to position the part to be welded and how this brings her fingers in close proximity to the electrodes whence the sparks emanate.



FIG 2—Man using spot-welding gun, showing that his hands are well away from the electrodes

thick the welding conditions are diameter of tip surface of electrodes, 0.25 in (0.63 cm), welding pressure on electrode-tip surface, 10,000 lb/sq in (700 kg/sq cm), welding current, 8,000 amperes, voltage across the electrodes, less than 1 volt, welding time 0.2 second

In practice, spot-welding is applied either by means of a stationary "machine" (Fig 1) or by means of a mobile "gun" (Fig 2). The machine is used when small objects are being welded, and the gun is used on a large job. When using the machine the small object is held between the electrodes by hand, a pedal switch is depressed, and this causes the electrodes to approximate and squeeze the metal parts together and the current to flow. In the case of the gun, which is portable, when its electrodes are brought into position one hand is used to steady it, the other to switch on the current, thus both hands are necessarily far away from the area to be welded. In each type, as the current is flowing and the weld is being made, there may be a spraying outwards of sparks of red-hot metallic particles. For the most part this "splashing" of sparks is absent or negligible in amount, but in some instances, for a variety of reasons, a much heavier "splash" occurs.

This discharge of sparks can be seen wherever spot-welding is being done. They collide with various parts of the worker and his clothing, but it is the common finding of industrial medical officers that on the whole they do little or no damage. A spot-welding operator usually shows evidences of his occupation by the presence of minute superficial burns of his hands and arms caused by contact

with the flying red-hot particles, but these burns are regarded as a trivial and transitory annoyance and of no disability. Occasionally injury to the eye occurs that is outside the scope of the present article.

Six months ago we noticed in the factory a case (Case 1) in which the sparks had penetrated the fingers of a worker and since that time we have been on the look out for such cases. Eleven more have presented themselves. The cases have all occurred in the factory in which one of us (W. A. B. R.) is medical officer, and have all been referred for surgical treatment to this unit.

Reports of 12 Cases

Case 1—C. M., a female spot-welder aged 18. While spot-welding small steel brackets on Nov. 13, 1945, she received a jet of sparks from the welding machine into the tip of her right forefinger. She felt a stabbing pain and rapidly the finger became white at the tip, painful, and began to swell. The wound of entry was so minute as to be almost invisible. The event. The pulp felt and looked hard. On Nov. 20 she reported the injury at the works hospital. Treatment instituted, and kaolin poultices were applied daily for a week. At the end of that time a small metallic foreign body was picked out with an eye-spud, and temporarily the finger settled. On Jan. 1, 1946, the finger became painful again. Another piece of metal was removed and a small abscess evacuated. By Feb. 25 the acute pain, swelling, and tenderness had subsided, but she complained of a pricking sensation in the finger when handling small objects and tenderness to the slightest touch. Her disability had necessitated a change of job to one in which fine finger movements were not essential.

On examination a very hard tender scar at the finger tip had resulted from the injury and the sepsis that followed. There was no acute inflammation and no axillary adenitis. The finger and hand were mobile and otherwise normal. A skiagram showed multiple MFBs lying in the pulp of the digit parallel to the terminal phalanx. No evidence of bone injury or disease was seen. **Surgical Treatment**—On March 11 a lateral incision was made, extending into the cornified entry wound at the finger-tip, and a minute superficial cavity containing necrotic material was opened up. There was no frank pus. Deep to this cavity the MFBs were located and as many as possible extracted by the point of the knife. The wound healed by first intention, and when seen again recently the patient had no complaint. She had returned to her old job of spot-welding on April 8.

Case 2—T. C., a male spot welder aged 42 while welding on Jan. 26, 1946, received a spray of sparks from the machine into the dorsum of the terminal phalanx of his right middle finger. It quickly became swollen and painful. He went to the works hospital and was treated by a sterile dressing and later, kaolin poultices. During the next two months several pieces of metal were extracted on two occasions from suppurating sinuses at the site of injury. On March 19 he complained of tenderness and a throbbing pain in the finger. On examination a hard, blackened, and calloused spot was seen at the wound of entry on the dorsum of the terminal phalanx. The middle finger and a similar lesion was noted on the dorsum of the ring-finger. Both areas were tender to pressure. There was no acute inflammation noted, no lymphangitis or axillary adenitis. He thought the ring-finger lesion had occurred in January, but he wasn't sure, and it did not give him a skiagram showed multiple MFBs in ring and middle fingers, but no evidence of bone injury or disease. **Treatment**—By March 25, when he attended for surgical treatment a small spot of pus was visible at the entry wound on the middle finger and the axillary glands were enlarged and tender. The superficial abscess on the middle finger was incised and two pieces of metal which lay loose in the cavity were removed and the incision left open for drainage. From the ring finger numerous small MFBs were extracted and primary suture was carried out. By April 9 both wounds were well healed and painless and he had resumed work as a spot welder.

Case 3—W. K., a male spot-welder aged 39. On Nov. 1, 1945, while spot-welding, a jet of sparks entered the pulp

the left little finger and the dorsal surface of the terminal phalanx of the right ring-finger. Both wounds were fomented daily, and a week later pieces of metal were picked out with a needle from each wound. The little finger healed quickly thereafter, but the ring-finger discharged pus for ten days before healing. When seen in March, 1946, he complained only of a tickling sensation on pressure. There was no evidence of infection. A skiagram showed a spray of MFBs in each of the affected fingers. As the patient considered his symptoms to be trivial he was not keen to submit to operation, and nothing further was done. He has continued to work as a spot welder and is without disability.

Case 4—A M., a male welding charge hand aged 36, on April 22, 1946, sustained a jet of sparks into the pulp of the terminal phalanx of the right index finger. Immediately it became very painful and swollen, and remained so for a few days, after which the condition settled down without treatment and without complications. After a week the small entry wound became hard and cornified. The resultant scar wasumpy and tender to pressure. There was no throbbing or pain. May 29 the finger had become inflamed, swollen, and painful. At the site of injury there was a small black cornified spot with a surrounding yellow area and a slight sero-purulent exudation. A skiagram showed multiple MFBs but no bone involvement. **Treatment**—A lateral incision was made on May 31 and inspissated pus was evacuated from the superficial aspect of the wound and most of the MFBs extracted with the aid of an electro magnet. The wound was left unsutured. A post-operative skiagram showed that most of the MFBs had been extracted. The wound healed quickly and well. He was still working in his pre accident job.

Case 5—A T., a male spot-welder aged 52. While spot-welding on May 30, 1946, he received a spurt of sparks from a machine into the pulp of his left index finger. He was seen within two hours of the accident. At the site of injury there was the erythema of a thermal burn with a few small black spots in its centre. A few hours later the finger became swollen and gave much pain overnight. Next day a small blister appeared at the wound site. A skiagram showed multiple MFBs but no bone or joint involvement. A lateral incision was made and the pus drained from the blister, the main mass of underlying MFBs extracted, and the wound left unsutured. A post operative skiagram showed that only a few dust like particles remained. He resumed work as a spot-welder two days later, and was without disability on Sept 10.

Case 6—G S, a male spot-welder aged 25. On Aug 13, 1946, he was welding parts of a motor chassis, using the spot-welding machine, when sparks penetrated his right thumb. He felt a sharp stab of pain, the site of the wound went white, and after a few hours the thumb was quite swollen. He did not



FIG 4—Enlargement of the thumb of Case 6 showing the wound of entry

attend the works hospital until next day. For three weeks the wound periodically healed and broke down again, with discharge of pus and metallic particles. The interphalangeal joint became progressively stiff and painful on movement. On examination on Sept 3 there was a small hard lump consisting of a central black spot with a white halo and a peripheral area of erythema on the lateral aspect of the right thumb opposite the interphalangeal joint. In addition the marks of his trade were very apparent. There were two black spots on the flexor aspects of his right index and little fingers (Figs 3 and 4).

On the front of the wrist were fresh superficial burns, minute scars of old burns, and abrasions and linear scratches due to flying particles of steel. He had been welding steel sheets of

extra thickness, and although his hands were relatively far away from the electrodes the spark output was heavier. Skiagrams (Figs 5 and 6) showed numerous opaque foreign bodies close to but not in the interphalangeal joint. Flexion of the joint was limited to half its normal range. By means of an electro-magnet most of the metallic particles were extracted and the wound was left open for drainage. He resumed work as a spot welder on Sept 16, and on Nov 12 was without disability.

Case 7—E P., a male assembler and temporary spot welder aged 38, received a spurt of sparks from the spot-welding machine into his left index finger on Aug 13, 1946. He said the injury almost paralysed the finger. It was very painful and began to swell soon

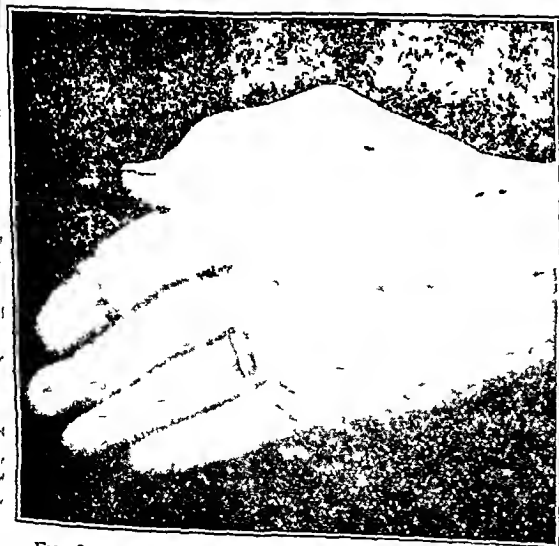


FIG 3—Photograph of the hand of Case 6 showing a number of the relatively unimportant superficial burns commonly sustained by spot-welders. Also seen on the thumb is the wound of entry of MFBs.



FIG 5—Case 6 Skiagram showing the digital lesion

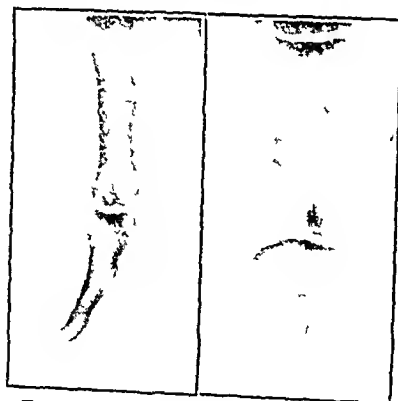


FIG 6—Skiagram of Case 6 taken after operation

afterwards. He reported to the works hospital two days after the event and kaolin poultices were applied. The wound healed quickly, but thereafter broke down every few days with discharge of pus. On examination on Sept 13 a typical lesion was seen on the flexor aspect of the middle of the terminal phalanx of the left index finger. It was tender to pressure and dry. There was no joint or tendon involvement. A skiagram showed MFBs in the pulp of the left index finger, but no bone or joint lesion. The metallic particles were excised, and he resumed work as a spot welder on Sept 13, when seen on Nov 12 he had no disability.

Case 8—R S, a male, aged 56, while spot welding small brackets on a machine on Aug 27, 1946, and wearing cotton gloves, sustained a jet of sparks into the pulp of the left thumb. Inflammation, swelling, and pain resulted, and kaolin poultices were applied daily. On Sept 3 two pieces of steel were removed from a pin head abscess at the site of injury by probing only and without incision. On the 12th a dark, rough, cornified area appeared at the site of entry. There was no inflammation or oedema. Slight pricking on pressure was the only symptom and this gave so little trouble that surgical intervention was unnecessary.

Case 9—E I, a female spot-welder aged 23. On Sept 2, 1946, while welding small brackets on the spot-welding machine a splash of sparks entered her left index finger. No pain was felt at first, but some hours later the finger began to swell and throb. She reported for treatment next day. Kaolin poultices gave ease, but the wound discharged moisture for ten days before it healed. Examination on Sept 13 showed a lesion situated on the flexor aspect of the left index finger over the distal interphalangeal crease. It was dry and tender to pressure. Joint movements were of full range, without tendon involvement. A skiagram showed MFBs situated in soft tissue of the middle flexor aspect of the middle phalanx. No bone or joint was involved. The foreign bodies were excised, and next day she resumed work as a spot welder. When seen on Nov 12 she was without disability.

Case 10—W E, a male jig hand aged 27, sustained a splash of sparks into the lateral aspect of the terminal phalanx of the left ring finger while spot-welding on Aug 23, 1946. An x-ray film disclosed numerous MFBs, but no bone lesion. The affected area was inflamed and tender and in the centre was a minute dark entry wound. An occlusive dressing was applied. On Aug 30 there was still some inflammation but no pus and no oedema. On Sept. 9 the only disability was very slight pricking on pressure, but this is not often felt, as the lesion is situated laterally. Surgical intervention was not required.

Case 11—A P, a male aged 35, was using the spot welding machine on Sept 13, 1946, when sparks penetrated his left thumb, he reported this fact soon afterwards to the works hospital. Apart from the initial stab of pain the lesion did not cause discomfort, but the immediate vicinity of the entry wound became blanched and tense. At the radial side of the base of the left thumb there was a small collapsed blister with a surrounding area of erythema. At the centre could be seen a hard black core from which exuded a pin-point of serum on pressure. A skiagram showed the presence of multiple MFBs close to but not actually in the first metacarpo-phalangeal joint. Surgical treatment was carried out within six hours. The area of the lesion was completely excised and primary suture performed. Healing was by first intention, and he returned to his job on Sept 23. When seen on Nov 12 there was no disability.

Case 12—N S, a male spot-welder aged 35. On July 20 1946 a splash of sparks from the machine penetrated his right index finger. He felt a burning sensation at the time of injury and had little discomfort afterwards. About four days later the finger began to throb and swell. He first came for treatment on Sept 27, when the findings were as follows. Right index finger raised pus-filled blister on the radial aspect of the interphalangeal joint. Joint movements were limited owing to inflammatory oedema surrounding the lesion. An x-ray film showed multiple metallic foreign bodies. The MFBs were removed by excision the same day and the opening was drained. The patient resumed work as a spot welder on Oct 5, and when seen on Nov 12 was without disability.

Comment on the Cases

From the foregoing it will be seen that the lesion consists of a superficial burn, minute entrance wounds, and underlying foreign bodies. The red-hot sparks are sterile, but dirt and bacteria may be carried in from the skin surface. In addition the heat coagulates and devitalizes an area surrounding the particles, thus producing a field particularly prone to the onset of infection. The symptoms are primarily those of a burn and, later, those of retained foreign bodies with chronic inflammation. In our cases the metallic particles had lodged in the pulp and cellular tissues of the fingers, but if the more specialized anatomical structures—joint, nerve, tendon, bone—should be involved, a more serious outcome might be expected. Even in the form described above, in which the finger-pulp is affected, involvement of nerve fibrils in the finger-tips can lead to much tenderness and disability. These workers depend for their livelihood upon the exact and full function of their fingers, and if to pick up an object causes severe pricking pain they are seriously handicapped.

Treatment

First Aid—This calls for a sterile occlusive dressing, a sling, the injection of antitetanus serum, and a sedative for the relief of pain. Preparation should then be made for the patient to receive surgical treatment.

Early Surgical Treatment—If seen within eight to twelve hours of injury the procedure indicated is wound toilet, excision of dead tissue, extraction of metallic particles, and primary suture. The operation is carried out with all the usual theatre facilities. Either regional "novocain" block of the digital nerves or general anaesthesia is satisfactory, and a bloodless field is obtained by means of a rubber catheter tied round the proximal end of the finger. Incisions are placed laterally and enclose the wound of entry if possible. If the lesion is more centrally situated the incision is still made laterally and the entry wound excised separately. Although most of the metallic particles can be seen and removed by the point of the knife the procedure is facilitated by the use of an electro-magnet: the foreign bodies are magnetic, and even dust-like particles can be withdrawn. The operation is completed by the insufflation of penicillin powder and primary suture.

Late Surgical Treatment—Cases which arrive for treatment later than twelve hours require immediate surgery only if infection is present. Even if no infection occurs, tenderness, irritation, lumpiness, or loss of fine sensation may be present, and these are indications for removal of the metallic foreign bodies. In certain cases, even in the absence of symptoms, excision is indicated, as the presence in the tissues of multiple MFBs remains a source of danger. Chronic suppurative and sinus formation necessitate incision and drainage, with removal of the causative foreign bodies.

Prevention

It will be noted that all the above cases occurred in workers engaged in the use of a spot-welding "machine" as opposed to a "gun". The reason for this is that the process of welding small parts on a machine may entail the positioning of the part with the fingers close to the electrode as the weld is being made: the fingers are therefore exposed to the splash of sparks close to their origin and at their point of maximum velocity. In the case of a gun operator, on the other hand, the hands are both employed in holding the gun and operating the switch, and are therefore out of harm's way.

There are many technical causes of an increase in the amount of sparking produced in the process of welding.

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Among these may be included foreign matter on the surface of the metal, inaccurate placing of the weld on the edge of the sheet of metal, maladjustment of the machine, etc. But even under ideal conditions sparking will occur in a certain number of cases. Such being the case, the problem of prevention is to devise a means of protecting the hands of the worker from these sparks. This might be achieved by one of three methods

(a) By applying to the machine a guard which would protect the operator's hands or prevent them from being brought close enough to the welding point to be in danger. This would be the ideal method—being permanent and foolproof, and in no way demanding the co-operation of the worker. Unfortunately, no such guard yet conceived will permit of the welding machine being used

(b) By the use of a jig for positioning the parts to be welded and thus removing the necessity for the operator's fingers to be close to the welding point. This is possible in many cases, but in some is technically impracticable. Also, in practice there is the very real danger that the operator will place ease before safety and discontinue the use of the jig

(c) By the provision of tongs or protective gloves. This is analogous to the provision of goggles for the protection of the eyes, and possesses the same disadvantages—namely, that through laziness or carelessness on the part of individual operators they will be temporarily or permanently left off. As is well known by all industrial medical officers, protective clothing can easily be devised and provided, but it is most difficult to persuade operators constantly to use it

It has been found that neither industrial cotton nor leather gloves afford sufficient protection, and we have experimented with various other materials. Those most satisfactory to date are cotton gloves coated with "neoprene" and asbestos fabric finger-stalls worn under the usual cotton gloves. We now have both of these in use but are continuing our search for the ideal material

We are grateful to Mr J. C. Scott, Director of the Accident Service, Radcliffe Infirmary, for his help and encouragement in preparing this paper, and would like also to acknowledge the assistance given to us by the welding and laboratory staff of the Pressed Steel Company

SYMMETRICAL GANGRENE IN THE AFRICAN

BY

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Gangrene in the extremities can generally be attributed to diabetes, arteriosclerosis, or thrombo-angitis obliterans. Ergot poisoning is a relatively rare cause. Arteritis resulting in gangrene is described in acute infections, such as typhus and typhoid fevers and malaria. Gangrene has been noted in pellagra or the vitamin B deficiency state (Page, 1946). It is also seen in those cases where the arteries are suddenly occluded by an embolus, subacute infective endocarditis being a typical instance. Occasionally in Raynaud's phenomenon, there are trophic changes in the tips of the fingers. Traumatic cases, forming a separate group, are also seen. Trench foot and the immersion-foot syndrome following exposure to cold constitute another class of cases in which gangrene of varying extent is the most important feature

I have encountered gangrene in an extremity in the elderly African, presumably due to arteriosclerosis, and unilateral gangrene, which might have been attributed to syphilis. There appears to be very little written on Buerger's disease in the African. I have not encountered a case in the native. Ferro-Luzzi (1942) reports on 20

cases of Buerger's disease in European males living in Eritrea, but he failed to find the condition among the indigenous population. Goetz (personal communication), however, has seen a case in the African

During the past four years I have seen six cases of symmetrical gangrene in the African, running a peculiar but nevertheless more or less constant course. In each the course and history were similar. (1) The onset occurred in a person who previously enjoyed more or less good health. (2) The disease was seen only in males. (3) It occurred usually between the ages of 20 and 35—one patient, however, was over 50. (4) The first sign was oedema of both feet, this was followed by pain. (5) The gangrene occurred simultaneously on each side. (6) No obvious cause common to each case could be found for the disease

In four cases the gangrene was limited to the tips and pads of all the digits. In one the gangrene ascended to the mid-tarsal joints, being exactly symmetrical on both sides. In the sixth case the whole of both feet and up to 3 in (7.6 cm) above the ankle-joint on each leg was affected

All the cases came from Mashonaland, but from widely separated regions. They were seen at different periods over the four years. In none was there anything to suggest that other cases with gangrene had occurred in the villages from where they originated. The patients denied having received any treatment from a witch-doctor or of having consumed any native drugs prior to the onset of the disease. They all stated that they had previously been well. In two of the six cases the Wassermann reaction was positive. In one of them the disease was immediately preceded by cerebral malaria, but in no other case was acute malaria found. No sugar was found in the urine of any of the patients. The blood pressure was normal in each. The clinical features of the two cases in which extensive gangrene occurred were as follows

Case 1

An African man aged about 30 first became ill on June 11, 1945, with general malaise and shivering. He vomited twice on the first day of the illness. During the night he developed severe headache and passed into coma. He was admitted to the Salisbury Native Hospital from Norton (about 25 miles away) on June 14. The coma continued for two days, after which he gradually regained consciousness (June 15).

On admission the blood smears were positive for *Plasmodium falciparum* and quinine was given by injection 10 gr (0.65 g) twice daily for two days. The cerebrospinal fluid was clear. There was nothing abnormal in his legs. On June 16 the day after his recovery from the comatose state and acute malarial condition, the patient first complained that his legs were heavy to lift. It was noticed that his feet, ankles and the distal halves of his legs were swollen and showed pitting oedema, but there was no pain. A day or two later his legs and feet were very painful to touch. Several days later it was noticed that the skin of both feet was hard and cold up to 3 in (7.6 cm) above each ankle-joint. The feet were discoloured black, this being most clearly seen on the soles and the pads of the toes. Three distinct zones were noted on each limb. The most distal one, from the toe-tips to past the mid-tarsal joints, was pitch-black, due to total gangrene. The middle zone, which reached to about 3 in above the ankle-joints, was cold and swollen. Above this was a narrow zone, which was warm and faded gradually into the normal temperature of the leg. All the toes were affected by dry gangrene. No pulse could be felt in the anterior and posterior tibial arteries, but that in the popliteal and femoral region was easily palpated and was of equal force in each limb.

The patient was thin. There was no oedema in any part of the body until it appeared in the legs. Jaundice was not detected. The conjunctivae were pale as was the tongue. The gums were slightly spongy. There were signs of a pellagroid rash

on the hands and feet. Abdominal distension was not present, nor was the spleen or liver palpable. Nothing of note was found on examination of the central nervous system. The cardiovascular system was normal, the blood pressure being 110/80. The Wassermann reaction of the blood and cerebrospinal fluid was negative. No sugar or albumin was present in the urine. The blood count was: red cells 2 570 000 per cmm, haemoglobin, 40%, colour index 0.78, white cells, 24,500, neutrophils, 74%, lymphocytes 22%, monocytes, 4%.

Before admission to hospital the patient's diet consisted of maize and meat—quite an ordinary one for an African. Life and food were shared with other labourers in a labour camp, and the patient stated that so far as he was aware none of the other inmates of the camp had been afflicted with his complaint.

The gangrenous areas were treated with dry sterile dressings. However, after ten days moist gangrene set in, and amputation was recommended. The infection spread and the gangrenous area became swollen and offensive, but the patient could not be persuaded to consent to an amputation. He insisted on leaving hospital and was discharged on July 13. Trace of him was then lost.

Case 2

A native youth aged about 16 was admitted to the Salisbury Native Hospital on July 1, 1945, complaining of swelling and pain in both feet. He came from the Lnkeldoon District (about 100 miles away). He was quite well until two weeks previously, when he began to have lumbo-sacral backache. There was no preceding history of malaise, vomiting, headache, consumption of drugs, or eating of food other than that to which he was accustomed. He had not previously visited a witch-doctor. A week after the onset of the backache he noticed that both his feet had begun to swell. The oedema was followed by pain in the feet. The patient was quite certain that the swelling preceded the pain by two days. A week later he noticed that both feet had changed colour, becoming darker and blacker. His diet on the whole was a fairly satisfactory one, consisting of maize daily, meat four times a week, pumpkin three times a day, sweet potatoes every day, monkey-nuts occasionally, and certain wild fruits. He ate worms, caterpillars, locusts of the larger type, and white ants.

On examination he was fairly well covered with no sign of nutritional disease. The lungs were clear and the heart normal. The blood pressure was 120/60. The spleen and liver were not enlarged. The blood count was: red cells 3 750 000, haemoglobin 71%, colour index, 0.94, white cells, 11 300, neutrophils, 68%, lymphocytes 21%, monocytes, 6%, eosinophils 5%. The blood Wassermann reaction was positive.



FIG 1

There was dry gangrene of all the toes and both feet up to the tarso metatarsal joints, the affected parts being black and cold. The gangrene was symmetrical in extent (Fig 1). Immediately above the gangrenous area in each limb was a zone of demarcation, 1 in (2.5 cm) in depth, above which again was

a band of hyperaemia which gradually faded into the normal temperature of the rest of the limb. The popliteal and femoral pulsations on each side were normal and equal. The dorsalis pedis and posterior tibial arteries could be felt pulsating.

Towards the beginning of August, spontaneous amputation was noticed at the line of demarcation in the left foot, and on Aug 20 a similar line was seen in the right foot (Fig 2). Next day the left foot was amputated at the line of demarcation.



FIG 2

in the tarso metatarsal line, and on Sept 7 the same operation was performed at the corresponding site in the right foot. The sites of amputation healed soundly and the patient was otherwise perfectly fit. He became anxious to leave hospital and was discharged, and returned to his kraal.

Discussion

The oedema is difficult to explain, since it is not usually a feature of arterial obstruction alone. Oedema in vascular disorders may usually be attributed to venous or lymphatic obstruction, local infection, or perhaps to disease of the capillary walls with resulting increased permeability. An example of the last type may be seen in Buerger's disease (Saint, 1945) or in ergot poisoning. It is possible that the oedema is the primary cause, producing secondary interference with the circulation of the limb, foot, or toes. The oedema appears rapidly in these cases and is of moderate degree. It may have been due to a thiamine deficiency. Case 1 was, in fact, given thiamine, 20 mg daily, by intramuscular injection as soon as the oedema was noticed. It lasted only a few days and then disappeared, but by that time gangrene had supervened.

It will be seen that the primary cause of the admission of Case 1 to hospital was cerebral malaria, and that the limb disorder followed soon after. It would thus be reasonable to exclude ergot or other drugs which might possibly have been consumed before admission. The limb disorder may, however, be attributed to the severe malaria infection or to a spasm of the arteries in the legs following the administration of quinine.

From the above description it will at once be clear that Raynaud's disease and thrombo-angitis obliterans are easily ruled out. Raynaud's phenomenon produces discoloured lesions including small cutaneous trophic lesions with fibrosis in the fingers and toes (Saint, personal communication), but this occurs after a long interval and not, as in the cases described, after a single attack. Raynaud's disease confined to the toes is uncommon, whereas in the present cases the disorder was limited solely to the lower extremities. Thrombo-angitis obliterans is easily excluded for there is often a history of intermittent claudication when the muscle circulation is involved or of migratory phlebitis.

It is almost always unilateral to begin with, becoming bilateral sooner or later. Almost all cases have a polycythaemia (Saint, personal communication). An anaemia was first seen in both my cases. The only two points which Buerger's disease has in common with these cases are that the patients were relatively young adults and were all males.

Ergot poisoning has to be considered. There is usually a history of the patient's having taken the drug, or of other cases occurring in the community. In the cases recorded, however, no other sufferers with gangrene were observed in the areas from which they came. In ergot poisoning, in addition to the gangrene, nervous symptoms may appear. In my cases, however, there were no neurological changes. In ergotism the gangrene may affect not only the toes but also the fingers, and is usually delayed for weeks. In my cases the onset was rapid and only the lower extremities were affected.

Exposure to excessive cold may result in gangrenous changes in the extremities. Abramson *et al* (1946) describe illustrative cases with symmetrical gangrene of the toes and feet bearing a close similarity to the cases described in this paper. Trench foot is usually seen in those compelled to remain in trenches for a prolonged period during which the extremities are exposed to a damp and very cold environment. There was nothing, however, in the history of the present cases to attribute the gangrene to such a cause.

Lewis (1936) describes two interesting forms of symmetrical or bilateral gangrene which bear a great similarity to my cases. The first form is referred to as "bilateral gangrene of the digits in the young," and the second as "bilateral gangrene in the digits occurring in the elderly."

In the former group children and young adults are affected, both sexes equally. The origin of the condition is obscure. It usually affects relatively young people with no previous history of vascular disease. At the time of onset, however, malnutrition or some other condition causing chronic ill-health is present. It may, on the other hand, develop during an acute infection such as pneumonia or typhoid fever. The onset is apparently sudden, without warning, and several fingers or toes are affected. These become discoloured within a few days. Tissue at the tips of the toes is lost, the gangrene usually being dry. Occasionally it may extend to the base of the distal or middle phalanx. The disease is bilateral and often strictly symmetrical. The main arteries are unobstructed. Lewis considers that the condition probably results from damage to the intimal coats of the digital arteries, with resultant thrombosis. My cases appear to differ from these in that they had a preceding history of pain and oedema in the affected areas, and that in two of them the gangrene extended well beyond the toes, thus being more extensive than in the disorder described by Lewis, also, the fingers were unaffected. The similarity between his cases and mine lies in the fact that a single attack with symmetrical distribution occurred in those generally poorly nourished or in a patient during the course of or following an acute condition.

In the second group described by Lewis—bilateral gangrene of the digits in the elderly—an associated disease, such as cancer, tuberculosis, high blood pressure, or diabetes was present with the gangrenous disorder. The fingers often become discoloured without warning and gangrene soon follows. The gangrene is often associated with much pain. Lewis supposes that the vessels show intimal thickening, due to nutritional changes. This leads to multiple arterial obstruction.

It is not possible to give a cause for the cases I saw over the past four years. The exact symmetry of the affection would suggest a toxic disturbance or some general disorder

such as a deficiency disorder. I doubt if ergot was the cause of the gangrene, since one of the cases was admitted with cerebral malaria, and developed the condition in hospital. Quinine, however, was administered to this patient and may have produced a spasm of the vessels.

Pellagra, ariboflavinosis, hypoproteinaemia, and other disorders of nutrition are common in the African. Case 1 showed signs of pellagra. It is possible that the gangrene may have resulted from vascular occlusion, a direct result of a nutritional disturbance in the vessel wall. This possibility is not altogether improbable in view of the reports on the development of gangrene in the extremities seen among prisoners of war in the Far East. Recently Page (1946) reported on the findings on 2,000 prisoners of war from Hong Kong. Among these a certain number with painful feet and signs of deficiency in the vitamin B complex developed gangrenous changes in the toes and feet. Page reports, too, that Prof. Kinoshita of Osaka University studied these vascular changes seen among Japanese soldiers returned from the South Pacific and found definite thickening of the vessel walls with narrowing or obliteration of the tissues of the small arteries of the feet and legs.

Summary

Six cases of gangrene of symmetrical distribution and extent occurring in the African are described. In four the gangrene was limited to the toes, but in two the gangrene was more extensive.

The condition sets in simultaneously on each side, first with oedema, followed by pain and finally gangrene.

My thanks are due to Prof. C. F. M. Saint for kindly examining the two cases described in detail and for his suggestions as to the differential diagnosis. I am grateful to Dr. R. M. Morris, Medical Director, Southern Rhodesia, for permission to publish this paper.

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Medical Memoranda

Acute Infectious Lymphocytosis

Steigman's (1946) account of infectious lymphocytosis has drawn attention to the importance of this condition in children, especially in the differential diagnosis of infectious lymphocytosis and acute leukaemia, and prompts me to report a case of the acute form, as very few have so far been recorded in this country. From a perusal of the literature infectious lymphocytosis would appear to be a disease of recent origin though before Carl Smith recognized it as a separate disease entity in 1941 it was probably confused with infectious mononucleosis. No cases even suggestive of the condition seem to have been reported before 1939 and indeed, only a handful of cases were to be found in the American literature, and apparently very few elsewhere until Finucane and Philips (1944) described an epidemic of 21 cases in a children's sanatorium.

CASE REPORT

The patient, a boy aged 7, first attended the children's department of the London Hospital on Oct. 15, 1946, with a history of diarrhoea for five weeks. There was slight abdominal pain, he passed frequent motions containing a little mucus, and he complained of sweating at night. The only abnormality noted was moderate enlargement of the left cervical glands. Rectal swab and x-ray examination of the chest were negative. On Oct. 25 blood examination revealed a white cell count of 30,600 per c.mm. (75% normal small lymphocytes) and haemoglobin 85%. At the age of 4 he had had whooping cough and two years later he developed mumps. An uncle had died of pulmonary tuberculosis when the boy was 1 year old, but there was no history of contact.

On admission for further investigation the boy felt perfectly well, the diarrhoea having ceased. He was thin and rather pale, and was afebrile, pulse 90. The tonsils were slightly enlarged as were the glands of the left side of the neck, which were discrete and rubbery. The spleen and liver were not palpable. There were no symptoms or signs referable to the nervous system. No other abnormality was noted, except that on Nov 7 the white cell count was 52,300 (76.5% small lymphocytes). The Wassermann reaction, Minnioux test, and Paul-Bunnell reaction were all negative.

By Nov 20 the white cell count had dropped to 11,100 (51% small lymphocytes, 40% neutrophil polymorphs and 3% eosinophils). He was then discharged to the out-patient department, and on Nov 26 the white cells numbered 13,300 per cmm (lymphocytes 25%). He felt well and there were no abnormal signs.

COMMENT

This case is typical of infectious lymphocytosis, especially in the mild abdominal symptoms, the paucity of physical signs, the cervical adenitis, the leucocytosis with relative and absolute lymphocytosis due to increase in normal small lymphocytes, lasting three to five weeks, and the negative heterophile agglutination test. If the disease is due to a virus as is to be supposed in the absence of a demonstrable bacterial agent, the blood changes are very unusual, since viral infections are characterized by leucopenia, the apparent lymphocytosis being only relative. As in the cases reported by Finucane and Philips a mild eosinophilia appeared as the total count fell.

I should like to thank Dr Kenneth Tallerman for permission to report this case, which was under his care.

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Pseudo-Hypertrophic Muscular Dystrophy

The commonest type of muscular dystrophy seen in clinical practice is pseudo hypertrophic muscular dystrophy, and its features are fairly constant. The following case is of interest because of the late onset of symptoms and the slow progress of the disease.

CASE REPORT

The patient, a man aged 68, was admitted to hospital complaining of difficulty in walking. At the time of admission he could walk only with the greatest difficulty and the slightest obstruction to his progress caused him to lose his balance. The first symptoms appeared at the age of 28 when he experienced difficulty in climbing stairs. He was then employed as a locomotive fitter, an occupation involving a considerable amount of climbing on and off engines. The progress of the disease was so slow that he was able to continue at his employment until he retired at the age of 64.

Since his retirement, however, a rapid deterioration in his condition has taken place, until now, at the age of 68 he is almost completely crippled. He is an only son but a maternal uncle had been similarly affected since childhood. The patient has two sons aged 28 and 30 who so far show no signs of the disease.

Examination revealed the characteristic combination of muscular hypertrophy and wasting found in this condition. Pseudo hypertrophy was present in the gastrocnemius, deltoid, and infra spinatus muscles. Wasting was evident in the supraspinatus, pectoralis major and biceps brachii, but there was no involvement of the masseter or of any of the other facial muscles. The pupils were central, circular, and equal, and reacted to light and accommodation. The cranial nerves were normal, the knee jerks could not be elicited, but the ankle reflexes were present, and the plantar responses were flexor. There were no signs of disease in the cardiovascular, respiratory or alimentary system. The Wassermann reaction was negative, and a glucose tolerance test normal. Section of the pectoralis major showed an almost complete absence of muscle fibres with replacement by fat. Section of the gastrocnemius revealed swelling of the muscle fibres with proliferation of the sarcolemmal nuclei.

COMMENT

Pseudo-hypertrophic muscular dystrophy is said to have the least benign course of all the dystrophies, and generally shows a progressive deterioration. Death usually ensues in 10 to 15 years from secondary pulmonary complications following paralysis of the respiratory muscles. Most cases of this type of dystrophy start about the middle of the first decade. A precocious onset of symptoms is said to forebode a bad prognosis

with a rapid deterioration and conversely, a late onset often indicates a more favourable course. In the present case the onset was delayed until the age of 28, and the course of the disease has so far extended over 40 years. Moreover there seems to have been an arrest of progress during 36 years.

It is likely that, had the patient been seen 10 years ago recovery might have been reported and this is a possible explanation of some of the cases of cure which have been recorded in the literature. The rapid progress of the disease at the end is also an interesting feature of the case.

Most of the cases in which arrest of the disease has taken place have been examples of the Landouzy-Déjerne type or of the Erb juvenile type. Since the essential pathology of the dystrophies is the same it is to be expected that a similar course would be followed by other types of dystrophy, and the case here described is a good example of the slow course and temporary arrest seen in the other types of muscular dystrophy.

I wish to thank Dr H H MacWilliam, medical superintendent of Walton Hospital for permission to publish this case.

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Empyema of Frontal Sinus simulating Osteomyelitis

In the following case the history and clinical signs resembled osteomyelitis of the frontal bone, and for that reason I submit it for publication.

CASE REPORT

Madame A, aged 50, was admitted to hospital complaining of a discharging sinus above the right eyelid for five months. There was no pain and the discharge was preceded by a swelling of the right upper lid for two weeks. She had had headaches over the right side of the forehead for one year. Six years previously she had had similar headaches and swelling of the right upper lid, but no discharge.

On examination a narrow sinus discharging yellow pus was observed immediately beneath the centre of the right eyebrow. *Staphylococcus aureus* was found on direct examination and culture. A probe was passed easily through the sinus, which proceeded above the superior orbital rim in the direction of the posterior ethmoidal cells for a distance of 2 in (5 cm) over the right frontal surface of the frontal bone. There was slight depression, oedema, and tenderness on pressure. Skiagrams showed what appeared to be an abnormally large right frontal sinus, the left frontal sinus was apparently absent. The right superior orbital margin was depressed about one third of an inch (0.8 cm) and marked widening and shortening of the right superior orbital fissure were found. There appeared to be a doubtful sequestrum at the medial margin of the sinus. A lateral view showed an abnormal depth to the sinus.

The frontal bone was approached through a Howarth incision opening the discharging sinus. The orbital rim and floor of the frontal sinus were intact but very thin. The pus was evacuated through the discharging sinus, and an empyema of the right frontal sinus was found occupying an oval cavity about $3\frac{1}{2} \times 2 \times 2$ in ($8.75 \times 5 \times 5$ cm) which had completely eroded the roof of the orbit to the level of the superior orbital fissure. The pulsation of the frontal lobe of the brain and meninges was clearly palpable through the mucous lining of the empyema. There was an erosion of the anterior wall of the sinus, and through this the sinus discharged.

The fronto nasal duct was enlarged in routine Howarth fashion and the anterior ethmoidal cells were removed. A $1\frac{1}{2}$ in (1.25 cm) drainage tube was inserted into the wound through the enlarged fronto nasal duct to the nostril. A full course of sulphathiazole and 3 000 000 units of penicillin were given over a period of 4 weeks. Recovery was uneventful.

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At the Eighth Congress of Scientific Films held in Paris in October, 1946 the Institut de Cinématographie Scientifique Paris and the Scientific Film Association, London, and observers from UNESCO, Czechoslovakia, Poland, Sweden, and the U.S.A., agreed that it was necessary to establish an international scientific film association. After preparing a draft constitution, the British and French organizations have been meeting in Paris to complete arrangements for an inaugural congress, to which all countries are being invited. This will be held in Paris at the beginning of October 1947. It is hoped that the proposed association will assist in the provision of a number of practical and urgently needed services.

Reviews

EDUCATION FOR MEDICINE

Medical Education and the Changing Order By Raymond B Allen, M.D., Ph.D. (Pp 142 8s 6d) New York The Commonwealth Fund London Geoffrey Cumberlege (Oxford University Press) 1946

The practice of medicine reflects the philosophy of its age. In this challenging monograph Dr Raymond B Allen, a medical educationalist of wide experience and now President of the University of Washington, surveys the problem of medical education in the post-war world. He necessarily poses more questions than he answers, for medical education is an experimental art. There is no science of medical pedagogy, curricula are never final. Only programmes of instruction based on the knowledge, experience, imagination, wisdom, and courage of individual teachers and taught in medical schools of high quality will achieve success. Since, as Santayana wrote, "Those who cannot remember the past are condemned to repeat it," Dr Allen sketches first the historical development of medical education. For him, as for others, medical education begins with the child and does not end until the physician has retired from active practice. The study of medicine, he believes, should include that of life in all its aspects—physical, psychological and social. The physician should be so trained that he is competent to apply new knowledge in any branch of human activity to healthy living and to the prevention and cure of disease, he should co-operate fully with all those agencies whose aim is the provision of adequate medical services for the people. Therefore the student, before entering a medical school, should be an informed and cultured person with a sound knowledge of men and the world. He should be well grounded in the natural and social sciences, the methods of science and the humanities, he should have formed habits of study, industry, honesty, dependability, friendliness, decency, and courage which should endure throughout his life. (It might in passing be noted that the medical student in the United States enters his medical school at the age of 21-2 years, after a three- to four year college course, in Britain the student usually begins his medical studies at the age of 18.)

Dr Allen makes a plea for emphasis, in the early undergraduate period, on broad principles and general ideas and concepts, but even here illustrations should be chosen which have application in the clinical field. Students should at this stage be taught where to find detailed information on any special topic and how to use a library. He pleads forcibly that the responsibility of the schools is to teach an *integrated medical science* and not the separate disciplines of anatomy, physiology, pathology, etc., as such. To achieve this unified course a new type of 'Faculty of Medicine' is envisaged in which should be vested the full and final responsibility for the undergraduate teaching programme. This faculty would specify what no committee has yet drafted in detail—namely, (1) the fields of knowledge to be covered (2) the special skills to be acquired and (3) the type of integration to be achieved. Heads of departments would ensure that their most gifted teachers were available to carry out the faculty's programme. Dr Allen emphasizes that the student in his clinical studies must have a sense of continuity in the medical care of a patient in order to acquire a lasting knowledge of the natural history of disease and experience in how patients, as well as doctors and nurses, strive with illness. He deprecates the "snapshot" impressions of large numbers of patients seen only occasionally which is encouraged by many methods of clinical instruction and he rightly condemns the increasing tendency of clinicians, and hence of their students to rely more and more in diagnosis on laboratory reports and less and less on clinical judgment based on the history, examination, behaviour, and social background of the patient. It takes a man, not a machine to understand a man. The physician must be a humanist if he is to fulfil his vocation.

The author commends the step towards independent responsibility for the welfare of patients which an internship affords and critically assesses its various types. He also makes

many wise observations on other topics—examinations, post-graduate education, and research. Throughout the book he stresses that medicine is a social science serving humanity. It is not enough that doctors should know about disease, they must, as Alan Gregg writes, care about it. This is the orientation in medical education which Dr Allen commends to his colleagues in American medical schools. It is one on which we in Britain would do well to ponder.

HENRY COHEN

DICHROMATIC VISION

Retinal Structure and Colour Vision. A Restatement and an Hypothesis By E. N. Willmer, Sc.D. (Pp 232, illustrated 21s) Cambridge The University Press 1946

After reading Mr Willmer's book we could not help reflecting on those happy bygone days before the last war when, turning aside from the commonplace three-dimensional world, men grappled with Einstein, relativity, and the fourth dimension. Suppose at that time some writer such as H. G. Wells had brought out a novel about a two-dimensional universe, it would have aroused great interest. He might have described how some scientists who had devised an atomic rocket of great power travelled in it to a distant planet. They landed safely, and discovered to their amazement towns consisting of flat houses with flat gardens. Flat boys and girls, with their flat parents, were all moving about rather like amoebae in the narrow space between two plane sheets of glass.

The analogy will be obvious to those familiar with current opinion on the physiology of vision, for losing confidence in the trichromatic theory of Thomas Young and following the lead of Prof Granit, of Sweden whose micro-electrode investigations on animals are well known, physiologists are examining tetrachromatic and even polychromatic theories for guidance. Now Mr E. N. Willmer presents us with all the pros, and many of the cons, of a dichromatic theory. His thesis is interesting and stimulating and a fitting record of his ingenuity and patience. The book is well written and attractively illustrated. The shades of colour in some of the plates are very pleasing.

H. HARTRIDGE

BEFORE AND AFTER OPERATION

Preoperative and Postoperative Treatment Edited by Lt-Col Robert L. Mason M.C., A.U.S., and Harold A. Zintel M.D. Second edition (Pp 584, illustrated 35s) Philadelphia and London W. B. Saunders Company 1946

A post-war edition of this excellent vade mecum for ward work is welcome. Considerably revised by Colonel Mason the co-author, and his New England collaborators, the work reflects the best in American pre-operative and post-operative management. Much of the detail is beautiful in its precision—the directions for shaving the wound area, for example, could not be more meticulous—and no practising surgeon could read the book without profit and enjoyment.

The viewpoint is essentially American, while this adds value to such sections as those on water and salt loss, on alkalaemia and on amino-acid feeding, some other sections suffer from their authors' inattention to foreign surgery. No Scandinavian work is considered and only one Canadian paper is quoted in connexion with heparin, and the chapter on post-operative pulmonary complications is similarly limited. The Australian methods of preparing the colon for excision are not mentioned and of forty one references in the section on blood transfusion only twelve, all American, are dated later than the beginning of the war. Indeed the whole subject of shock has been less diligently re-edited than other chapters. All the references in it are to pre-war work, and British contributions to the understanding of types of shock, irreversible shock, and the dangers of excessive transfusion have not yet displaced the older opinions about toxins and nervous mechanisms. Some of the authors trust too confidently in the work of the chemical laboratory—Maddock's formula for calculating the salt needs of a hypochlorhaemic patient from the plasma chloride, for example may cause grave error, and the hematocrit determination, blood specific gravity, and plasma protein as criteria of

dehydration are notoriously liable to mislead unless their fallibility is recognized.

However the defects of the book are inherent in its qualities. Not only is the biochemical basis of therapy and prophylaxis everywhere sound, but there is throughout a typically American insistence that no effort be spared to investigate the patient thoroughly to apply every pre-operative detail that will benefit the patient at operation and to be inspired with an unflinching care after operation for his comfort and safety.

IAN AIRD

PELLAGRA IN POWs

Pellagra in the Oto Neurology and Rhino Laryngology By Otto L. E. de Raadt M.D. (Pp 172 Fl 5.00 (Dutch currency)) Leiden University Press Leiden Available from N. V. Martinus Nijhoff, Lange Voorhout 9 The Hague

This is an English edition of a thesis presented at Leiden University, presumably written originally in Dutch. Dr de Raadt an ENT specialist was one of a group of Dutch medical men confined in POW camps in the Dutch East Indies and in this monograph he gives an interesting account of his findings based on the examination of 160 persons suffering from deficiency states in Bandoeng, Java.

Although the subjective complaints of vertigo, tinnitus and auditory impairment are among the commonest symptoms of pellagra and have been recognized from early times, we do not remember having seen before a detailed description of the objective findings in these cases when submitted to routine tests. As the author remarks, 'Strange is the absolute absence of any report of vertigo in pellagra in the oto rhino laryngological bibliography at the end of the thesis'. He also discusses the ocular manifestations and other coincident symptoms, particularly those generally considered to be caused by hyporiboflavinosis.

The following are some of the conditions that the author surveys: vestibular hyperexcitability for cold water nystagmus, hearing loss of perceptive type, Eagleton's symptom, Bing's ocular cogwheel sign, tinnitus due to deficiency, abnormality in the form of the pupils, hypo or achlorhydria, burning and pruritus in hands and feet, stomatitis, glossitis and pharyngitis. Unfortunately in Java, as elsewhere in Japanese POW camps satisfactory therapeutic tests could not be used, but it would appear likely that the deficiency responsible for the cases described by Dr de Raadt was of riboflavin and other closely associated vitamins of the B complex.

H. S. STANNUS

Those who knew Sir GEORGE NEWMAN debonair and versatile Chief Medical Officer of the Ministry of Health, only in that capacity will be surprised to find from *Quaker Profiles* that he has been a life long devotee of the Quaker way of life. His beliefs are set out in a series of descriptions of eminent members of the Society of Friends such as Fox the founder, Pennycuik the historian, and the Rowntree family. There are incidental references to eminent Quaker doctors such as Lister and Jonathan Hutchinson. These practical mystics showed by their lives that that kind of mysticism is not incompatible with eminence in business, literature, and science. The chapter devoted to Joseph Rowntree shows him as a pioneer in the scientific treatment of social problems. The Cardinal Tenets of Quakerism are discussed at some length, and among these the 'inner light' plays a prominent part. This mystical revelation it seems to the reviewer is really indescribable, though its reality to those who have experienced it cannot be doubted. The papers contained in the book (Bannisdale Press, 7s. 6d.) come mainly from *The Friends Quarterly Examiner* of which Sir George Newman has been the honorary editor for over forty years. They are characterized by the clarity and grace which we have long been accustomed to associate with the author's work.

Prof. Abderhalden wrote a book about the general principles of nutrition during the first world war *Die Grundlagen Unserer Ernährung und Unseres Stoffwechsels* (H. Huber Bern Swiss francs 8.50) which has passed through many editions has been brought up to date. It has the merit that the importance of energy is not obscured in descriptions of new discoveries and the author lays stress on the many stages through which food passes before it is actually used in the body. The account of the effects of deficiency of calories is scanty. He gives details of the technique of metabolism experiments.

BOOKS RECEIVED

This is not precluded by notice here of books recently received.

The 1946 Year Book of Obstetrics and Gynaecology Edited by J. P. Greenhill M.D., F.A.C.S. (Pp 655 21s) London H. K. Lewis 1947

Summarizes recent advances in obstetrics and gynaecology.

The Design of Experiments By R. A. Fisher, Sc.D., F.R.S. 4th ed. (Pp 237 12s 6d) London Oliver and Boyd 1947

This edition includes new material on orthogonal squares, on confounding with many factors, and on the fiducial limits of a ratio.

Genetics By E. Altenburg (Pp 452 16s) London Constable and Co 1947

An account of modern genetics for the student.

Penicillin Therapy By John A. Kolmer, M.S., M.D., F.A.C.P. 2nd ed. (Pp 339 \$6.00) New York and London D. Appleton Century Company 1947

This edition contains new chapters on streptomycin, tyrothricin, streptothricin and other antibiotics.

Handbook of Neurological Examination and Case Recording By D. Denny Brown M.D. (Pp 107 10s 6d) London Geoffrey Cumberlege 1946

An introduction to neurological methods for students and housemen.

Textbook of Obstetrics By Gilbert I. Strachan M.D., F.R.C.P., F.R.C.S., F.R.C.O.G. (Pp 771 45s) London H. K. Lewis 1947

A textbook for students and practitioners.

The Chemical Constitution of Natural Fats By T. P. Hilditch D.Sc., F.R.S., F.R.I.C. 2nd ed. revised (Pp 554 45s) London Chapman and Hall 1947

This edition includes new material on component acid data in lipid animal and vegetable fats, on component glycerides and on individual fatty acids.

Der Blutspender By Dr H. Willenegger and Dr R. Bittel (Pp 197 10 Swiss francs) Basle Benno Schwabe 1947

The technique of blood transfusion, with reference to its use in the recent war.

Harvey Cushing: A Biography By John F. Fulton (Pp 75 30s) Oxford Blackwell Scientific Publications 1946

A biography for the student and general reader with many photographs.

British Standards Institution Yearbook 1946 (Pp 296 2s. post free) London British Standards Institution 1946

Lists British Standards in numerical order, with a subject index.

Surgical Treatment of the Nervous System Edited by F. W. Bancroft, A.B., M.D., F.A.C.S., and Cobb Pilecher, M.D., F.A.C.S. (Pp 534 £5 10s) London J. B. Lippincott 1946

An illustrated textbook of neurosurgery for the neuro and general surgeon.

A Laboratory Manual of Vertebrate Embryology By F. B. Adams Stone Ph.D., and Waldo Shumway, Ph.D. 2nd ed. (Pp 90 12s) London Chapman and Hall 1947

Summarized information on the embryology of the frog, chick, and pig.

The Diagnosis of the Acute Abdomen in Rhyme By Zeta (Pp 88 5s 6d) London H. K. Lewis 1947

Abdominal catastrophes recounted in verse.

Nutritional and Vitamin Therapy in General Practice By Edgar S. Gordon M.D., Ph.D., 3rd ed. (Pp 410 27s 6d) London H. K. Lewis 1947

An account of vitamins and nutrients for the general practitioner.

Henry Sewall: Physiologist and Physician By Gerald B. Webb and Desmond Powell (Pp 190 16s) London Geoffrey Cumberlege Oxford University Press 1946

A biography, with photographs of the American physician.

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DISCUSSIONS WITH THE MINISTER

The Prime Minister announced in the House of Commons on June 9 that the Appointed Day under the National Health Service Act would be July 5 and not April 1, 1948. This will allow another three months for the setting up of the central, regional, and local machinery necessary for the operation of the new Health Service. It will also allow more time for the important discussions which are taking place between the Ministry of Health and the Negotiating Committee. This Committee, which could not be more widely representative, has undertaken a responsible task. Soon it will be in a position to put before the profession a statement of the way in which that task has been discharged. No news is not always good news, and in recent weeks some of our correspondents have taken as bad news the lack of any detailed statement about the progress of these discussions. Many doctors are worried about practices they have bought recently or practices they propose to buy. Assistants are not clear about their future prospects, and some of the recently demobilized medical men are at a loss as to their next step. An interim report in general terms may perhaps allay some of the anxiety felt by those readers whose letters we have published, and by many others whose inquiries and communications have not been attended for publication.

The National Health Service Bill, which first saw the light of day on March 19, received the Royal Assent¹ on Nov 6, 1946. There followed a great deal of vigorous controversy which culminated in a meeting of the Negotiating Committee on Feb 7. The Committee was then informed that the Minister of Health would like to enter into discussions and that he had accepted the conditions of the Negotiating Committee—namely, that such discussions should be comprehensive in their scope and should not exclude the possibility of further legislation². Discussions began almost immediately and have proceeded throughout on this comprehensive basis. The same conditions have been accepted so far as Scotland is concerned by the Secretary of State and discussions on the National Health Service (Scotland) Act, which received the Royal Assent barely a month ago³ have now begun.

Details were published in the *Supplement* (March 15, 1947) of six subcommittees set up by the Negotiating Committee. These subcommittees are concerned with general practice hospital and specialist services, public health, dental health, ophthalmic services, and superannuation. Each subcommittee has been actively engaged in parallel discussions with the Ministry. Each has impressed upon its officers of the Ministry, by explanation and argument,

the points of policy laid down by the Negotiating Committee. In some cases discussions have been completed, but other subcommittees, and notably the General Practice Subcommittee, are still hard at work. No precise details can be given, for obvious reasons. It is anticipated, however, that sufficient progress will have been made for each subcommittee to report back to the Negotiating Committee at a meeting to be held before the autumn. These reports will have to be considered carefully and as interlocking parts of a full and comprehensive scheme. It is probable that the Negotiating Committee will then seek a meeting or meetings with the Minister in order to press upon him all aspects of the considered views of the Committee, advised and instructed as it has been by all its constituent bodies. The next step will then be for the Minister to reply to these representations.

So far the details of the exchanges will have been confidential. It is inevitable that this should be so. At this point, however, discussions should have reached the stage at which the full story can be told to the whole profession. A summary of the representations made by the Negotiating Committee, together with the Minister's reply, will then be published. It will then fall to each individual member of the profession to exercise that judgment which must precede action. Local and central discussions and meetings and a plebiscite will provide the familiar democratic machinery for decision. The whole profession will decide by these means its future course of action. It is still not possible to lay down a time-table for these events. Two assurances can be given, however. Discussions have been completely comprehensive, and all along representations have been made with vigour, clarity, and determination. Discussions will soon be completed, and when they are the report made by the Negotiating Committee to the profession will be full and explicit.

WHITHER INDUSTRIAL MEDICINE?

After 1918 industry discarded its medical services. These were mainly in Government ordnance and filling factories which eventually closed as the need for munitions diminished. Industrial medicine was then limited to a study of occupational disease and first-aid requirements in factories¹. The amount of money spent on industrial health research was negligible, and no university provided teaching or any other facilities in the subject. Between the wars the number of factories with a medical service slowly increased, standards were set, and interest was stimulated. But not until 1940 had medicine in industry a real opportunity to develop, an opportunity which arose as a direct result of legislation introduced by Mr Ernest Bevin, then Minister of Labour.

It is now nearly two years since the second world war ended, but so far there is no sign of any appreciable decline in industrial health services. Everything points, indeed, to a further extension. Large firms are retaining their doctors, nurses, and dentists, and some of them are expanding their services. Certain new post-war organizations, such as B O A C and the Coal Board, have included

¹ *British Medical Journal* 1946 2, 756

² *Ibid.*, 1947, 1, 258

³ *Ibid.* 1947, 1, 790

⁴ *Annual Reports of the Chief Inspector of Factories* 1919 and 1920

ical services in their planning from the beginning. Group experiments such as that sponsored by the Nuffield Foundation on the Slough Trading Estate are arousing widespread interest. The Ministry of Supply has formed a permanent medical service. Some universities have set up departments of occupational health and have appointed professors and lecturers. The amount of money spent on industrial health research by the Medical Research Council increases each year, no fewer than eight separate units now work mainly in this field, and new committees dealing with the subject have been created.² Recent legislation, notably the Disabled Persons (Employment) Act, 1944 and the National Insurance (Industrial Injuries) Act of 1946, will ensure for industrial medicine a permanent place in the health services of the country. The effect of the Industrial Injuries Act was discussed in these columns a few weeks ago.³ In addition the importance of industrial health services is now more widely recognized by the layman. A useful report from the jute industry⁴ was compiled by employers and employees in conference with Government officials. This committee's recommendations range over a wide variety of subjects but include the firm view that "every jute factory should be under the supervision of a medical officer" and that "a comprehensive scheme of medical supervision covering the whole industry should be developed." Working parties in other industries might profitably devote attention to similar points.

We publish in this issue at page 838 the inaugural address by R. C. Browne, who was recently appointed to the chair of industrial health at Durham University. He emphasizes that until recently "industrial health" meant merely "industrial toxicology." Now a broader view is being taken. Over the past thirty years there has been a great increase in research by committees, sometimes sitting at a distance from the problem under review. Industrial health research at the start of the recent war was largely a repetition of former work or was designed to re-emphasize principles already known. As Browne says, "We observed the melancholy but understandable spectacle in 1940 and 1941 of industry attempting to run in almost complete ignorance of what had already been discovered in the previous war." However, the needs of the armed Forces for up to date knowledge of the effects of modern mechanization on the individual fighting man had an important influence. These needs were well satisfied by groups of workers, and Service experience during the war was in many ways in advance of present civilian practice.

There are three main ways in which industrial medicine could expand—by extension of the present system, by the creation of a whole-time national industrial health service, and by a compromise between these two methods. Extension of the present arrangements, even aided by legislation, is open to criticism. The system is inadequate, because it is limited to the larger and more enlightened industrial concerns, most of them factories, and little concerned with other occupational groups. It is haphazard, because of widely differing standards of service, both administrative and technical. The methods of appointing industrial

medical officers—particularly those in a part time capacity, are open to abuse. It is also true to say that a number of employers still tend to give the minimum of co-operation. The costs of the service are met entirely by the employer at present, and it has been said, mainly by those with little day-to-day contact with men at work, that the industrial medical officer is therefore biased in his decisions. Evidence of this is hard to find.

The creation of a whole-time State industrial health service, perhaps good in theory, might provide an apparently easy answer. Difficult problems to decide—problems differing widely from those now arising in connexion with the new National Health Service—would be the method of finance, methods of control and by which Ministry, sources and recruitment of medical man-power, and, particularly, the place of the general practitioner in the service, the extent to which there should be technical direction and supervision of the doctor, conditions of entry into the service, educational facilities generally, and the more abstract but nevertheless fundamental problem of loyalty. How effective can a doctor be, as an instrument for promoting good relationships in a given group, if he has a major loyalty to Whitehall or to a regional committee? Other criticisms of a State service, already well aired in our columns, would no doubt also apply, of these the fear of red tape and of bureaucratic remote control would be outstanding. A recent report by the Royal College of Physicians of London⁵ advocates a national health service for industry, but only broad principles are stated.

"An Industrial Health Service should be planned in a bold manner without much regard for traditional arrangements. Legislation should provide for the needs of smaller industries and non industrial undertakings. The service should be an essential part of the National Health Service. The Chief Medical Officer of the Ministry of Health should be the Chief Medical Officer of the Industrial Health Service. There should be uniform conditions of service rates of remuneration, and pensions. The service should be organized on a regional basis. Whole time industrial health officers should be appointed for the larger industries, and in suitable cases there should be a combination of full time and part time service. But general practitioners will be the main body of the industrial health service. There would be obvious difficulties if they were employed by two separate Government Departments."

The third way in which progress can be made is by a compromise between the two schemes, so that the best features of each could be retained. By common consent the present standards of industrial health practice should be improved and extended. It is doubtful whether industry as at present constituted, would care to be saddled with yet another control—possibly of an inspectorate within its own gates. But it is ready to accept the principles of health supervision at work, and the workers themselves on many occasions have insisted on this, as recent pronouncements by miners and dockers show. The scheme should be comprehensive in that the needs of 18,000,000 employed people should, after study, be catered for. The need for careful planning is no less important than with a State service. One overall directorate might not be an advantage at this stage, but co-ordination is necessary. The whole-time industrial medical officer should conform to high

² Committees on Occupational Medicine, Occupational Psychology, Occupational Physiology, and on Industrial Pulmonary Diseases.

³ *British Medical Journal* 1947 1 665.

⁴ *Final Report of Jute Industry Factory Advisory Committee* 1946 H.M.S.O.

⁵ *Report on Industrial Medicine* R.C.P. Lond. *Brit. J. Industr. Med.* 1946 2, 51.

professional and technical standards and be acknowledged as a specialist. A small number of consultants should be available in the regions with both high medical qualifications and long experience. Whole-time specialists in industrial medicine might be encouraged to develop group practice. The part time medical officer, who will usually be a general practitioner, should satisfy certain basic standards before entry into the service, educational facilities should be provided by the universities to this end. The need for further professional links with regional committees should be explored. Any success that the industrial doctor may have had is largely because he has been accepted as part of the management. Both employer and employee then agree that his service is an integral part of the industrial system. The doctor obtains the confidence of all parties, he acts largely, and wisely so, in an advisory capacity, and his freedoms become those of any other independent medical man. It has been stated⁶ that whether industry is publicly or privately owned its directors must be appointed by and answerable to the owners and not to the workers. This same principle should also apply to the medical advisers to industry.

The future development of industrial medicine depends for success on the technical skill of its practitioners. The saving of working time by competent nursing and casualty services is one obvious contribution, as is straightforward advice on health matters in collaboration with general practitioners and hospitals. The ancillary services, providing advice and treatment on dental, ophthalmic, and more recently ear and throat conditions, have also proved their worth, their expansion to cover the smaller working units and groups might be developed in collaboration with the new regional hospital boards. But these matters are largely concerned with curative medicine. The industrial health officer must go further into the fields of prevention, medical sociology, and the promotion of health. He must forge close links with personnel officers, industrial psychologists, and others. In this way he can make a positive contribution to the economic well-being of the group. Questions associated with toxicology and hazard control—for example, the health problems arising out of atomic and supersonic developments—require the close co-operation of the engineer and the physicist, and will always arise with new advances in science. The study of the incidence of injury in different occupational groups and in varying accident situations requires help from statisticians, if the information thus obtained is to be exploited fully in the wide field of accident prevention. Industrial contributions to rehabilitation, including the placement of handicapped persons and methods of linking hospitals more closely with industry on lines similar to those suggested by R. C. Browne, require close attention. Methods of matching the man to the job and so placing individuals in occupations for which they are physically and mentally suited involves co-operation with personnel officers, works managers, and engineers, as well as with medical practitioners and hospitals, techniques of job description and job analysis have still to be developed and may well provide another valuable tool for the industrial physician.

Finally, there is the continuing health supervision of juveniles entering employment. Apprenticeship schemes have done much to provide vocational supervision. There is an equal need for the health supervision of the school to be continued into employment. To be successful this supervision must define health in its widest sense and include a close study of the social, economic, and even moral issues that so frequently arise. In this field alone industrial medicine could make a significant contribution to positive health.

SPRAY-DRIED EGG AND FOOD-POISONING

The relationship between eggs and salmonella food-poisoning has been discussed before in these columns,^{1,2} but it was not possible to give the full story because the facts from the English side were not available. Only a few experts dealing with the problem were aware that the extensive introduction of dried egg powder was followed by a great increase in outbreaks of salmonella food-poisoning, no information was given to the general public or indeed to the medical profession. Now the Medical Research Council has issued a special report on the subject,³ which includes details of a number of investigations by various bacteriologists. Two of the four reports are concerned with the bacteriology of dried egg and salmonella infections in man associated with the consumption of dried egg. The predominant bacteria in dried egg are enterococci and aerobic-sporing anaerobes, coliform organisms are present in every sample but only in small numbers. The significant finding is that in 754 or 9.9% of 7,584 samples examined, organisms of the *Salmonella* group were isolated. Since the media used were not suitable for their growth this excludes the comparatively harmless *Salm pullorum* and *gallinarum* types, which one would expect to find as their relationship to fowl diseases is well known. This high proportion of positive findings varied with the country of origin, being in dried egg from USA 11.1%, from Canada 4.1%, and from the Argentine 10.5%. While 33 different *Salmonella* types were isolated, 6 types were most frequently seen, all of them new strains not previously found in this country or associated with salmonella disease. These new strains are *Salm oranienburg* isolated 245 times, *Salm montevideo*, 139, *Salm meleagridis*, 117, *Salm tennessee*, 90, *Salm bareilly*, 82, and *Salm anatum*, 30 times. The most common food-poisoning strain, *Salm typhi-murium* was also isolated from 30 samples.

The report on salmonella outbreaks in man shows clearly that the extensive retail distribution of dried egg coincided with a marked rise in outbreaks of salmonella food-poisoning. In 1944, for example, there were 454 such outbreaks reported, a figure higher than the total for the whole of the seventeen previous years. As the authors of the report point out, this indicates some new source of infection, and the facts suggest that dried egg powder is this new source. This suggestion probably received the strongest confirmation when the *Salmonella* strains from these outbreaks were typed. There were 10 new types in

¹ *British Medical Journal* 1946 2 583

² *Ibid* 1947 1 456

³ *The Bacteriology of Spray-dried Egg with particular reference to Food poisoning*. By various authors. M.R.C. Special Report Series No. 260 1947 London, H.M.S.O. 15

1942 8 more in 1943, and another 6 in 1944. Of these new types the six commonest in order of frequency were precisely the six already mentioned as those most often isolated from dried egg. Complete proof that dried egg is the vehicle would require demonstration of its connexion with each outbreak notified. Owing to war conditions and other influences this was possible only in a few outbreaks, but in a number the connexion was established, and in the present report four such outbreaks are detailed. These new strains gave rise to much the same clinical features as the older long-recognized types.

The general public is mainly concerned with the vexations of rationing. The medical profession has to consider the possible effects of new foods and new food habits in relation to illness. Dried egg is a comparatively new food, and communal feeding is a comparatively new habit. The increasing use of British restaurants, school and factory canteens, and the like carries with it greater risks than previously of a considerable spread of infection from contaminated food. Much more attention has been paid to this problem in America, and investigators there have standardized bacteriological methods of assessing the efficiency of utensil-cleansing, have laid down the factors essential to an acceptable standard of sterilization, and have prescribed sound methods for the elimination of infected food-handlers. In this country we lag far behind. Little work has been done on this subject, and the illuminating paper by Hutchinson⁴ described one of the very few investigations made in Great Britain. It disclosed many unsatisfactory features which would not be tolerated in the U.S.A. and it emphasizes the need for further investigation and for the setting up, for general guidance, of standards of cleanliness and sterilization. Communal feeding has probably come to stay, and an authoritative committee to advise as to standards, technique, and other matters is an urgent need.

The introduction of foods such as dried egg and dehydrated vegetables should also be studied in relation to the spread of pathogenic organisms. Clearly the risk of food-poisoning from dried egg is a real one. An important part of efficient public health administration is to weigh up potential risks against known advantages, and it is not sound administration to reject a method merely because it involves a small risk. This administrative problem is faced fairly in a short appendix to the recent report contributed by the Ministry of Food. The Ministry makes out a strong case on the nutritive and economic sides for the importation of dried egg. It admits the infective risk but claims that it is a small one. Between 1942 and 1945 the Ministry imported 244,000 tons of dried egg and argues that against this quantity the ascertained cases of food-poisoning do not loom large. It goes further and discusses what can be done to reduce the risk. A specification that *Salmonella* group organisms must not be present was found impracticable. Experiments were then made on the effect of cooking, and the results are set out in the body of the report. "Numerous experiments showed that scrambled egg and omelette prepared from freshly reconstituted dried egg were free from demonstrable living

salmonellae, but that if the reconstituted egg was incubated for some hours so as to allow bacterial multiplication cooking could not be relied upon to kill all salmonellae present." Advice on the need to cook as soon after reconstitution as possible is set out on, for example, all leaflets to caterers. However, the statement quoted on the effects of heat treatment hardly justifies the light-hearted pronouncement "It may be concluded that if dried egg is effectively cooked immediately after reconstitution the risk of salmonella infection therefore does not arise." The risk exists and the Ministry of Food is probably right to take it, but it would be better to recognize its existence and point out that it can be minimized by suitable methods of cooking. The short introduction by the late Dr R. B. Haines and Prof. G. S. Wilson gives clearly the scientific basis on which the use of dried egg was continued after the risk was known, but it does not seek to imply that all risk can be removed. One method of prevention which does not appear to be mentioned in the report is by improvement designed to exclude *Salmonella* organisms at the places of production and drying. No doubt this was considered outside the scope of the report, but it is a promising line and already a good deal is being done, for example, by the exclusion of dirty eggs.

MEDICAL SERVICES IN DENMARK

We begin this week the publication of a short series of articles on the medical services of Denmark. Dr Gerald Evans (*Supplement*, p. 119) records an Englishman's impressions gained during a recent visit to Copenhagen. He will be followed in later issues by Danish physicians describing the conditions of general practice, the hospital system, the public health service, educational facilities, and the State Serum Institute—this last an organization whose fame as a scientific institution, a central epidemiological research laboratory, a diagnostic service, and a factory for the production of sera and vaccines has gone far beyond the confines of Denmark.

The Scandinavian countries have much to teach the rest of the world in the various fields of social welfare. They are in advance of most other European countries in education, sex equality, co-operative enterprise, infant and maternal welfare, public health, and social progress generally. They are of course small countries in which social experiment is easier than among vast populations with a varied industrial pattern. The population of Denmark is less than that of the county of London, and, apart from Copenhagen, only one town has many more than 50,000 inhabitants. Among a well-organized people, roughly half-rural and half-urban, the conditions seem to be almost ideal for social advance. Moreover it is important to remember that the Danes are a well-educated people. The fact that education is a necessary basis for national health measures is not always appreciated. Denmark, which had compulsory education, at least on paper, two hundred years ago, is in the vanguard of Scandinavian countries in the development of adult education. Its residential high schools for people up to 25 receive State subsidies but have perfect freedom and an undictated curriculum, and they are not predominantly vocational. By these and other means, including progressive and co-operative movements, the Danes have acquired a strong community sense, have learned the advantage of working together, and have come to understand what co-operation requires of the individual.

of our own National Health Service is to be a success the people must understand it, its need and value, its means and aims. Without such an understanding regulations and disciplines will count for little—something to be evaded rather than the leading strings to a healthier society. It is no less true for its patients than for its doctors that a National Health Service must be accepted rather than imposed, and we may regret that our Government, so energetic in legislation, while it has prepared a Service for the people, has devoted little attention to preparing the people for the Service. Many still believe that the service is a system of "free doctoring" and free everything else to do with health. They should be told that its success will depend largely on their own understanding and proper use of it, and also that it is not "free" but that the whole community is footing the bill.

The National Health Service in Denmark is a very different organization from the new British scheme. It was founded in 1909 and reorganized and adapted to the latest public health developments in 1932. Its functions are advisory, supervisory, and administrative. In one respect it resembles the General Medical Council, for it authorizes both general practitioners and specialists to practise their profession, but it also advises local public health authorities and the public generally in all medical matters, and supervises public health, nursing, and hospitals. The provision of hospitals for the people as a social task was laid down by ordinance as long ago as 1806. The onus of providing such hospitals was laid not on the State but on local authorities. The result is that Denmark now has a uniform and efficient hospital system, with hospital treatment available to any person who needs it, irrespective of means or social position. Nine out of ten hospitals belong to the bounty or city communes, and these municipal or county hospitals, as we should call them, have gained the regard of the people in the same way as the voluntary hospitals of this country. Perhaps it is because the municipal hospital is a recent growth in Great Britain, and some recollection of the old Poor Law Infirmary still remains, that these hospitals in spite of the excellence of many of them, have not yet evoked the same pride and affection, for the feeling of a community towards its hospital may not depend on the mode of financial provision for its maintenance. It is, or it should be, the people's own hospital, whether it is supported by the rates or by their voluntary contributions.

The medical profession of Denmark remains a free profession. The doctors have not been turned into Civil Servants, they have not even adopted a system of group practices or health centres, though Dr Evans describes the arrangement whereby people unfortunate enough to be taken ill after 8 p.m. may have a strange doctor to attend them. The only respect in which the Health Service seems to act compulsively towards doctors is in requiring them to send any notifications or reports which it considers necessary. The Danes have endeavoured to maintain the family doctor principle—that is each family has its regular doctor, one who knows not only the constitution and history of each individual in the family but his domestic and economic background. That principle is imperilled not so much by legislation as by the increasing specialization of medicine. In Denmark the sickness benefit club service which for over half a century has been providing free medical care for practitioners was planned from the start as a family doctor service including children under 15, and was not restricted to wage-earners. It is to the general practitioner that the application for medical attendance is made and through him the specialist is consulted and admission to hospital arranged. There is organized collaboration between general practitioners and hospitals, specialists, and

laboratories. It is said that the system is working well and there is no disposition to change it. In the hospitals—more so outside Copenhagen than within it—discussions and conferences take place between the hospital staff and local practitioners, and the latter receive reports on their discharged cases.

The Danes have succeeded in maintaining a system of individual medical practice, free from political pressure and interference by lay authority. The family doctor system is being carried out more consistently in Denmark than in any other country, although specialist medicine is of a high order. The family doctor system may not satisfy the departmental mind, may not be liked by those who tend to think of human beings in terms of statistics or of mere numbers, but it does represent the most human approach and the most effective approach in medical practice.

SCANDINAVIAN POLYCLINICS

In June, 1946, Danish, Norwegian, and Swedish representatives met in Copenhagen. A long report on this meeting¹ devotes much space to a discussion on the evolution of medical practice in health centres run as polyclinics.

Polyclinics are operated in the larger towns in Sweden and at the Universities of Uppsala and Lund. The largest polyclinics are directly linked with the hospitals whereas some of the smaller polyclinics are in this respect independent units. The former are usually staffed by the junior members of the hospital service, whereas the latter are in most cases in the charge of a specialist who gives part-time service. Originally intended only for the poor, Swedish polyclinics have come to be patronized more and more by the well-to-do who, in return for an increasingly elaborate service, pay fees for each attendance and a supplementary fee for radiological examinations and the like. A report from the surgical side of the Sahlgrenska Hospital shows that the average daily attendance at its polyclinic, staffed by two doctors, was 216 the record being 325 attendances in one day. In the course of four hours a day, these two doctors attended patients at the rate of 2.2 minutes per patient. The work included suture of recent wounds, dental extractions, applications of plaster-of-Paris, removal of small tumours, injections, aspirations, scrutiny of skiagrams, writing prescriptions and directions for special examinations, and communicating by letter or by telephone with other doctors with patients, and with their relatives. Though the rhythm of this particular polyclinic may have been exceptionally hectic, it is illustrative of a very definite trend.

It was hoped that polyclinics would ease the pressure on hospital beds but experience has shown that the hard-worked polyclinic doctor when confronted by an obscure case or one requiring much examination, is apt to send many of his patients to hospital, whereas a general practitioner has more time in which to keep his patients under observation at home. One of the Swedish delegates deplored the tendency on the part of the public at the present time to undervalue the human element provided by the individual doctor practising medicine as an art and to overvalue the technical side of medicine. Formerly the patient with a cold in his head went to bed with a bottle of brandy beside him. Now he lies himself to a crowded waiting-room at the polyclinic where he broadcasts his infection. On the other hand, a recent statistical analysis in Stockholm has shown that attendances on individual doctors including private practitioners, greatly outnumber attendances at polyclinics.

A PATIENT'S EXPERIENCE OF ECT

[From a Correspondent]

In view of Dr D W Winnicott's emphasis on the need for further study of patients' own reactions to physical therapy of mental disorder (*Journal* May 17, p 688) some account of the experience of a patient may be of interest. I am a writer by trade. My symptoms were I understand those of a mild depressive illness. I felt frustrated in the extreme brooded over past events was at times deeply depressed for periods of as long as two days at a time, and was liable to great irritability which I kept under control except in so far as it sometimes broke out in speech, accompanied by aggressive and exaggerated negativism in argument. That this condition had developed from a deep seated origin was indicated by the fact that I had stammered rather badly from infancy—i.e., over 45 years. In general, I found great difficulty in thinking and working on the ordinary superficial level usual in most occupations while lacking the specialized training which might have enabled me to direct my tendency to deeper thinking into some canalized and thus fruitful employment. This must be a common difficulty of the type of mind so well described by C E Montague—a mind which has 'a proneness to revel and bask in its own sense of fact'. The mildest depression greatly accentuates the disability of this type of person, I imagine.

I was sent by an ex-Servicemen's society for treatment, and up to the time I attended the clinic I had no knowledge of the physical methods in use. I had, however always taken a great deal of interest in psychology since making acquaintance with the subject at university 25 years ago. I knew enough of the general principles to publish an article on 'The Psychology of Road Accidents' in a leading review over ten years ago.

Experience of Treatment

I received two ECT treatments at a large clinic under the assistant director (whom I will call Dr X), and at the present date, after about 14 months, I still retain the following benefits: considerable but not complete relief from the stammer, complete relief from excessive irritability, somewhat improved capacity for work, a change from what seemed to me moods of the deepest depression to a less frequent and much shallower depressed mood, complete relief (to my great surprise) from a minor skin affection of some ten years' standing which had resisted other treatment.

My experience of treatment was as follows. At a preliminary interview Dr X asked me to send him written accounts of my history, family background and circumstances. He gave me a physical examination of the usual kind. I sent him a frank account of myself, and he then gave me a lengthy interview which included questioning under a drug injected into each arm. These injections temporarily eliminated the stammer.

He then, somewhat to my surprise, sent me home with two technical volumes—one a standard manual on depression, the other the bound papers of the Society of Psychological Medicine containing several papers on the various physical treatments. I, like Dr Winnicott, was deeply shocked at the idea of leucotomy and disliked what I read of cardiazol more than I disliked the idea of ECT. Perhaps a layman or a psychiatrist with a special interest in perfection of mind may instinctively object to these treatments just as a dancer or athlete, with a special interest in perfection of body, might instinctively object to quite ordinary surgery. I was thus enabled to form my own opinion of the treatment and whether I wished to undergo it. Admittedly the evidence was empirical, as it must be for the layman—and often for the ordinary practitioner—even in the case of a common aperient.

Dr X then interviewed me again in company with another patient who had developed a stammer after prisoner-of-war experiences. He explained the mechanism of aggressiveness and how in man it was expressed in speech. Later seeing me alone he prescribed six ECT treatments. I asked if there were any risk of change of personality character, or temperament. He assured me that the only effect was to restore the distorted personality to normal. I mention all this to show that in my experience at any rate the psychiatrist administering physical treatments is not necessarily the dangerous type rightly feared by Dr Winnicott who may press buttons or give injections without careful regard to the psychical factors.

I approached the treatments with much the same attitude as I take towards a dentist's chair. I knew as much as a layman could learn of what to expect, I thought I had satisfying evidence that consciousness was instantly obliterated, that risk of injury was negligible and that there was a high probability of benefit. In the event this evidence was confirmed by experience.

I disliked the form of restraint used but accepted it as one does a dentist's gag. My last sight of anything was Dr X, a tall upright and commanding figure standing just within my line of vision (I shall refer to this later). I then knew nothing whatsoever until I awoke some hours later from what seemed to have been a natural and refreshing sleep. I soon discovered some stiffness of the back and some pain near the temples on moving the jaw. However, I immediately knew that something important and good had occurred. A nurse was at the bedside, and I said to her: 'That was very clever of you.'

I felt light and easy in mind—nearer to being in a happy frame of mind than I remembered being for many years. Loss of memory was slight. The two main instances were that on my return home I was most pleasurably astonished to see my small son, and I had forgotten that I had a younger sister. It is remarkable how the appearance of a person one has forgotten as a result of ECT seems almost miraculous something created that instant, yet the person and all the circumstances return fully to consciousness at once. My own experience was that the memories lost returned with a pleasurable emotional tone. I have wondered whether this memory loss is somehow a reversal of the usual process whereby unpleasant memories are suppressed. An examination of the emotional tone accompanying returning memories might be illuminating. In my case no unpleasant memories returned in this special, sudden manner. The facts of my history carrying an unpleasant emotional tone (if I may so put it) were all present in my memory as before, but no longer seemed to have the power to drag me down into a depressed state.

I attended for a second treatment three days later. I felt very much greater apprehension and increased dislike of the whole thing. It had I imagine, progressed from the dentist's chair to the operating theatre in my estimation, though I have never been operated upon. As I had had no experience that could possibly justify that apprehension I did my best to dismiss it as irrational. I had however, formed the conclusion (on my own account) that the slight pain which had persisted since the first treatment was due to a strained back and a temporarily dislocated jaw. In spite of that I was puzzled to understand how an experience undergone during complete unconsciousness could lead to such apprehension. I was also astonished to have experienced the very striking certainty that something important and good had happened.

This attitude led me to decide on this occasion to close my eyes as soon as the electrodes were applied and concentrate upon trying to detect any sensation whatever between that moment and the time I should awake. My only experience was that, with my eyes completely but lightly closed, I did see one or two 'stars' moving gently. They were the kind of 'stars' one sees after a blow on the eye, but they drifted gently into view for an immeasurable instant and had no quality of violence whatever. They were not due to tight closing of the eyes as I had closed them only loosely. No muscular sensation whatever accompanied them. This time so far as I remember, my only loss of memory was that I did not dress completely before going to the rest room and I forgot that Dr X had asked me to see him before I left.

Subjective Effects

The most striking effect of these treatments on my behaviour and general attitude was that little routine duties and services to others, which had been a burden and even a cause for suppressed irritation, were now performed without the slightest hesitation and even with pleasure. My relations with my associates were made much more easy and natural.

I then within the next day or two, began to have symptoms which I identified as the physical reactions to fear. I still found this difficult to understand in view of the absence of any conscious experience of anything alarming. I had frequent and violent heart disturbance—a gross flutter or palpitation—and, what alarmed me much more, a kind of 'humming' or

fine tremor of the heart which I disliked extremely because I recalled some story or other which I had read years before about a madman who was troubled with a 'humming' in his chest. I also had for some days a mild but noticeable loosening of the bowels which I identified as similar to that occurring in some people when frightened. As a child and during the air raids I had experienced some heart flutter when excited, but I was not normally subject to the bowel effect.

I was also haunted by certain subjective experiences which I decided must be 'memory images' (my terminology). They were closely associated with the heart symptoms—i.e., when these images came to mind the heart trouble began, and I had to put them out of mind turn my head quickly and look at or think of something else for fear that if I continued to contemplate them the heart would get worse. These images were: (1) An explosive flash similar to one I had seen on the films of a mine being exploded *under water*. The water instantly goes white in a kind of aqueous flash radiating from the centre horizontally. It recalled the mine explosion because of its horizontal nature and its instantaneous spread in a liquid medium—as distinct from the less controlled explosion in air. (2) A somewhat similar image in many respects. In this case the memory was as if some flaky precipitate such as ground rice or soap flakes were at the bottom of a vessel of water. The flakes seemed suddenly and instantly separated vertically by a horizontal force through the water. They then settled down slowly through the water by their own weight until all was at rest again. (3) A flag attached to a flag pole, is suddenly and instantly stiffened as if by a powerful wind. These were not precisely seen but present as visually conceived ideas. I described them to Dr X who said similarly explosive ideas were frequent in ECT patients. (4) A fourth image of this nature but more easily understood was the figure of Dr X himself, standing beside the treatment couch as I had seen him at the moment of the first treatment. He was precisely as I had seen him but this image had for me the quality of the sinister dangerous professor in a thriller. Contemplation of it started the heart symptoms just as in the case of the others. I found it made not the slightest difference to my attitude towards him next time I saw him. But it might be well for the doctor to stand out of sight of a patient at this instant.

I have been much interested in the fact that these three memory images have all the same spatial quality. In each case the force is applied horizontally, and this is the case of course in the application of the treatment. I communicated all this to Dr X and attended at the clinic again. I felt that these symptoms were in some way a warning that further treatment might be dangerous. I was prepared to undergo further treatment if it were recommended and no doubt I would have been able to behave reasonably about it as before. I was, however, by no means confident of maintaining control against the really severe apprehension and the heart symptoms, which afflicted me even when waiting to see Dr X.

One other memory I could not get out of my head for some weeks. This was a genuine memory of the sound of the strange inhuman cry from other patients under treatment. Perhaps I am too sensitive but I think it might be well if steps were taken to deal with this. Although I knew it was an automatic expulsion of air and emotionally meaningless, it stuck constantly in my mind as a horrible thing.

In the event Dr X decided that it would be better to suspend treatment for the time being. He reassured me about my heart saying the symptoms would gradually pass off, which has been the case. Within two months of treatment I could not have written this without heart symptoms. The detailed recollection now has no such effect.

I have not been for further treatment because I am considerably improved and I hope it is not necessary. I am convinced that to complete the course might lead to further improvement but in the absence of the more distressing symptoms I formerly experienced I do not feel that the renewal of some weeks of such fundamental disturbance is worth while. I am advised otherwise I shall be willing to undergo further treatment but I hope to avoid it.

I have made no record of dreams and remember none, but I am sure I had some unusual dreams. One night I had a formless terror. It was causeless and I knew I was alone. I put on the light, sat up and waited until

it had passed and then went to sleep again. Another night I believe I had a slight muscular reproduction of the fit, or the sensation of it.

A most interesting effect of the treatment was that my imagination was very greatly stimulated. I soon began to write a fantastic Oriental fairy story with which I was, and am quite pleased. I had not previously done anything of the kind. I also took up work again on a book and completed about 60 000 words of it satisfactorily.

I suppose I am introverted. It is a fact that the treatment is felt as a threat to the secret inner world. I was most anxious about it. I knew that something I valued would be and was being destroyed. But might it not be a false value that I placed upon that inner world? I believe that it was a false value, otherwise, why should I awake from treatment with the certainty that something good had occurred?

THE BIRTH OF A BABY

The film entitled "The Birth of a Baby" has been classed by the London County Council as suitable for "A" exhibition and is soon to be shown to the public, at least in London, at one of the news theatres. A special showing of the film on June 11 was arranged by the National Baby Welfare Council, which is sponsoring the distribution of this American essay in adult education. The English commentary before and after the film proper points out the differences between American and English obstetrical technique and practice. It seems unfortunate, however, that during this commentary there should be only a succession of rather dull "stills" in strange contrast to the opulent setting of the film, particularly as it relates to the American family doctor. His equipment would be the envy of even a modern maternity hospital in this country. Despite these and other criticisms to which we drew attention when this film was first shown privately in London (*B.M.J.* 1940 1 264), the film has a real educational value. It contains nothing that would shock or unduly upset any normal young woman, and it presents in an easily assimilable form much of the detail of antenatal care preparatory to confinement at home. There are few doctors who will not be interested by it and there must be very few young married women who would not benefit by seeing it.

SPENS COMMITTEE FOR SPECIALISTS

INTERDEPARTMENTAL COMMITTEE OF INQUIRY

The Minister of Health, Mr Aneurin Bevan, and the Secretary of State for Scotland Mr Joseph Westwood, have appointed a committee of 11 members to recommend "what ought to be the range of total professional remuneration of registered medical practitioners engaged in the different branches of consultant or specialist practice in any publicly organized hospital and specialist service." The full terms of reference similar to those of the committee of which Sir Will Spens was chairman and which has recently submitted a report on the remuneration of general medical practitioners (Cmd 6180), are

'To consider after obtaining whatever information and evidence it thinks fit, what ought to be the range of total professional remuneration of registered medical practitioners engaged in the different branches of consultant or specialist practice in any publicly organized hospital and specialist service, to consider this with due regard to what have been the financial expectations of consultant and specialist practice in the past, to the financial expectations in other branches of medical practice, to the necessary postgraduate training and qualifications required and to the desirability of maintaining the proper social and economic status of specialist practice and its power to attract a suitable type of recruit, having regard to other forms of medical practice, and to make recommendations.'

The committee comprises Sir Will Spens CBE (Chairman), C R Dale, Esq., Sir Thomas Gardiner, GBE, KCB, T Lister, Esq. M.A., Miss Elizabeth Looker OBE, BA, Prof D Murray Lyon OBE MD FRCP Ed, FRSEd, Lord Moran of Manton MC MD, PRCP, Leslie E Peppiatt, Esq., Prof Harry Platt MD, MS., FRCS, S Cochrane Shanks Esq., MD FRCP FFR, J R H Turton Esq., MB FRCS, Mr T B Williamson, Ministry of Health, and Dr D P Stevenson, MRCS, L.R.C.P., Assistant Secretary, British Medical Association, are Joint Secretaries.

Reports of Societies

ERYTHROBLASTOSIS

Dr LOUIS K. DIAMOND of Harvard addressed the Section of Paediatrics of the Royal Society of Medicine on May 23 on erythroblastosis or haemolytic anaemia of the newborn. There was an erroneous impression, he said that this was a new condition of recent origin but it was well described in English literature before 1900 the pathology was fully illustrated by German investigators in the early part of the twentieth century, in 1932 at Harvard records of 20 infants manifesting a single underlying morbid process of erythroblastosis were published, and in more recent years much had been written on the Rh factor.

Problems of Rh Incompatibility

The Rh factor was considered to be positive in 85-87% of the white population of the United States, in 95% of negroes, and in 99% of Chinese. An investigation of 2,500 American ex Service men showed that more than 5% were Rh-negative and on receiving the Rh factor by transfusion developed antibodies. The danger of sensitization was much more than theoretical and must be borne in mind when giving transfusions. It was essential that no childbearing woman be given a transfusion until it was first determined whether she was Rh negative and might or might not have Rh antibodies.

In discussing sensitization during pregnancy Dr Diamond dealt with the effect on the progeny of an Rh positive father and an Rh negative mother. If the father was homozygous the children would be Rh positive and each of them potentially might be a means of sensitizing the mother if the father was heterozygous, half the children might be Rh negative and there was less danger. In addition it must be assumed that the placental barrier might be faulty and some foetal red cells might cross over and enter the mother's circulation. The first pregnancy was likely to be the least affected, because the mother was undergoing slow sensitization during that time it was in later pregnancies that the effect was more pronounced. One mode of sensitization which had not been appreciated until a number of cases of this sort had happened resulted in about half a dozen women from one particular clinic in their first pregnancy having babies with erythroblastosis. On investigation it was found that at this clinic it was customary to give intramuscular injections of blood as a means of curing vomiting during pregnancy. In the control of haemorrhagic disease in the newborn therefore it was important to refrain from using intramuscular blood until it was ascertained that the recipient was not Rh negative.

It was important, Dr Diamond continued not only to determine the Rh type of every recipient of blood and of every woman during childbearing but to follow the sensitizing process and to test the husband's blood and if possible to ascertain its homozygous or heterozygous quality. One other practical consideration was that obstetricians should be forewarned of the need to exercise great care before using the husband as a donor for transfusion to the wife. Every woman should be typed during the antenatal period the husband and children should be typed if the woman had been found sensitive and again in special cases, the woman's serum should be searched for abnormal agglutinins. There was always the possibility of a woman being sensitized to the factors in her husband's blood which she herself lacked.

Clinical Problems

With regard to clinical problems to be faced by the paediatrician about 20 years ago the blood of the father was generally used for transfusions and many transfusions were necessary because the red blood cells did not seem to survive as expected. The majority of children recovered, however, especially if there were no complications such as severe jaundice or cardiac failure. There were certain complications of erythroblastosis which were frequently called to the attention of the paediatrician. First there was the brain damage which occurred. In his series of children who survived some showed damage to their

higher centres and muscle control, but a fair number had shown relatively little disturbance later in life. The prognosis must be guarded in all cases. One complication less serious, but alarming to parents was the heavy staining of the tissues of the infant with the pigment present in jaundice. This pigment might be deposited in the teeth which were being formed at birth and later so that they took a green or greyish green colour. The parents might be assured that the permanent teeth would be normal in appearance. Changes were not observed in the bones with any frequency and most of the children who had not suffered nerve damage would survive.

Up to 1941, before the Rh factor was recognized, transfusion was given in an arbitrary way. Afterwards Rh negative blood was used, given frequently in small transfusions, and whether because of this or because the cases were recognized earlier the mortality dropped during the next few years from 40% to 30% among newborn infants. Then, it being a frequent experience that a normal infant at birth developed trouble later on, an investigation was made and it was found that in most of such babies at birth there was a certain amount of circulating antibody. Thereupon the practice developed, in addition to the transfusion, of delivering these babies two or three weeks before term, and the result of this was a further decrease in mortality. In a series of 350 cases the mortality dropped to 20%. Finally, still another improvement in therapy was effected. This was made possible by the development of a plastic catheter in the umbilical vein of the newborn infant by means of which constant withdrawal and replacement was possible. The infant's blood could gradually be replaced so that at the end about 80% of the infant's red cells and serum had been removed. The child was kept warm throughout the procedure, and oxygen could be administered. Relatively little difficulty was found in using this plastic catheter. This technique together with the earlier delivery was employed from January to July, 1946 in 15 severe cases, of which 9 died and, with an improved technique, from August 1946, to February, 1947 in 20 severe cases, of which only 3 died. Among 36 moderate or mild cases there had been only 3 deaths.

Dr Diamond recapitulated the improvement in mortality following advances in treatment as up to 1941, simple transfusions from father 40% mortality in 1942-4 transfusions of Rh-negative blood, 30% mortality, in 1944-6 the same plus delivery before term, 20% mortality in 1946-7, early delivery plus replacement transfusion—the present treatment—10% mortality. Of the babies who had died some had succumbed to the consequences of immaturity. Finally, he said that more study was needed before the problem of the management of blood incompatibility and antibody action between mother and child was solved. There was no justification for complacency in this field, neither was there any reason for undue anxiety when the problems of Rh incompatibility had to be faced.

At a meeting of the North of England Obstetrical and Gynaecological Society in Manchester on April 18 Dr VINCENT CORBETT described a case of vesico uterine fistula causing symptoms in a woman whose youngest child was 10 years old. The aetiology was obscure but it was suggested that the fistula might have been made by an attempt to cause abortion. Dr VAUGHAN JONES described two unusual cases of secondary post partum haemorrhage. Dr R. E. NEWTON described a case in which supravaginal hysterectomy showed a true placenta accreta in a fundal accretion which had ruptured. Dr J. W. A. HUNTER described three cases of carcinoma of the uterus appearing twelve or more years after the treatment of menopausal menorrhagia with radium. Mr PERCY MALPAS read a note on Smellie's method of forceps traction.

The Morgan W. Williams Bequest is a fund from which grants are awarded to medical practitioners and others ordinarily resident in Glamorganshire. The grants are intended to assist those wishing to travel abroad on short visits of medical interest. It is a condition of any award that the person to whom the grant is made shall forward to the secretary of the Welsh National School of Medicine a report on his visit. Applications for grants which should if possible be made at least three months before the proposed travelling date should be sent to the Secretary, The Welsh National School of Medicine, 10, The Parade, Cardiff.

Correspondence

Physical Therapy of Mental Disorder

SIR—By showing so clearly that even a psycho analyst has his blind spots, his prejudices, and his ignorances, by descending to the level of invective, and by upholding the 'right' of psychological science against the 'wrong' of physically orientated therapy, Dr D W Winnicott (May 17, p 688) has implicitly declared to us that, even in the name of positive science it is indeed difficult to get away from the evaluative statement. He can never free himself from making such statements as 'the wrong kind of doctor, skilled in the wrong way', 'depression is the illness of valuable people,' and 'I think leucotomy is the worst honest error in the history of medical practice'. He deplores, condemns, is shocked and horrified and he points the accusing finger. His statement that 'scientists hate empiricism and regard it as a stimulus to research' which I cannot believe he means, is the kind of slip of the pen which we can safely leave Dr Winnicott to sort out with his unconscious.

The notion upon which his whole argument seems to rest is that magic and science are irreconcilable, wholly alien to each other. It is upon this point rather than upon the specific issue of physical therapy in mental disorder, that I should like to join issue with him. It should be clear enough that when Dr Winnicott refers to 'magic' it is with an associated feeling of hostility while his references to science are those of a proponent. He loves science because he is dedicated to it. He holds to the one and eschews the other. Now it seems to me that it is this fundamental division of all experience into the 'good' and 'bad' the 'accepted' and the 'rejected' which is not only the origin of all evaluative judgments but is in Dr Winnicott's own case the underlying process in his prejudiced attack. Furthermore, it would seem that, in calling magic 'bad' and science 'good' he is doing no more than reversing traditional custom. In psycho-analytical language he is replacing a traditional worn out super-ego with his own 1947 model. He arrogates to himself the function of Inquisitor and with zeal pursues the misguided leucotomist in true heresy-burning fashion. He magically invokes science to condemn magic. The condemnation of a practice as immoral (in this case leucotomy and ECT) which issues from a philosophy that implicitly denies morality (in so far as it is positive and non-evaluative) is an absurdity. Dr Winnicott in descending from his Olympian perch and engaging in the humdrum squabbles of mortals cannot except by most serpentine logic, retain his Olympian status. He cannot be a referee in his own fight, but this appears to be what he is trying to do, and I must draw his attention to it. As to his personal opinions, however prejudiced they may be he is entitled to our respect, but his authoritarian attitudes deserve another fate—I am, etc.,

W MALCOLM MILLAR.

Gross, W, and others) When prefrontal leucotomy is given to the most hopelessly ill patients in mental hospitals, one out of three becomes well enough to return home, while 30% are much improved. Brody and others have been unable to find any intellectual deterioration as a result of the operation.

In view of the long and painstaking scientific research which has made these results possible (and they represent a vast alleviation of human suffering) it is difficult to understand why Dr Winnicott can describe these treatments as "brutal," or why he says that it is better to do nothing than to use them. Perhaps the reason why he has been misled is because it is well known that serious psychological symptoms in the case of children can clear up in a remarkable manner as the result of psychotherapy and even in some cases merely by lapse of time. It would be wrong however to suppose that the same applies to adults, and especially middle aged adults, who are most frequently the objects of shock treatments. The best analysts are careful to select their patients, and even Freud admitted that his methods were not successful with elderly patients or with psychotic patients. It would therefore seem illogical for Dr Winnicott to dissuade such persons from having any treatment at all. He evidently supposes that because a mental conflict has been a causative factor in the onset of an illness, the patient should be treated solely by psychological methods. It would be just as reasonable to forbid a patient suffering from Graves's disease to have an operation on the ground that emotional conflict was a factor in its causation.

When Dr Winnicott regrets that psychiatrists are as interested in biochemistry and neurology as in psychology he appears to be guided by a mistaken belief in the unreal Cartesian dualism of mind and body. For the psychiatrist however, the patient's organism must be considered as a mind-body unity and must be treated by psychotherapy and physical means as the situation demands. If Dr Winnicott were right, the psychiatrist would need no medical knowledge whatever. It is not true to say that no doctor would agree to have shock treatment. More than one has personally testified in the medical Press to the efficacy of ECT for melancholia while three research workers to my knowledge have submitted to a number of shocks in order to test the effects of different wave forms. One of these described the subsequent sensation as "like having drunk two glasses of champagne."

It is difficult to understand Dr Winnicott's prejudices, considering that so few patients dislike the treatment, while those who do are easily anaesthetized beforehand with a little "pentothal." Serious results may however follow from an attack of that character by a man of Dr Winnicott's standing for the patient may be denied the only form of treatment which will save him many months, or even years, of suffering in a mental hospital—I am, etc.

London W1

A SPENCER PATERSON

REFERENCES

- Freudenberg R. K. *et al* (1947) *J ment Sci* 93 9
Sargant W and Slater E. (1944) *Physical Methods of Treatment in Psychiatry* Edinburgh
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SIR—Dr D W Winnicott's attack (May 17 p 688) on Physical Therapy of Mental Disorder merits some comment. Dr Winnicott is a paediatrician and a Freudian child psychiatrist and cannot therefore have had much personal experience of these methods. Before one dismisses so lightly these important developments in psychiatry as Dr Winnicott does one should first examine the actual results of these treatments. When ECT is used in cases of involutional depression figures of from 70 to 90% of recoveries are constantly reported (Sargant and Slater 1944) while hospitalization is reduced in cases of depression from an average of 63 weeks to 6 weeks (Sargant 1942). With regard to the insulin coma treatment of depression a statistical investigation in New York has shown that Governor Dewey has made it a successful State hospital. It was calculated that each case required 14 months hospitalization through the use of insulin and German investigations show that the mortality rate in insulin treated cases is in the order of 2.1 (Freudenberg, R. K. Sargant, W., Mav-

SIR—The inspiring and stimulating article by Dr D W Winnicott (May 17, p 688) shines like a beacon of light in the dark wilderness. I would like to write constructively further to my previous letters which I am given to understand have received a not inconsiderable measure of support. It is my view that it is quite unnecessary to be a doctor in order to give good psychiatric treatment. The important desideratum is to have people who by their characters deep culture and infinite patience are best fitted to undertake treatment in this dangerous subject. A psychiatrist does not always possess these attributes in fact there are many lay people who with a course of training in normal and abnormal psychology would make much better therapists. There are some distinguished psychiatrists and some good ones, but unfortunately they are in the minority.

I am in whole-hearted agreement with Dr Winnicott in his views against ECT. As regards the operation of prefrontal leucotomy which I witnessed many years ago as one of the first to be done in this country, it is one of the most dreadful operations I have ever witnessed, and I can pay

tribute only to the skill of the surgeon and to nothing else, but I would suggest that it is fundamentally wrong to operate grossly on the brain for conditions we do not understand and which may have a spiritual background and are far beyond our knowledge. Perhaps one of our psychiatrists would volunteer for the operation if it is contended that it does no harm.

I venture to prophesy that many of these modern treatments will gradually fall into comparative decay and will be used only in a selected one fifth of the cases in which they are now used. Psychiatrists must get out of the habit of trying to fit every single action of a patient, whatever it may be, into a pet pattern and jargon of their own, they would still somehow or other fit in these actions if the patient acted in exactly the opposite way. A perusal of some of their reports amounts to nothing more than a schoolboy copy of half a page of a textbook. After all, to a great extent psychology is only "informed" common sense.

The admirable and most instructive book by Dr C P Blacker on *Neurosis and the Mental Health Services* London, 1946 deals emphatically with this as the most important problem—namely, the proper selection of a psychiatrist. It tries to deal with all the difficulties of the situation from a short and long term policy. If an investigation is undertaken piecemeal in this way it will fail. What is needed is a commission of inquiry into every aspect of the case. It is absurd for psychiatrists to inquire into their own system and faults. The inquiry should be conducted by responsible and distinguished people into the mental hospital system and conditions therein, the selection and training of psychiatrists, the drastic curbing of their powers, the Chancery laws, the certification laws, the rehabilitation of the patient and the substitution of a greatly increased social medical service in place of much that now goes under the heading of psychiatry. They are in danger of being regarded in many cases as a menace and in other cases as a source of amusement. These are the views of an ever increasing number of doctors, and there are rumblings of more than discontent in the public mind which the real leaders of psychiatry would do well to heed in good time. I have myself drawn up a memorandum which I hope might be of some use to a commission of inquiry.

I would like to ask, say, twenty psychiatrists to undergo a course of ECT in order to record their own impressions. We should learn a lot from this. Let it not be said that their motto is "Do as I say and not as I do." Of all people as far as is humanly possible they should be beyond reproach. The name itself "psychiatrist" should be changed as it conveys a false and mystic sense of importance to the lay public.

In the past, and in a few exceptional cases, there was some brutality in some mental hospitals. The explanation by Dr Winnicott of this brutality is most interesting and as far as I know quite new, but how then would Dr Winnicott explain the subconscious motives of a few doctors who winked at what happened? I know of one case where an intelligent and educated person was wrongly placed in what is euphemistically called an observation ward. Here he was so treated that it is a wonder that he never went completely out of his senses. No theories can explain away such facts. Yet there is no remedy in law for this procedure, for the financial loss, the misery and suffering caused to the patient and his family, and for the after-effects. All the participants in such a case will find it very easy to play the victim off in order to ease their subconscious guilt feelings, but will not face up to facts and do justice, albeit at a very late stage, to the victim by adopting the obvious and comparatively simple way out. The injured patient should remain for always among his friends, it would be fatal for him to leave them.

It is interesting to note in the same issue of the *Journal* a memorandum on threatened suicide (*Supplement* May 17, p 103). What an anti climax to have to reiterate at this late stage that mental trouble may be a disorder of the emotions and not of the intellect.

The most important sentence in my opinion in Dr Winnicott's article so wonderfully expressed and which is the kernel of rehabilitation, is when he says that massed guilt feelings and hate and fear are aroused in people who are concerned with mentally ill people. I would like to add to this wonderful sentence, which may have far reaching consequences that the more supposedly mentally ill people defend themselves and their rights the more guilt is aroused in the people they meet in order to hide their own subconscious aggressive feelings and hate and guilt. If this question can be dealt with properly a great deal will be done to prevent the perpetuation of the condition of an innocent patient once falsely labelled. The patient or victim, as always comes first, and the desires of interested parties in many particular instances to whom often the patient's breakdown is almost entirely due and in other cases was deliberately fostered by them, should be recognized as being concerned with their own position alone.

Just as Dr Winnicott admits his prejudice in certain matters so I admit mine in others, but this is no reason why the facts I have given should not be correct. I am deeply grateful to Dr Winnicott for what I consider to be a momentous article, and I would like to pay tribute to the good work that is done by the right type of psychiatrist—I am, etc.,

London NW 11

A LIONEL ROWSON

SIR—I am interested in the correspondence on this subject and do not hesitate to express my views that there are patients who do benefit from ECT, leucotomy, and other physical forms of treatment, but there are those for whom I am certain that psychotherapy is the correct form of treatment. I must make a correction here that general paresis is an organic condition and would therefore be treated by organic methods (Dr G Tayleur Stockings, May 31, p 778). I appreciate that in making this statement I may be on uncertain ground as some research workers may be on the point of discovering an organic basis for the neuroses, but I know from my own experience and that of other analysts that patients can obtain a state of normality which they never knew in their lives before they were analysed, and this in the absence of any physical treatment.

I would not have been tempted to make this contribution had it not been that I have been unable to get what I consider adequate physical treatment for a patient I have under analysis. Briefly a severe obsessional male of 40 who lives 30 miles away was referred by his doctor in December 1946, for treatment. At that time he had pruritus ani for which no physical factor could be found. I took him on for analysis, but the severity of the pruritus soon prevented him from making the daily journey. As I had had fairly considerable experience of continuous narco-sis and skin conditions I advised his admission to a licensed house for this form of treatment. After a month he was relatively free from irritation and analysis resumed, until about 5 weeks ago when the pruritus again became painful, complicated by a general septic condition which put an end to travelling. He was willing to have further narco-sis, but not at the previous establishment, because he had found the quarters so uncomfortable.

I did not anticipate any difficulty in finding another licensed house where he could have this treatment, especially as it had proved its value for him before. We found another licensed house where his condition was diagnosed as a barbitone rash, continuous narco-sis was refused, and ECT made a condition of his continued residence, in spite of the fact that he had previously had it with disastrous results. I saw him after this experience, which had shaken his faith in psychiatrists still more. On account of his physical condition he was unable to make the daily journey to me, and I agreed to find a licensed house which would undertake narco-sis. This I did, explaining the position by telephone and to prevent any misconception followed this up with a report. He tackled his septic condition very well, but the whole question of continuous narco-sis has been evaded.

It is interesting to note that there are vogues for a particular brand of physical treatment, and it is impossible to obtain which is apparently outmoded however good it may be—I etc.,

Bishop's Stortford Herts

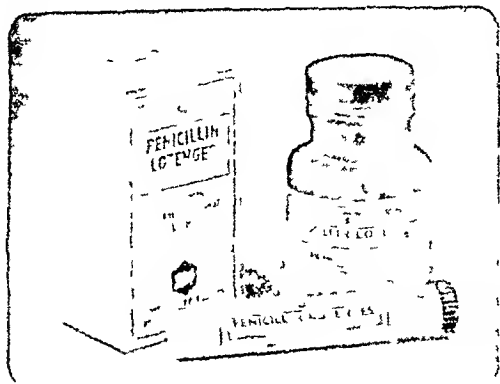
D N HARDCASTLE

SIR—I should like to join the doctors defending the physical methods in psychiatry against Dr D W Winnicott's point of view (May 17, p 688) with the simple statement I am convinced is right, that mental diseases *simul generis* do exist. I firmly believe that all mental disorders are symptoms of the acutely subacutely, or chronically ill physical organ called cerebrum. Without a physical dis-ease of the said organ—directly or indirectly—there are no "disturbances." *In corpore sano ad mens sana*. Those who believe in physical causes are nearer the truth and subse-quently nearer the solution of the great mystery of mental disorders than those who think that the philosophical psycho-theories are the last word in psychiatry. It is evolution psychiatry turns back to medical research seeking with the help of cerebral physiology and pathology the causes of mental disorders. It is refreshing to see the increasing number of doctors realizing this fact.

Till we know, ECT is under present circumstances one of the best if not the best treatment for shortening the time of hospitalization in a series of mental disorders, and what

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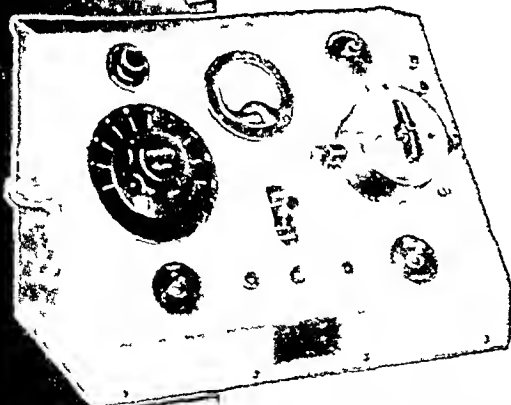
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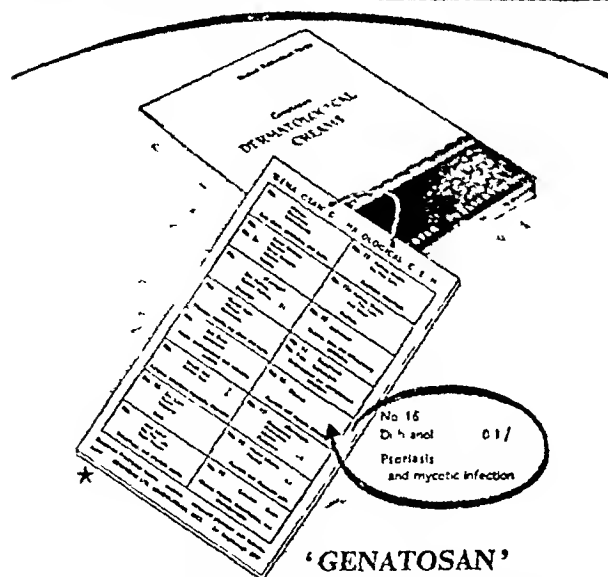
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means to have a patient staying weeks in a mental hospital instead of months one has only to ask the husbands, wives, sons, or parents of such a patient—I am, etc.,

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ERNEST E FELDMESSER

Nicotinamide and Diabetes Mellitus

SIR—In the *Journal* of Feb 9, 1946 (p 218), you kindly published my results of massive nicotinamide therapy in diabetes mellitus. These investigations were prompted (as then described) by an original theory that diabetes mellitus was a vitamin deficiency disease, and when commencing 'experimentation' by using massive dosages of different vitamins I was unaware that work had previously been executed on nicotinamide and carbohydrate metabolism. I have since learnt that such investigations have been reported. After publication of my results I received an overwhelming amount of correspondence from interested colleagues all over the world (some themselves diabetics), who promised to report their results to me. This was indeed welcome in view of the fact that I wished to pursue the question more extensively and the number of diabetics under my care was rather small. I have since collected an imposing and interesting amount of data which I hope to publish at a later date.

I was therefore most interested in Dr H J Wade's results of nicotinic acid amide on the sugar tolerance curve in six cases of diabetes (March 27, p 414). Dr Wade asserts that my results prompted him to pursue this investigation further, but unfortunately he did not pursue it very far. His administration of nicotinamide was of too short duration and the numbers of cases lamentably small. This is regrettable in view of Wade's superb opportunities for exhaustive investigation (Dr Wade is in charge of the Diabetic Clinic at the Salford Hospital, Manchester).

The fact that some workers report poor or negative results with this therapy need cause no despondency. My theory is that nicotinamide "slogs" the remaining islets of Langerhans to greater insulin production but does not affect the sugar tolerance curve in itself. The beneficial results of nicotinamide depend upon the amount of functioning pancreatic tissue. If the pancreas is completely fibrosed or lamentably poor in islets of Langerhans, then the nicotinamide will have no effect irrespective of dosage or duration of dosage, because a general cannot exhort a non-existent army to greater endeavour. Should there be, however, a reasonable quantity of functioning pancreatic tissue, then varying good results will be obtained by means of the nicotinamide stimulating the remnant of secretory tissue to greater production. According to the amount of islet of Langerhans present so the results will vary.

I would suggest, therefore, that every diabetic be administered with massive doses of nicotinamide. Some will receive no benefit, whereas others, with more functioning pancreatic tissue will be able to partake of the joys of eating more liberally and extensively without constant insulin injections. I hope to publish more rather interesting data on this subject later, but meanwhile I shall be grateful if interested colleagues will send me their results—I am, etc.,

Poole

W GORDON

Folic Acid

SIR—Dr Cecil L Forde reports (May 24, p 740) the use of folic acid in a case of subacute combined degeneration which had in addition, the peripheral blood picture of pernicious anaemia. He reports that the blood picture "responded" to "intensive" liver therapy for three weeks, but that the nervous lesions are not affected. Folic acid was given and "in a few days" there was marked improvement in the neural condition. If this improvement continues on folic acid alone this case deserves a detailed report, for it is, to my knowledge, the only example in the literature of a case of subacute combined degeneration which has responded to folic acid therapy. It is reasonable to suggest however that the three weeks intensive liver treatment was the most likely cause of the improvement—nervous as well as haematological—in this case. It is an established fact that unless treatment of pernicious anaemia is adequate—i.e. red cell count of 5,000,000 per cmm or more, with a normal mean cell volume—subacute combined degeneration

may supervene. Such adequate treatment of pernicious anaemia is always possible in the uncomplicated case, and, unless full haematological details are given, the onset of, or the progression of, subacute combined degeneration in pernicious anaemia adequately treated with liver extract cannot be accepted.

The work of Spies in America and Davidson in this country—to mention but a few—has already made it clear that folic acid will not prevent the development of the neural complications of pernicious anaemia nor improve them if they are already present. Severely progressive subacute combined degeneration has been reported in many cases receiving intensive folic acid therapy. This is a matter of grave concern to the patient and the doctor.

Folic acid is still in the experimental stage. It is not adequate treatment in pernicious anaemia, for in only a handful of reported cases has folic acid restored and maintained a normal blood picture. Much more research is required for the establishment of the indications for folic acid therapy. Spies—and the manufacturers of folic acid—have already recommended that pernicious anaemia should not be treated by folic acid alone because of the danger of the onset of subacute combined degeneration in such cases treated with massive doses of folic acid. It is surprising that so far there has been lacking in British journals the warning that folic acid is inadequate for the routine treatment of pernicious anaemia. There is still no substitute for adequate liver therapy in this condition—I am, etc.,

Frodsham Cheshire

J G A MCSORLEY

Vitamin C Deficiency

SIR—In *The Russells in Bloomsbury* by G S Thomson, there is a passage referring to a treatise on scurvy circulated in 1665. "He [Dr Maynwaringe] was referring particularly to that disease [scurvy] and to nervous complaint or complaints which went by the name of melancholia or hysteria and were associated by Maynwaringe with the Scurvy," and later "The real root of the trouble lay in the quantity of salt meat eaten of necessity by both rich and poor." In the *Journal* of May 17 (p 679) Dr L I Hatherley reports a case of vitamin C deficiency lasting six years which, within half an hour of the injection of ascorbic acid, instead of being weak, apathetic, and apparently dying became alert, bright, and cheerful. Later a deficiency of vitamin P was thought to be present in addition. Many years ago at a meeting of the Royal Society of Medicine I heard an Arctic explorer quoted as saying that he only once had any trouble with scurvy, and that was when a party instead of shooting bears for food lived on tinned food found in a cache.

As a poor substitute for lightly cooked meat for the past few years I have prescribed black-currant puree in a number of cases suspected of vitamin C and P insufficiency and more especially recurrent subconjunctival haemorrhage. At present I have a case of intra ocular haemorrhage under treatment, as no other treatment has had any success. From clinical experience and the studying of numerous reports, etc., I suggest (1) that much of the present tiredness, ill-health, etc., is due to deficiency of vitamin C and P, (2) that more fresh meat should be on the ration, (3) tinned meat should not be included in the meat ration, as its position in our diet is misleading, (4) we are certainly being starved as with the present calories, sufficient or insufficient, the chance is remote of a sufficiency of vitamins being present—I am, etc.,

Southsea Hants

F C B GITTINGS

The Nation's Food

SIR—I find your "Medical Notes in Parliament" (May 31 p 790) most interesting, for it appears that in the House of Lords on May 22 Lord Addison proceeds to prove Dr Bicknell's statement to be true and anything but false, sloppy, or inaccurate. It seems generally agreed that the domestic rations yield 1,600 calories per day and that unless one is financially placed so that one can afford to eat in restaurants, the remaining 1,300 calories per day, which are necessary for normal health, have to be made up of bonus issues of sugar, jams, meat pies, sausages, and the sweets ration. Lord Addison states that if the total quantity of food going into consumption is divided

the total population it will show that each person gets 2 900 calories per day but of course this gives a wholly wrong interpretation of the facts since those who can eat in restaurants must consume more calories than those who cannot afford to do so

Many of my national health insurance patients cannot afford to purchase meals in restaurants and as Lord Cherwell has so wittily pointed out these unfortunate people will have to consume either 100 oz (2.8 kg) of fish, or 5 lb (2.2 kg) of potatoes or 200 oz (5.7 kg) of cabbage in order to make up a deficient 1,300 calories. This is a gargantuan task which is beyond the ability of any patient I have at the present moment—I am etc

Leves Sussex

E J S BARTHOLOPE

De Morgan's Spots

SIR—Since it is impossible to prove the exact nature of De Morgan's spots by experiment I venture to suggest that dialectic consideration supplies us with a plausible explanation of their occurrence. I believe I was justified in writing (*Med Pr* 1943, 210 219, and *Rare Diseases and some Debatable Subjects* 1946 London p 51) the following: 'They are apparently true benign neoplasms (minute capillary angiomas) and although some of them disappear by spontaneous involution (? thrombotic or atrophic closure of the supplying blood vessel) they tend on the whole to increase in number with the individual's age. I regard them as simple *mutational* tumours (rather than telangiectases) of the cutaneous capillaries

I can think of no other equally plausible explanation of their occurrence. They apparently illustrate only one type of common non-malignant mutation of somatic cells at the surface of the body, some other types doubtless contain pigment as the one did which was microscopically examined by Sir John Blund Sutton if indeed the pigment in that particular 'spot' was not due to a capillary rupture which led to involution

I certainly am not the first to have suggested this mutational explanation for various 'spots' which appear spontaneously on the surface of the body (cf allusion by Lockhart Mummery when discussing malignant mutations of somatic cells) but I believe that 'ruby spots' will come to be regarded as the most conspicuous illustrations of non-malignant mutations of somatic cells—I am etc

London W 1

F PARKES WEBER

SIR—The very careful and convincing paper on De Morgan's spots by Capt A R Murison Lieut J W Sutherland, and Flying Officer A M Williamson (May 10 p 634) is a final refutation of the idea that these spots have any connexion with cancer, and Dr Parkes Weber in his letter of May 24 has underlined this conclusion which I think is universally accepted. These spots are flattened circular lens-shaped islets of connective tissue lying in the thickness of the epithelial layer of the skin and slightly raising it above the level of the surrounding skin. Each of them has a narrow vascular pedicle, like the stalk of a mushroom, through which blood vessels reach it. Owing to lateral movements of the skin this pedicle is subject to frequent obstruction too temporary to be called strangulation, and capillary angiectasis consequently occurs in the spot which assumes its characteristic scarlet colour with a sharp well-defined margin. Gentle rotary pressure with a glass slide can be made to empty the dilated vessels and the colour disappears to return as soon as the pressure is released.

The invasion of epithelium by connective tissue is a reversal of the process which produces carcinoma. I have never known a malignant growth of any kind originate in one of these spots and they must be regarded as entirely benign and unimportant products of advancing years especially liable to appear in the region of the waist where the skin is subject to pressure and to lateral displacement—I am etc

London W 1

W SAMPSON HANDLEY

Passive Immunization against Measles

SIR—It would appear from all reports that for children under five years old the gamma globulin fraction is the safest and most reliable method of obtaining passive immunization against measles an added advantage being the smallness of the dose when dealing with these small children. As far as I can ascertain the only material readily available for this purpose

(apart from the parent's whole blood) is convalescent measles serum. With this the dosage is rather bulky and there is the danger of the serum containing the isotherogenic agent of homologous serum jaundice. In this connexion I have heard that one or two deaths have occurred, and this has deterred me from using this substance. I should be grateful for an authoritative opinion as to whether this risk is such as to contraindicate the use of convalescent serum.

My main point in writing this letter, however, is to inquire why gamma globulin is not manufactured in this country, and if for some reason it cannot be manufactured, then why is it not imported? The substance must have been in use and favourably reported on for over two years, yet none of the local chemists can obtain it from the wholesale chemists, as it is apparently manufactured solely in America and is not being exported to this country. Surely, Sir, it would be of far more value, if it is a question of dollars to have gamma globulin rather than American brands of iron compounds, antacids, and the like of which we already have a surfeit of efficient English makes—I am, etc,

Harrogate

J C WARD

Acid Drinks and Sulphonamide Therapy

SIR—While agreeing that natural fruit acids are oxidized and cannot therefore be suspected of altering the blood acid-base ratio to the acid side I must protest at the illogical attitude taken regarding their administration during sulphonamide therapy. It is not enough to continue the fashion of prescribing fruit juice drinks on the lame excuse that they do no harm. It is abundantly evident from others as well as my own clinical experience that thorough alkalinization to the extent of rendering the urinary reaction alkaline is the surest method of obviating toxic reactions such as crystalluria, focal nephritis, haematuria, etc. The greatest risk of renal complications attaches to sulphapyridine, sulphadiazine, and sulphathiazole. At a urinary pH of 8 the solubility of these sulphonamides is approximately 2.2, 11, and 8.5 times as great as when urinary reaction is pH 5 to pH 6.

The obvious method of ensuring the necessary alkalinization of the patient is the liberal exhibition of easily assimilable alkalis in the form of sodium bicarbonate, carbonates, phosphates and citrates (where there is good tolerance to the last) in physiological proportion—I am, etc

Dognor Regis Sussex

ARTHUR A BRADLEY

REFERENCE

Med Res Cncl War Memo No 10 1945 pp 12, 21 London

Local Penicillin and Endaural Cortical Mastoidectomy

SIR—Endaural mastoid surgery—i.e., mastoid surgery performed through incisions in and about the external auditory canal and meatus—is gaining in popularity. Advantages of the method as contrasted with the post-aural approach include less haemorrhage and post-operative pain, speedier convalescence, and almost complete absence of scarring. The exposure obtained is such as to permit uncovering of the lateral sinus and dura mater removal of the mastoid tip if desired, and complete extirpation of the mastoid cells in all except perhaps the most cellular mastoids.

In endaural cortical mastoidectomy as usually described a wedge of skin is excised at the posterior and superior aspects of the external auditory meatus, this 'window' is left open for post-operative drainage and heals in a few weeks. I have employed the following modification successfully in some dozen cases. The incision—which is extracanalicular—is made parallel to and a millimetre or two behind and above the posterior and superior borders of the external auditory meatus respectively, and upwards along the root of the helix for about 1 cm, the lower part of the incision is made down to bone the upper part down to temporal muscle. The periosteum over the mastoid process and posterior zygomatic root is elevated retractors placed and the bone operation performed as usual. The external auditory canal is not disturbed.

At the conclusion of the bone operation the cavity is filled with a paste of penicillin solution and serum or plasma powder as described elsewhere (Harpman J A, *Lancet* 1946 2 808). The incision is then closed with a few fine sutures and the external auditory canal concha, and fossa triangularis (the concavity behind the anterior part of the helix) are packed with ribbon gauze. The suture is removed in about one week and the pack omitted a few days later. The stenosis of the external auditory canal fre-

Recently observed after cortical mastoidectomy performed by the external aural route has not been found following this endaural technique. The lesion in the cases in question was acute or subacute mastoiditis, the ear drums and wounds were healed within a week of operation.

Convalescence appeared to be aided by pre- and post-operative systemic penicillin treatment—I am, etc.,

Warwick

J A HARPMAN

Treatment of Acute Mastitis

SIR—From the beginning of August until the end of October I encountered twelve cases of acute mastitis in thirty two consecutive midwifery cases of which half were confined at the local maternity hospital. Cases showed evidence of acute inflammation of a breast from the 7th to the 21st day after confinement, local inflammation high fever, and rigors. All cases except two resolved without surgical interference with penicillin *cum* stilboestrol therapy 100 000 units twice daily and stilboestrol 1 mg orally t.i.d. 600 000 units was administered in nine cases, 1 000 000 in one case. In the two remaining cases evidence of abscess was evident on the 3rd day of treatment. Both were dealt with surgically and penicillin was continued until temperature and local condition indicated that inflammatory mischief was well controlled. These two received 1 000 000 units.

Occurring so late the infection was deemed to be not of haematogenous origin, while on the other hand careful investigation failed to reveal evidence of case-to-case infection. Moreover inquiry in domiciliary practice showed that cases were common in the district in the practices of different midwives. The contingency of the epidemic is therefore difficult to explain.

The following preventive treatment appears to have been successful as no case has occurred in my practice since it has been carried out as routine. The nipple is cleansed with warm normal saline and dried with sterile cotton wool. It is then smeared thinly over with fresh penicillin cream. I have great hopes that many cases of mastitis can successfully resume breast feeding after treatment has been successfully completed but so far I have failed to persuade any mother to make the attempt—I am, etc.,

Fraserburgh Aberdeenshire

J MACLEOD

Poisoning by "Lethane" Insecticide

SIR—In the article by Dr C V Harrison (May 24 p 722) the composition of lethane 384 special is given as "12.5% of lethane 384 (N butyl carbitol thiocyanate) 37.5% of lauryl thiocyanate, [etc]". So far as my information goes this is incorrect. I believe the composition to be (as stated in the paper by Prof Buxton and myself in the *Journal* of April 11, 1942 p 464) as follows: 12.5% N butyl carbitol thiocyanate (or, alternatively *beta* butoxy *beta*-thiocyano diethyl ether), 37.5% *beta*-thiocyanoethyl laurate 50% refined paraffin.

The main constituent (*beta*-thiocyanoethyl laurate) was not investigated by Cameron, G R, Doniger, C R and Hughes, A W M (1939) *J Path Bact* 49 363, but some data regarding its toxicity to mammals are given by Main R J, and Haag, H B (1942) *Industr Med* 11, 531. The M.L. doses found for intraperitoneal and subcutaneous injections to guinea-pigs and rats were 1.48 and 4.3 ml/kg. These figures fall into the range given for lauryl thiocyanate, and the error (if it be such) does not necessarily invalidate Dr Harrison's conclusions. Nevertheless it may be well to publish this correction unless he has information that the composition of lethane special has been changed—I am, etc.,

London W C 1

J R BUSVINE

"Tuberculous"

SIR—I should like to draw attention to the all too frequent and improper use of the word "tubercular" when "tuberculous" is what is really meant. "Tubercular" is a general term used to describe any condition characterized by rounded nodules—for instance a new growth—and exostoses might be described as tubercular in appearance when they are nodular. Tuberculous has a limited and special application: it is the adjective which should be used instead of "tubercular" to describe a condition due to tuberculosis. One should say a tuberculous (not a tubercular) lesion, a tuberculous (not a

tubercular) abscess, when it is intended to convey that these conditions are due to tuberculosis. The distinction may appear to be meticulous but precision in language makes for clarity of thought and exposition, and the reader of an article is entitled to expect this from the writer—I am, etc.,

London W 14

J M HAMILL

Sir Joseph Barcroft and Drugs in Asphyxia

SIR—I am sorry that my paper on the use of drugs in asphyxia appeared by some means as a letter in the *Journal* (June 7, p 825). It was originally prepared for the use of a medical committee in I.C.I., and it was my intention before it appeared in print to preface it with a paragraph explaining the part that the late Sir Joseph Barcroft had in its composition. As it stands it might well be the theorizing of a medical scribbler. In fact it was the culmination of a correspondence over many years and it incorporated several alterations made by Sir Joseph himself. As the matter is one of great practical as well as theoretical importance I think it is only right that it should be known that my 'letter' had this authoritative backing. Sir Joseph's letter returning it (with the caveat that he would not personally like to be responsible for giving strychnine to infants) was one of the last he wrote, and I should like to take this opportunity of recording that his interest and help in the work of a general practitioner who did not happen to have been one of his pupils were as keen and as generous as in that of the many research workers who did have that privilege—I am, etc.,

Winsford Cheshire

W N LEAK

State Medical Service in New Zealand

SIR—In response to Sir William Fletcher Shaw's letter (May 31, p 782) I would point out that my quotation from Mr Porritt's article in *St Mary's Hospital Gazette* contained the whole of his comments on medical service. I must dissent from Sir William's description of *St Mary's Hospital Gazette* as "almost a private publication", Sir William will find a copy, I believe in every medical library. That Mr Porritt's article was not intended to be a private communication is perhaps shown by the introduction to the paragraph on medical services, which runs as follows:

This leads me to a few words on things medical in New Zealand. For ten years the country has had a partial State medical service and a dispassionate appraisal of this is perhaps not without interest at the present juncture in this country."

I would also point out that Mr Porritt as a native of New Zealand, would perhaps be in a better position than Sir William to appraise the present position in New Zealand as compared with that position when he left the country 23 years ago. But it so happens that Mr Porritt's conclusions to which Sir William takes exception are strongly fortified by a much fuller exposition furnished by Mr Douglas Robb in a recent little book, *Health Reform in New Zealand* sent to me for review. Mr Robb is a distinguished consulting surgeon a member of the Council of Auckland University College and of the New Zealand Medical Council. He criticizes the absence of arrangements for postgraduate teaching and research. He remarks that the 'impetus for introduction of the State service was a political one and the conception of the details of the service was almost 100% political—few medical men appear to have been consulted as such'. While recognizing the increased financial prosperity of general practitioners he states his belief that "the service has been accompanied by a steady demoralization of the profession". His sense of general dissatisfaction with the present medical position is summed up in his request to urge which is the real purpose of his book for "the appointment of a Health Service Commission to inquire into all the aspects of the subject with a view to plans for the future. This suggestion is of particular interest to me as I begged the Prime Minister in a Parliamentary Question (*Hansard* Jan 21 1941) to appoint a Royal Commission which would take evidence from all sections of the community concerned with the Health Service before any definite steps were taken which would revolutionize existing arrangements. This request was refused but was repeated later by the Negotiating Committee of the medical profession, and again refused—I am, etc.,

House of Commons

E GR

Ethics of Government's Advisers

SIR—Examples of interference at a distance with the general practitioners' recommendations regarding the diet of his patients have been published from time to time in the medical and lay Press. We have been assured by Government spokesmen that lay interference—i.e. refusal to grant extra items of diet by the local food office staff—may be overcome by reference of individual cases to the Ministry when each case will be examined by the Government's panel of medical experts, whose decision again taken at a distance is apparently irrevocable. It has also been pointed out that interference from a distance occurs in the provision of surgical corsets. Here the Board of Trade is the culprit in the first instance, and certain medical advisers of the Ministry of Health or the Department of Health for Scotland in the second.

Now it is a generally accepted ethical principle in our profession that we do not give opinions on other practitioners' cases unless we are invited to do so, and then only after examining the patient. It would appear therefore, that there is a *prima facie* case against these medical experts or advisers whatever they call themselves of unprofessional conduct. Unless of course the changing face of Britain with emphasis on the encouragement of dishonesty and immorality, has been accompanied by a corresponding change in the ethical standards so long and so rigidly upheld by the General Medical Council—I am etc.

Denham Bucks

EUSTACE SHIPMAN

POINTS FROM LETTERS

Wrong Use of Power

Dr ELSIE M CHUBB (Capetown) writes 'I was much impressed at the stencilled copies sent out during the ban on the weekly Press and was rather surprised at the lack of initiative shown by so many others who merely accepted it. The appearing of the truncated *B.M.J.* was a very valuable protest against wrong use of power by the Government.'

William Blake Psychologized

Dr E WEATHERHEAD (Southborough, Kent) writes 'I suggest that if poor Blake is to be psychologized, he should also be physiologized and "prithologized". Had he lived in these days he would certainly have been "hospitalized".'

A Demobilized Doctor

'M.D.' writes 'Anticipating the happy occasion next year of the jubilee of the R.A.M.C., may one suggest an additional small function for that body and its R.N. and R.A.F. counterparts? The very worthy appeal on behalf of needful families of deceased members and ex-members with which you deal in your current number may I think, be supplemented by one—not definitely of monetary aspect—on behalf of the ex-members themselves. It is one for a little help and advice to those of them who meet with difficulties in their search for civilian occupation after demobilization. A case in point is that of a man of 35 who after his long service, mostly abroad, did his hospital course and then got ill. General practice is barred because of poor health, but research work is avidly sought for by this earnest worker. He has failed to obtain such employment after many inquiries. Perhaps he is on the wrong line, and possibly one of your kind readers could set him right.'

Attempted Suicide

Dr W. H. BRYCE (St. Andrews) writes 'Referring to the article in the *Supplement* of May 17 (p. 103) on 'The Law Relating to Attempted Suicide' it may be of interest to know that in Scots law attempted suicide is not a crime *per se*.'

Experiments on Human Beings

Messrs L. G. TRIDGELL, P. SAUNDERS and H. GARLING (London, S.E.22) write 'Last Dr. Louise Fraser's letter published in your issue of May 31 (p. 785) should lead others to assume that all experiments on human beings are unethical. May we as three of some forty conscientious objectors who took part in several experiments for periods up to five years state that we were under no sort of external compulsion to participate nor having started were we compelled to continue any longer than we thought fit. We have as yet insufficient experience of what happens in jail.'

Obituary

NOAH MORRIS, M.D. F.R.C.P.

Noah Morris, Regius Professor of Materia Medica at Glasgow University since 1937, died in Glasgow on June 1 at the early age of 53. By his untimely death the Glasgow medical school has lost one of its outstanding personalities at the height of his achievements. A native of Glasgow, Prof. Morris graduated B.Sc. with special distinction in physiology in 1913, M.B. Ch.B. with honours in 1915, and for his M.D. thesis in 1921 he was awarded the Bellhouston Gold Medal. He also held the degree of D.Sc. and the D.P.H. He was elected a Fellow of the Royal College of Physicians of London in 1943, and had been a Fellow of the Royal Faculty of Physicians and Surgeons of Glasgow since 1921.

Morris had been interested in physiology and biochemistry since his early days, and after a period as assistant and later demonstrator in the department of physiology under the late Prof. D. Noel Paton he was appointed professor of physiology in the Anderson College of Medicine while at the same time carrying on a general practice. In 1928 he was offered and accepted the newly created University lectureship in pathological biochemistry with which was combined the post of biochemist to the Royal Hospital for Sick Children, Glasgow. Here he laid the foundations of his reputation as a teacher and investigator. He published many papers on metabolic problems, particularly with reference to disturbance in acid base balance and the metabolism of calcium, phosphorus and fat. He frequently read communications to the meetings of the Association of Physicians and the British Paediatric Association and at the same time he inspired much of the research done by the other members of the hospital staff.

Prof. Ralph Stockman, who died at the age of 85 only last year, had been appointed to the chair of materia medica in 1897. He resigned in 1936 and Dr Morris succeeded him as the Regius Professor of Materia Medica. In the years which have elapsed since then he has more than maintained the high traditions of the chair. This appointment also carried with it the post of physician in charge of medical wards at Stobhill General Hospital—an innovation at the time but one which rapidly proved itself. Gathering about him a band of young and enthusiastic workers, Morris built up a department which soon became noted for the high standard of its teaching and for the vigorous research which went on under his leadership. Not content with this, Morris also achieved a high reputation as an administrator, and during the past two years his onerous duties as convener of the Committee of Postgraduate Medical Education were undertaken with his customary energy and enthusiasm. Indeed it is only a few short weeks since he ceased work. Following an operation, his health seemed to improve, but the nature of his illness meant that his days were numbered, a fact which he faced with admirable courage.

As a colleague, Morris was characterized by his loyalty to his friends, his sound judgment and his honesty of purpose. Although accustomed to speak his mind freely, he had few, if any, enemies, and as a regular attendant at medical meetings he would always be found the centre of a jovial group discussing the events of the day. He was widely read and well informed, and the pleasure he got from these talks was more than equalled by the pleasure he gave to others. He was respected and loved by undergraduates. Not only was he a clear and forcible lecturer but he had a great sense of humour, which students were quick to appreciate.

Morris's life was cut short at a tragically early stage and we mourn his loss. He lived his life to the full and he died as one would have expected—courageously and without complaint. We extend our deepest sympathy to Mrs. Morris who shared with him his enthusiasm and was proud of the success he had achieved and to his son and daughter.

Sir Alexander Macgregor writes 'I trust you will allow me to pay a tribute to the memory of the late Prof. Morris, my old friend and adviser in municipal hospital affairs. His dual appointment to the university chair of materia medica and as a physician to Stobhill Hospital was a happy event in the

history of medicine in Glasgow, and he was happy in it, for he at once established himself as a teacher of his subject in the classroom and as an exponent of humanistic medicine in the wards of the hospital. In both spheres his intellect and his strength of character and of purpose gained for him an ascendancy and influence in local and national affairs to which few attain. But it was not on this account alone that he won the esteem and unbounded affection of his colleagues and students. It was well known to his friends that his supreme interest in life was in his fellow-men and in the interplay of personality, and I know that he would have liked this to be said of him. He made and retained friends in every walk of life, he made friends of his students and was content only with the best they had to give, watching over their progress through the university and in after life. In his work as a physician and scientist he was quick to seize every opportunity to advance his subject and to encourage and even constrain others to join in the search for truth infecting them with his own enthusiasm. I should acknowledge with gratitude Prof. Morris's services to public health and the deep interest he took in the relations between clinical and preventive medicine. I was constantly indebted to his wise advice on our city hospital problems before and during the war. Had he lived he would have played a prominent part in the new health service.

Medical Notes in Parliament

APPOINTED DAY

On June 9 Mr VIANI asked when it was intended to bring the rest of the National Insurance schemes and the English and Scottish National Health Service schemes into operation.

Mr AILIE replied. The preparatory work necessary to arrange the transition from existing schemes and agencies and to create the organization to operate the new provisions effectively is very heavy. Considerable progress has been made with these preparations despite great difficulties of staff and premises. The various schemes are closely linked up with each other and with proposals for completing the break-up of the Poor Law and providing a comprehensive scheme of national assistance standing behind the insurance provisions. The Government consider that there are compelling reasons in favour of bringing all these schemes into operation on the same date. They have reached the conclusion that by giving high priority to the legislation which it is hoped to introduce next session to complete the break up of the Poor Law this will be possible. On a consideration of all the factors involved they have decided that the best date for this purpose is July 5, 1948 which coincides with the end of the next contribution year for health, pensions, and unemployment insurance.

NATIONAL SERVICE BILL

The Second Reading of the National Service Bill was moved in the House of Lords on June 3 by Lord HALL. He said that for the period provided in the Bill some 200 000 men would regularly be called up for twelve months full time training, with reserve training covering a further period of four years. The main object of the Bill was to prevent war.

The Archbishop of York said the reduction of service from eighteen months to twelve would probably enlarge the number of recently conscripted men who had to serve in Germany. In the British Zone of Germany there were several million young women in excess of the number of men. Some of them because of the circumstances of the Hitler regime were over-sexed. Inquiries by the medical authorities would show the result of the temptations to which these boys were subjected. He pleaded that conscripts should be kept in England a considerable time before being sent to Germany. Temptation often took place in the first weeks.

Incidence of Venereal Disease

Lord MORAN doubted the wisdom of recruiting by compulsion or of leaving to soldiers the decision on the numbers required. The experience when they pressed for the demobilization of doctors did not encourage them to give the Army a blank cheque in this matter. The decision about conscription would really be made when they knew the real potentials of the atomic bomb and bacterial warfare. There were great risks in employing conscripts overseas. In September of last year, in

our Army in Japan, of every 1 000 men 228 had venereal disease. In another command alongside 600 out of 1 000 had venereal disease—more than half. In Germany at the same time the figure was 185 out of 1 000, in Austria and Italy 168 out of 1 000, and in Burma and Malaya 141 out of 1 000. The figure in the Middle East was 31 out of 1 000. The reason for that lower figure was that there was really no mixing between the Army and the civil population. Those figures might alter from time to time but were substantially the same now. The figure for the Army at home was 33 in every 1 000. That was very much higher than usual, it was generally in the neighbourhood of about 12. He was told that the figure for syphilis worked out at about 5 to 6 per 1 000 among the civil population. They had the same prevalence of venereal disease in 1919 after the first German war when similar conditions prevailed. Then the figure was 150 out of every 1 000 in the Army of the Rhine while in the American Army in September of that year of all the white American troops in Germany and France, 859 out of every 1 000 had venereal disease. He quoted from Volume XV of *Medical and Casualty Statistics*. Absence from home was the factor which led to this high incidence of venereal disease. The longer a conscript was away from home the higher rose the rate and incidence of the disease. These figures lent no support to the Prime Minister's idea that the Army was a people's university.

Lord NATHAN said he had been staggered by the figures of venereal disease given by Lord Moran. He suspected Lord Moran had taken the figures for treatments instead of those for cases. The highest figure for the United Kingdom forces for the third quarter of 1946 was 9.6 per 1 000 and the lowest was for the latest quarter 5.3 per 1 000. In the British Army on the Rhine the highest figure was the third quarter of 1946 44.6 per 1 000 and the lowest figure the last quarter 30 per 1 000. In the C.M.F. the largest figure was 39.5 per 1 000 in the second quarter of 1946 and 22.8 per 1 000 was the lowest figure—being the figure for the first quarter of 1947 based upon January and February only. In the M.E.F. the highest figure was 9.4 per 1 000 for both the second and third quarters of 1946 and the lowest was 4.1 per 1 000 for the first quarter of 1946. In S.E.A.L.F. the highest figure was 37.6 per 1 000 for the first quarter of 1946 and the lowest figure 31.2 per 1 000 for the first quarter of 1947, based upon January and February only.

Lord MORAN said he had quoted from A.M.D.5 Statistics, September, 1946. The figure of 228 per 1 000 which he had given had nothing to do with treatments. It meant 228 on an annual rate. These figures had been given officially by the Army Medical Department.

Lord NATHAN said there was no disagreement that venereal disease had to be dealt with properly and promptly. General McCreery, Commander in Chief of the British Army on the Rhine had devoted time and labour to put this right. But on the whole they must rely for conduct abroad on what these young men learnt at home.

The Bill was read a second time and referred to a Committee of the whole House.

SCOTTISH UNIVERSITIES

On June 3 Mr RANKIN discussed admissions to the Scottish Universities. He said that last November Mr DILTON stated that for the session 1945-6 there were 6 440 applications for admission to the four Scottish universities but that almost 50% of these candidates although equipped to benefit from a university education, had not been admitted. The raising of the school-leaving age would create a need for something like 15 000 new science teachers in secondary schools. This was a demand which the universities as a whole must meet. The number of students in Great Britain had risen by 32% since the war but in Scotland by only 28½%. Scotland ought to contribute 5 000 or 6 000 to the extra graduates required, but last year the number who graduated in pure or applied science from Scottish Universities was 460. When they added the numbers in medicine and arts it seemed clear that the obligations which would be placed upon Scotland would not be met. He suggested the solution of the problem lay in founding another university. Claims to this had been made from Dundee, Oban, and Dumfries but he favoured Inverness.

Mr GLENNIE HALL said Scotland was not alone in having crowded universities. Other universities were absolutely packed out because 90% of the places had to be reserved for ex-Service men and women. Scotland proposed to increase by 32% the places available for students raising them from 9 500 to 12 500 and the expectation was that she would be able to crowd in even another 2 000. There were limiting factors which would prevent the Government from initiating the building of another university. It could not undertake to find building labour or material nor would there be the teaching staff at the

present moment. Where buildings could be easily converted extra places could be found for students. Recurrent grants for all purposes given to universities were: Aberdeen £158,000, Edinburgh £255,200, Glasgow University £305,550, Glasgow Royal Technical College £37,000 and St. Andrews University, including Dundee £162,050. In addition capital grants for building and equipment had been allocated to a total of £172,100 and additional grants of £15,000 to Edinburgh and £80,000 to Glasgow had still to be approved. Grants to Scottish teaching hospitals attached to the universities amounted to £159,550 out of £500,000 allocated to this purpose.

Services Medical Examinations

Mr. HUGH FRASER asked on June 4 what steps the Minister of Defence was taking to bring the medical examination and documentation of all ranks of the British forces especially in regard to pulmonary and dental x-ray into line with modern practice in the U.S. and late German armed forces.

Mr. ALEXANDER replied that up to date methods were already used in all three Services. Medical examinations in the Navy included miniature radiography of the chest when a person was entered or as soon as practicable afterwards, and thenceforth periodically so far as staff and equipment allowed. A follow-up system included full scale films and special observation in hospital of doubtful cases. The number of dental x-ray machines had recently been considerably increased so that all essential x-ray examinations could now be carried out. Over 90% of Army recruits were examined by mass radiography to detect primarily the presence of pulmonary tuberculosis. As soon as enough staff and equipment were available all recruits would be so examined. Facilities were available for dental x-ray for diagnosis and treatment. In the Royal Air Force all recruits had a chest x-ray as a routine. Further chest x-rays, and also dental x-rays were arranged as required. The facilities would be developed further as and when skilled personnel became available. In general routine dental x-ray examination and documentation of all personnel was not regarded as justifiable having regard to the present resources of the country. An inter-Service Committee on medical documentation had recently been appointed to consider the possibility of introducing a common system for the three Services on the most up to date lines bearing in mind war experience not only in this country but also in Germany and the United States.

Medical Certificates

On June 5 Mr. JOHN MORRISON invited the Minister of Health to give a list of all the certificates required by Government Departments which a doctor may be called upon to sign on behalf of a patient.

Mr. BEVAN in reply said that according to his present information medical certificates may have to be produced by patients (or their personal representatives) to Government Departments under the following enactments or for the following purposes. This list was not necessarily exhaustive.

1 Under the Births and Deaths Registration Acts, 1836-1926, e.g., to certify cause of death to the registrar.

2 To assist in determining a claim to war pension or allowance.

3 Under the Lunacy and Mental Treatment Acts and the Mental Deficiency Acts.

4 In support of claims to benefit under the National Health Insurance Act, 1936, and the Contributory Pensions Acts, 1936-41.

5 In support of sick absence by a Government Department as employer.

6 Under the Blind Persons Acts, 1920 to 1938 to support an application for old age pension at 50.

7 Under the Essential Work Orders, Control of Employment (Directed Persons) Order, 1943 and Control of Engagement Orders in support of a claim to leave or change the employment.

8 Under the Road Haulage Wages Act, 1938, the Catering Wages Act, 1943 and the Wages Councils Act, 1945 in support of a permit to be employed at substandard wage rates.

9 Under the Coal Distribution Order, 1943 and the Control of Fuel (Restriction of Heating) Order, 1947 to obtain additional supplies of fuel and exemption from heating restrictions.

10 Under the Disabled Persons (Employment) Act, 1944, for registration.

11 Under the Corsets (Manufacture and Supply) (No. 14) Directions, 1946 to assist in obtaining surgical corsets.

12 Under the Welfare Foods Order, 1946, to enable expectant mothers to obtain food benefit.

13 Under the Rationing Orders or otherwise to enable invalids to obtain special authority for supplementary rationed food and to assist invalids, expectant mothers and others to

obtain special treatment with regard to goods which are the subject of Government control.

14 Under the Control of Motor Fuel Orders to assist claimants for additional petrol allowances on medical grounds.

15 Under the National Service Acts, 1939-47 in support of a claim for exemption from, and to justify failure to comply with provisions of the Acts.

16 Under the Cremation Act.

Rubella—Mr. HASTINGS on June 5 asked the Minister of Health whether, in view of the increasing birth rate and the clear evidence that German measles in the mother could produce serious defects in the unborn child, he would make this a notifiable disease, so that precautions could be taken to prevent its spread. Mr. BEVAN replied that the effects of this disease in pregnancy were being investigated in conjunction with the Medical Research Council. He preferred to await the results of this investigation before considering the matter further, and he invited Mr. Hastings to furnish his evidence.

Medico-Legal

A STERILIZED HUSBAND

[FROM OUR MEDICO LEGAL CORRESPONDENT]

We noted in our issue of Jan. 18 (p. 118) the decision of the High Court in *J v J*¹ rejecting the petition of a wife for a decree of nullity on the ground that just before the marriage her husband had himself sterilized by vasectomy. Mr. Justice Jones found that this act amounted to wilful refusal to consummate the marriage but he rejected the wife's petition on the ground of acquiescence: she had signed before marriage a statement that she fully understood and realized that the operation produced total and irremediable sterilization. The Court of Appeal has now reversed that decision and granted the wife's petition.

Lord Justice Somervell reading the judgment of the court, agreed with the judge's statement of the law but disagreed with his finding that the wife had acquiesced in the sterilization. The principle, he said, had been established by *Cowen v Cowen*² that a marriage was not consummated if a husband, by his own act in insisting on using a contraceptive prevented sexual intercourse from having its natural consequence. The husband in the present case had effected by an operation what could have been effected by the use of a contraceptive on each successive occasion. By his act in submitting to the operation he had rendered himself incapable of effecting consummation. When the couple had been engaged for some months the wife had refused to sign the statement required by the doctor as a condition of performing the operation. She had ultimately consented to sign on the husband's promise to postpone the operation until after the marriage, for she had hoped to be able to persuade him to a different view. In spite of his promise he had undergone the operation before the marriage and she had not known this until some six weeks before it. Her knowledge was not in law an absolute bar to her petition, and the question remained whether the petition should be dismissed in all the circumstances including her knowledge for lack of what was called "sincerity". The marriage had taken place in June, 1934, she had not known until late in 1945 that she might have grounds for a decree of nullity and she had then left her husband and filed her petition. Lapse of time was no bar until a party knew both the facts and his or her legal rights. The judge was wrong in dismissing the petition because of the wife's knowledge before marriage. That knowledge had not existed at the time of the engagement, it had been sprung on the wife a few weeks before the date of the marriage, and would not have been an easy reason for her to give for breaking off the marriage. She had felt that it was too late to draw back. In all the circumstances the court did not think that the petition should fail for "insincerity". The question of wilful refusal to consummate the marriage did not arise, the husband's incapacity was a sufficient reason for a decree of nullity, which the court pronounced.

¹ (1946) 2 All E.R. 760

² *The Times*, May 24

³ (1946) P. 36

No. 21

EPIDEMIOLOGICAL NOTES

INFECTIOUS DISEASES AND VITAL STATISTICS

See print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended May 24

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year for (a) England and Wales (London included) (b) London (administrative county) (c) Scotland (d) Eire (e) Northern Ireland

Figures of Births and Deaths and of Deaths recorded under each infectious disease for (a) The 126 great towns in England and Wales (including London) (b) London (administrative county) (c) The 16 principal towns in Scotland (d) The 13 principal towns in Eire (e) The 10 principal towns in Northern Ireland

A dash — denotes no cases a blank space denotes disease not notifiable or no return available

Disease	1947					1946 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Scarlatinal fever Deaths	65	5	30	2	2	67	6	24	1	—
Diphtheria Deaths	197	20	61	28	6	371	26	74	34	9
Dysentery Deaths	47	10	15	—	—	200	16	45	1	—
Enteric fever Deaths	—	—	1	1	—	5	—	—	—	—
Erysipelas Deaths	—	—	33	9	4	—	—	52	4	—
Infective enteritis or diarrhoea under 2 years Deaths	76	12	11	23	1	52	5	5	11	4
Measles* Deaths	12 830	548	141	82	21	3 287	1034	674	24	5
Ophthalmia neonatorum Deaths	61	—	13	—	—	75	7	14	2	—
Paratyphoid fever Deaths	6	1	3(B)	—	—	—	—	1(B)	—	—
Pneumonia influenza Deaths (from influenza)	557	41	2	4	5	557	24	6	3	3
Pneumonia, primary Deaths	9	—	2	—	—	7	1	—	—	—
Polio-encephalitis, acute Deaths	2	—	—	—	—	—	—	218	28	4
Polio-myelitis acute Deaths	11	1	—	6	—	9	—	—	—	—
Perennial fever Deaths	—	2	11	—	—	—	3	17	—	—
Pyrexial fever Deaths	135	7	12	—	—	151	16	11	1	—
Relapsing fever Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever Deaths	982	89	141	23	43	1 089	100	143	18	26
Smallpox Deaths	8	—	—	—	—	8	—	—	—	—
Typhoid fever Deaths	3	—	4	3	1	8	—	3	2	1
Typhus fever Deaths	—	—	—	—	—	1	—	—	—	—
Whooping-cough* Deaths	1 879	226	196	50	16	2 075	182	69	30	22
Deaths (all-cause) 1st mortality rate (per 1 000 live births)	416	51	57	25	9	378	53	56	27	13
Deaths (excluding still births) Annual death rate (per 1 000 persons living)	4 402	655	615	170	111	4 635	660	636	183	113
Live births Annual rate per 1 000 persons living	10 169	1563	1261	488	295	8 976	1414	1062	423	308
Still births Rate per 1 000 total births (including still births)	261	32	36	—	—	249	35	52	—	—

* Measles and whooping-cough are not notifiable in Scotland and the returns are approximate only

* Includes primary form for England and Wales London (administrative county) and Northern Ireland

* Includes paratyphoid fever for England and Wales and Eire

Smallpox

Contacts are still under surveillance in connexion with the outbreaks at Barnsley C B, Bilston U D, and Coseley, U D. A first case in Wakefield C B was detected on June 4

Barnsley—There have now been 15 cases with 3 deaths in persons aged 75, 72, and 70 years. Of these cases 9 were in the second generation and 1 is probably in the third generation. The common lodging house where the disease first appeared and its occupants have been disinfected terminally but have remained under surveillance since the last case was removed on June 4. This man had refused vaccination until June 3.

St Helen's Hospital, from which the last case was removed on May 29, is now empty. Patients and staff from the affected ward have been transferred to a ward set aside for their reception at the Infectious Diseases Hospital. Other patients have been discharged home under surveillance and the hospital is now being disinfected.

The situation at Barnsley is reasonably satisfactory apart from two disquieting features. (1) A child aged 11 was admitted to St Helen's Hospital on the night of May 15 for tonsillectomy. Operation was postponed and she was discharged the following day. The parents refused vaccination. The child is said to have become ill on May 21 and developed smallpox rash on May 26. She was not removed from her home until May 29 and while ill in bed there received a number of visitors who are now under surveillance. (2) A man who had refused vaccination absconded from the common lodging-house and walked to Darton, a suburb of Barnsley. He returned to Barnsley by bus on May 29 and was removed to the smallpox hospital later that day. He says his rash appeared on May 28. Although many of his contacts have been traced some of them may not be under observation.

Bilston—Two further cases have been reported recently. The fourth member of the family mentioned last week (June 7 p. 831) was removed on June 2. She is 12 and was vaccinated in infancy and re-vaccinated unsuccessfully on May 17 the day after her sister died. Further re-vaccination on May 23 gave a good take, but she developed a modified smallpox rash on June 2 and was removed to hospital immediately. Her mother, another case in the same generation with onset on May 29, died on June 5. The second case, a teacher at Villier School, aged 39, was vaccinated in infancy and removed on June 4 (onset June 1, rash June 4) from a previously unaffected household.

Coseley—There have been no further cases in this district. Contacts in two households remain under surveillance and further cases if any should crop during the week ending June 14.

Wakefield—Here a man aged 71, vaccinated in infancy, became ill on May 31 and was removed on June 4. The date of the rash is uncertain but the clinical state suggests that it appeared about June 2. The man is one of 45 permanent residents in the model lodging-house 62, George Street Wakefield, but was employed as night watchman at the corporation's electricity works. There is evidence that no casual vagrants stayed at the lodging-house but passers-by frequently sat with him by his fire at work during the night.

Sheffield—The last of 3 cases (in two generations) was removed on May 21. Surveillance of contacts has now ceased and the patients are awaiting discharge.

Discussion of Table

In England and Wales there was a fall in the notifications of whooping-cough 241, diphtheria 46, scarlet fever 46, and dysentery 18. There was an increase in the incidence of measles 152.

The decline in the number of cases of whooping cough was produced by a few counties the largest falls being Yorkshire West Riding 92, Middlesex 48, Lancashire 42, London 37. The only changes of note in the returns for diphtheria were decreases in Durham 12 and Northumberland 10. The recent small rise in the incidence of diphtheria in Lancashire has increased the proportional importance of the returns of this county, and during the week one-third of the total notifications were recorded from Lancashire.

Only small changes occurred in the local returns of scarlet fever. The increase in the notifications of measles represents the balance of the conflicting trends. Increases were recorded in Essex 291, Yorkshire West Riding 208, Kent 191 and Worcestershire 137, there were decreases in Glamorganshire 201, Staffordshire 150, and Derbyshire 142. Lancashire had 16 and London 10 cases of dysentery. Cases of smallpox were recorded from Staffordshire, Bilston M B 1, Coseley U D 1, Lincoln

shire Grimsby CB 2 and Yorkshire West Riding Barnsley CB 3, Sheffield CB 1

In Scotland the only marked changes in the notifications of infectious diseases were decreases in measles 45 and whooping cough 35. In the Western Area a fall was recorded in the incidence of cerebrospinal fever 9, and of diphtheria 12.

In Eire the notifications of diphtheria increased by 13, while a fall occurred for scarlet fever 11 and whooping cough 13. The rise in cases of diphtheria was mainly due to an increase in Dublin CB.

In Northern Ireland the trends of the various infectious diseases remained practically unchanged.

Week Ending May 31

Notifications of infectious diseases in England and Wales during the week included scarlet fever 886 whooping cough 1 657 diphtheria 194 measles 12 314, acute pneumonia 512 cerebrospinal fever 3, dysentery 46 acute poliomyelitis 18 smallpox 14, paratyphoid 7, typhoid 1.

Medical News

The annual meeting of the Association of Surgeons of Great Britain and Ireland 45 Lincoln's Inn Fields, London, WC2 will be held at the School of Geography, Mansfield Road Oxford, on Thursday, Friday and Saturday July 3, 4, and 5. The programme is as follows: July 3 9.30 a.m. business meeting 10 a.m. discussion on 'The Surgical Relief of Pain (excluding Sciatica)' to be opened by Mr J. H. Keligren, Dr W. K. Livingston (USA), Prof J. Paterson Ross, and Prof Geoffrey Jefferson 12.30 p.m. short paper by Prof L. J. Witts 'Splenomegaly', 2.15 p.m. discussion on 'The Modern Treatment of Toxic Goitre', to be opened by Mr Geoffrey Keynes, Prof H. P. Himsforth, Mr T. A. Hindmarsh, and Dr Oliver Cope (USA), 4 p.m. short paper by Prof J. R. Leammonth 'The Results of Treatment of Traumatic Arteriovenous Fistula', July 4, discussion on 'Cancer of the Cardiac End of the Stomach and Lower End of the Oesophagus', to be opened by Mr P. R. Allison, Dr L. G. Blair, Mr T. Holmes Sellers, Mr Vernon Thompson, and Mr N. C. Tanner 2.15 p.m., operating sessions and case demonstrations at Radcliffe Infirmary, Wingfield Morris Orthopaedic Hospital, and Churchill Hospital, demonstrations of cine radiographic studies and experimental work in the Nuffield Institute for Medical Research, demonstrations in the Institute of Social Medicine 5.30 p.m. demonstration by Prof R. R. Macintosh, 'Anaesthesia Applied in Research', clinical pathological conference at Radcliffe Infirmary conducted by Dr A. H. T. Robb Smith July 5, 9.30 a.m., short papers on 'Anorectal Fistula' by Mr C. Naunton Morgan, Mr E. T. C. Milligan, Mr O. V. Lloyd Davies and Mr W. B. Gabriel, 12 noon, short paper by Prof H. J. Seddon and Mr D. M. Brooks 'Results of Nerve Grafting in the Extremities'.

A joint meeting of the British Association of Physical Medicine and the Physical Medicine Section of the Royal Society of Medicine will be held at 1 Wimpole Street, London, W, on Wednesday, June 18 at 4.30 p.m., when Dr P. Bauwens will read a paper on 'The Complex Behaviour of High Frequency Current in Simple Circuits'. At 6.30 p.m. the annual general meeting of the association will be held at the Royal College of Surgeons of England, Lincoln's Inn Fields, WC, and will be followed by a dinner at 7 for 7.30 p.m.

A meeting of the London Association of the Medical Women's Federation will be held at Queen Victoria Hospital, East Grinstead Sussex, to-day (Saturday June 14), at 3 p.m. when there will be a demonstration of methods of treatment in plastic surgery.

An international short wave congress will be held at Amsterdam in 1948 on July 19-24. Members of the Board are Dr W. Beaumont, London, Dr A. Gertz Stockholm, Prof Dr C. Guarini, Naples, Prof Dr D. Kobak, Chicago, Prof Dr W. Kowarschik, Vienna, Dr P. Liebesny, New York, Dr J. Meyer, Paris, Dr L. Rosa Budapest, Dr J. Saidman, Paris, Dr J. Samuels, Amsterdam, Prof Dr F. Schemmzky Innsbruck, Prof Dr E. Schliephake, Wurzburg. Those wishing to deliver lectures should communicate with the Secretary Weteringschans 73, Amsterdam, before April 15, 1948.

An International Cytological Association will be founded at the Cytological Congress to be held in Stockholm on July 10-17. It will be a section of the International Association for Biological Research which is affiliated to UNESCO.

The report of a conference on catering for the aged and infirm held on Jan 18 (*Journal* March 15, p. 348) under the chairmanship of Lord Amulree, has been printed as a pamphlet entitled *Nutritional Problems of Invalids the Aged and Infirm* price 1s (plus postage) obtainable from the London Council of Social Service, 7, Bayley Street, London, WC1.

The board of management of the Hospital for Sick Children Great Ormond Street London, WC, announces that in an endeavour to lessen the time spent waiting in the out-patient department, out-patients will be seen by members of the consulting medical and surgical staff only by appointment. Such appointments should, if possible, be made by a doctor acquainted with the case and preferably by letter. Patients who attend without introductions from a doctor will be examined in the receiving room and only when necessary referred to a member of the consulting medical or surgical staff. Patients will be seen by appointment between the hours of 9.30 a.m. and 12.30 p.m., except on Sundays. The hospital is open day and night for urgent cases.

The National Association for the Prevention of Tuberculosis has decided to offer six scholarships this year, open to doctors and other medical personnel throughout the British Colonial Empire. The successful holders will come to Britain for a period of six months or longer to study tuberculosis in its widest aspects—clinical, administrative, and social. The award will be divided as follows: (a) Two scholarships (value £120 each) to registered doctors in the Colonial Medical Service; (b) Two scholarships (value £100 each) to medical graduates of native medical schools in the British Colonies; (c) Two scholarships (value £80 each) to matrons, nurses, health visitors, or other members of colonial sanitary departments. The successful candidates will be eligible for lodging and training allowances from Colonial Government funds, and the details of their training during the tenure of the scholarship will be supervised by the N.A.P.T. Travelling expenses, purchase of books, and other incidental expenditure will be met by scholars out of their scholarship moneys. Applications should be made through the Colonial Medical Departments, who will forward them to the Colonial Office which will make recommendations to the Council of the N.A.P.T. An announcement of the method of sending in applications will be made shortly by the Colonial Office.

The King Edward's Hospital Fund for London proposes to offer in the summer a number of bursaries tenable at voluntary hospitals in London. *Hospital Administration*—Three junior bursaries of the value of £350 a year for men or women aged 20-30, and three senior bursaries without an age limit of the value of £600 a year. *Catering Officers*—Eight bursaries valued between £300 and £600 a year for men or women. *Domestic Administration*—Six bursaries for women at the rate of £250 a year, plus board and lodging. Inquiries should be addressed to the Secretary, King Edward's Hospital Fund for London, 10, Old Jewry, London, EC2.

In July a new monthly journal will be issued called *The Annals of the Royal College of Surgeons of England* containing reports and lectures which have been recently given in the College. It will also include a diary of the activities and lectures of the College and will be of interest not only to Fellows but also to Members. The annual subscription is 25s. post free, single numbers 2s. 6d., postage extra. Applications should be made to the Editor, The Annals of the Royal College of Surgeons of England, Royal College of Surgeons, Lincoln's Inn Fields London, WC2.

Lord Moran has been appointed Chairman of the Medical Advisory Board of the Alfred Eichholz Clinic, London, which is staffed by blind men and women—qualified physiotherapists trained by the National Institute for the Blind.

The Minister of Labour and National Service has nominated Mr G. P. Barnett, one of H.M. Deputy Chief Inspectors of Factories, to be Chief Inspector in succession to the late Mr H. E. Chastaney.

Dr Emyr Wyn Jones has been appointed Sheriff for Caernarvonshire for 1947.

Dr Thomas Munn Body has been appointed a Deputy Lieutenant in the North Riding of the County of York.

Dr J. M. Cure has been nominated a Member of the Council of Government of the Colony of Mauritius.

The submission of Form T 147 under the Public Health (Tuberculosis) Regulations, 1940, is no longer necessary for men born between 1916 and 1926, but is required only for those born in the years 1927-9.

Dr William Hartley Thompson, of Bradford, who died on Dec 30, 1946, left £55,616. Dr Walter Charles Aylward, of Tunbridge Wells, who died on Jan 29, left £15,300. Mrs Vivien Hennessey Ada Lloyd Laming Evans, widow of E. Laming Evans, CBE, FRCS, formerly of Oxley, left £30,781, the residue, after certain bequests, to the Royal College of Surgeons, England, for research in orthopaedic surgery. Dr Stanley Wyard, of Wimpole Street, W1, who died on Sept 29, 1946, left £14,234. Dr Charles Grant Pugh, formerly Medical Officer of Health for Southend, who died on Dec 19, 1946, left £23,850. Sir Arnold Lawson, the ophthalmic surgeon who died on Jan 19, left £65,078. Dr Charles Llewellyn Lander, of Maiden Newton, Dorset, and Plymouth, who died on Dec 25, 1946, left £35,934. Dr John Young, Bishop's Stortford, Herts., who died on Dec 20, 1946, left £21,913.



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*References—Shortage of space precludes list of references but full documentation may be obtained on application to Clinical Research Dept 14 A



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Any Questions?

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Meat Extracts

Q—What is the nutritive value of the popular proprietary meat extracts? Is it possible to maintain life on them? Of what real value are they when included in an invalid diet? Also is there any truth in the popular theory that calf's foot jelly is very nutritious and strengthening?

A—It is understood that many of the proprietary brands of meat extracts contain besides the water-soluble extractives of meat, yeast extract and salt for flavouring purposes. Their nutritional value is to day rated rather differently from a few years ago, because of the discovery that they contain useful quantities of riboflavin and nicotinic acid. These may amount, respectively to averages of 1 and 30 mg per oz (28 g). Meat extracts contain about 20% each of water and mineral matter—presumably mostly phosphates and sodium chloride. Nothing appears to be known about the non-nitrogenous extractives, possibly they consist of soluble break-down products of glycogen. The nitrogenous extractives have been more fully studied. Peptones and similar compounds ("albumoses") amount to about 15% and are probably utilized as well as similarly constituted proteins, "meat bases"—creatine, creatinine, carnosine and anserine, glutathione, urea, and ammonia among others—make up the balance. These bases are believed to account for any effect meat extract may have in stimulating appetite.

Clearly these products, however great their value as adjuncts to invalid diets are in no sense complete foods. Even if enough could be eaten daily to provide the necessary protein equivalent—about 1 lb (454 g)—the deficiency in fat and carbohydrate, in vitamins A and C, and probably in calcium and iron is enough to put them outside any list of single foods that maintain life without supplement, incidentally there are no such foods. For fuller information a paper by Rees and Salway (*Chemistry and Industry* 1947, May 31, p 302) may be consulted. These authors make no reference to calf's foot jelly. Hutchison and Mottram regard it solely as a very expensive source of gelatin and say of "jellies" in general that their value to invalids probably depends on their content of sugar rather than of gelatin.

Production of Penicillin resistance

Q—Is there any danger of producing penicillin-resistant organisms in patients with acute infections of the mouth and throat treated with penicillin lozenges?

A—The capacity of bacteria to develop resistance to penicillin varies in different species. It is very great in *Staphylococcus aureus* and very small in *Streptococcus pyogenes* which is perhaps the most important organism likely to be subjected to the action of penicillin in the mouth and throat. It is also possessed in some degree by *Streptococcus viridans*. The plain answer to the question is "yes but the danger" to the patient himself is remote. The indiscriminate use of penicillin preparations of every kind which are easily and may be casually applied to parts of the body such as the skin or mouth which are heavily populated by bacteria is to be discouraged because such widespread abuse of a potent remedy continued for years may end in breeding widely distributed races of resistant bacteria.

"Susceptibility" to Lousiness

Q—There is a widespread belief that some persons are more susceptible to lousiness than others. While it is a fact that some people are more irritated than others by insect bites is there any justification for the view that the louse tends to select certain persons?

A—The writer has reared lice for laboratory experiments for several years and at different times has been assisted for

short periods by volunteers (about a score). On none of them did the lice show reluctance to feed. On the other hand, the hosts displayed a great difference in their reaction to bites, many being so severely affected that they were unable to continue. Among naturally infested people one finds great variation in the number of lice present, but in all cases the figure is not great (a dozen or so adults), and is much less than that which would be expected from the known powers of proliferation of the louse. Almost certainly this is due to the louse-killing activities of the infested people. Presumably this is partly dependent on their standards of hygiene but also on their sensitiveness. Individuals who suffer most would tolerate only very small numbers. In the case of fleas and mosquitoes, people who are sensitive are most likely to notice bites and therefore to consider themselves unduly sought after by the insects. With lice, however, it is the insensitive people who are apparently more "susceptible" to attack.

Smithwick's Operation for Hypertension

Q—To what extent is Smithwick's operation of lumbo-dorsal sympathectomy performed in this country for the treatment of hypertension? Is this procedure justified in a man, aged 45 with anginal attacks associated with hypertension but otherwise healthy?

A—Smithwick's operation (*Surgery* 1940, 7, 1) is a very extensive resection of the sympathetic system above and below the diaphragm, first on one side and subsequently on the other. This operation, or others of a similar nature but varying in extent, such as Adson's or Peet's operation, are being performed more frequently in Great Britain. Smithwick himself was able to give a review of a large series of his own cases over a period of five years (*Arch Surg* 1944, 49, 180), but no comparable series in this country has been published. Each case has to be considered on its merits after thorough investigation. In general in this country the operation is performed only on patients under 50 years of age who have systolic pressures over 200 mm and diastolic pressures over 100 mm who are deteriorating in spite of medical treatment, and who show little if any evidence of structural heart disease or renal disease. If the patient in question satisfies these criteria he should be investigated by the cold-pressor and sedation tests, so that the possible response to operative treatment may be gauged.

Chylous Ascites

Q—I recently operated on a woman of 25 for inguinal hernia. On opening the sac milky fluid tinged with pink, typical of chylous ascites escaped and some 12 oz (341 ml) was later removed from the peritoneal cavity. The patient had complained of no other symptom than slight pain in the hernial region. What are the aetiology and prognosis?

A—True chylous ascites is due either to injury or to obstruction of the thoracic duct (or receptaculum chyli) or of one of the more important intra-abdominal lymphatics, it is a rare condition apart from filariasis. Chyliform ascites is also uncommon but may be found in some cases of carcinomatosis, rarely in hepatic cirrhosis and occasionally in cases of tuberculous peritonitis. The last-mentioned is the more likely cause in this case, for it may occur unaccompanied by any other symptoms.

Premenstrual Mastalgia

Q—A woman aged 45 suffers from lumpy and tender breasts every three months or so—about a week before menstruation the condition subsides after her period. She fears cancer but is unwilling to have her breasts removed except as a last resort. Is stilboestrol worth trying? If so in what dosage? What other treatment would you recommend?

A—The occurrence of discomfort is so infrequent that it would be better to persuade the patient that no treatment other than a well-fitting brassiere is necessary. There is nearly always a large element of neurosis in "premenstrual mastalgia," and fear of cancer as in this case, is a common feature. Reassurance is therefore important. If the patient is not content with this general measures should be tried before endocrine therapy. The restriction of the intake of fluid and salt for ten days before a period is sometimes efficacious, small doses of thyroid also appear to help. Stilboestrol is used a good deal

in the treatment of this condition but the results are mostly unsatisfactory. If need be it might be given in 0.5 mg doses twice daily by mouth during the time when the discomfort is present. The more usual technique of using it during the first half of the cycle seems inappropriate in this case since the appearance of the pain is irregular. An alternative is methyl testosterone 5 mg sublingually twice daily for ten days before a period. Finally x-ray therapy should be considered.

Yohimbine

Q—What is the value of yohimbine? How is it given in what dosage and are there any contraindications to its use?

A—When yohimbine is given by mouth or hypodermically in moderate doses it produces a general vasodilatation in the skin the mucous membranes and particularly in the sexual organs in consequence it produces erection. It does not stimulate the production of spermatozoa or sexual desire. The effect is not produced by therapeutic doses in man (5 mg or 1/12 gr) although it has been recommended as an aphrodisiac. Large doses produce excitement cerebral congestion vertigo, and gastric disturbance. Yohimbine has also been proposed to lower abnormally high blood pressure but Lawrence found that it may produce a further rise with dangerous symptoms.

False Positive Pregnancy Reactions

Q—Assuming good technique is it possible to get a positive result from an Aschheim-Zondek or Friedman test in a woman known neither to have a chorion epithelioma nor to be pregnant? What are the conditions giving rise to this anomaly?

A—Yes a positive reaction is occasionally obtained in conditions in which there is overactivity of the anterior lobe of the pituitary. It is sometimes seen for instance when the pituitary is released from the normal inhibition of the ovary as at the menopause and in some cases of genital tuberculosis associated with metrorrhoea. It has also been described in association with pituitary disease (such as acromegaly) and tumours of the midbrain. The occasional finding of a positive Aschheim-Zondek reaction in cases of genital carcinoma is probably explained by the fact that the patients with such lesions are mostly of menopausal age.

Sore Tongue

Q—What are the probable cause and the treatment in a case of sore tongue in which the tongue is furred centrally and has marked injection of papillae at the tip extending about an inch (2.5 cm) along the edge and in which dental and blood disorders have been excluded also vitamin deficiency and all known and evident dietetic irritants?

A—It is difficult to offer constructive suggestions in this case, for the common extrinsic causes of soreness of the tongue have been excluded and the appearances described are not characteristic. Sore tongue is sometimes the complaint when the underlying abnormality is xerostomia—for instance in Sjögren's syndrome hysteria must not be forgotten. In the absence of a clear-cut diagnosis the only possible treatment is palliative avoidance of unduly hot or cold food and drink and of physical and chemical irritants such as seasonings and smoking and lubricant mouth-washes before meals in which 1% amethocaine hydrochloride may be included if the discomfort is severe.

Circumcision

Q—A patient with an exceptionally long but easily retracted foreskin desires a circumcision. Is the cuff method of operation satisfactory and would it enable the patient to carry on his normal sedentary duties without interruption?

A—The answer to this question depends on what is meant by the 'cuff' method of circumcision and on what are the precise reasons for operating. If by the 'cuff' method is meant the leaving of enough foreskin partially to cover the sensitive glans penis and if the patient wants redundant foreskin removed merely to facilitate penile hygiene this method should prove satisfactory. Discomfort after circumcision is in great part due to post-operative infection and this can be reduced by the use of a penicillin cream as a dressing. In any case the interruption to his sedentary duties should be but a short one.

Letters and Notes

Raven's Intelligence Test

Mr JOHN C RAVEN (Dumfries) writes: May I draw attention to certain matters on which the person who answered the question 'Is Raven's test—the progressive matrices—satisfactory for estimating general intelligence?' was ill informed (May 17, p 706). 'Progressive matrices' (1938) was never intended to be a test of 'general intelligence'. It was designed to assess a person's output of intellectual activity at the time of the test, and has proved to be the best test for this purpose yet produced. Only under certain circumstances does the so-called 'K' factor affect the results obtained. There is no reason to assume that a person's output of intellectual activity is always the same. Data obtained with the matrices test indicate that it varies considerably in health and illness. This does not mean that the test is unreliable. Success in the test does not depend upon acquired knowledge. For this reason it is one of the most valuable tests for distinguishing backwardness due to loss of schooling from genuine mental deficiency. Adults' scores on the test decline with age. The fact that other tests fail to show this does not mean that they are better tests. It is often more difficult to answer questions than it is to ask them. Many readers of the *Journal* will I think, be glad to hear that a book dealing with 'The Assessment of Mental Development' is nearing completion, that an inquiry into variations in the intellectual activities of adults in health and illness is in hand and that three derivatives of progressive matrices designed for use with little children, with adults and with adults above average in intellectual capacity, have just been completed.

Tinnitus

R writes: The question and answer on the subject of tinnitus (May 17 p 706) revives memories of my first weeks in practice when I was in the habit of giving maximum doses of all tinctures. An old lady consulted me about tinnitus from which she had suffered for years, and forgetting that the dose of tincture ofaconite was 2-5 min (0.12-0.3 ml) I prescribed 15 min (0.9 ml) and I realized my mistake a few hours later and, terrified, called on the old lady. She told me that she had taken one dose immediately on getting home and that the tinnitus had stopped. I asked her to take no more to see how long the effect would last. When I last saw her a year later the tinnitus had not returned.

Injection of Hydrocele

Prof CHARLES WELLS (Liverpool) writes: I refer to the answer under 'Any Questions?' (May 10 p 665). All the sclerosing solutions are very painful indeed, and a local anaesthetic should be injected into the sac (and subsequently run out again) before the irritant is put in. A second important point is the risk of injecting the fluid into the tissues outside the tunica. The cannula should be pushed well home when the sac is still full.

Treatment of Scorrhoea

Mr THOMAS WILSON FRCSE (London, NW6) writes: I treated a similar case to that published (May 17 p 705). (1) Wash the scalp in warm water, then dry and apply ung metallorum to the roots of the hair. (2) A *Staph aureus* vaccine. (3) A mixture containing mag sulph, acid sulph dil, spt chloroform, nuc vomicae inf gent co. (4) Ung metallorum to the axilla and the genital crural regions. My case is now quite well.

Surgical Rubber Gloves

Doctors in private, general or consulting practice requiring surgical rubber gloves for professional use are reminded that they should apply to the Secretary of the Central Medical War Committee British Medical Association House Tavistock Square London WC1 marking the envelope "Gloves" in the top left hand corner and enclosing a stamped addressed envelope for reply. They will then receive a booklet of six certificates.

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SOCIAL AND OCCUPATIONAL FACTORS IN THE AETIOLOGY OF SKIN CANCER

BY

JOHN A RYLE, MD AND W T RUSSELL, DSc

(From the Institute of Social Medicine Oxford)

The causes of human cancer, apart from the influence of specific carcinogenic agents and of chemical and physical factors the components of which may or may not be carcinogenic, are to be sought broadly in heredity, age, sex, and certain social and occupational influences. Berenblum (1944), although reintroducing the word "irritant" in a sense in which it is not usually employed, has discussed the two questions (1) Are all irritants potentially carcinogenic? and (2) Are all carcinogenic agents irritants? To the first he concluded that the answer is "No", to the second, that all direct carcinogens are irritants. He also concluded that non-carcinogenic irritants may facilitate the progress of a pre-neoplastic lesion to cancer.

There is strong evidence for genetic predisposition in the case of cancer originating in polyposis of the colon, and Jacobsen (1946) has lately added to existing information important material bearing upon a similar predisposition in the case of breast cancer. While it is not strictly correct to speak of cancer itself as heritable, the existence of a cancer diathesis may be held to be established, at any rate in respect of certain histological types and anatomical sites, in man. It has also been experimentally demonstrated for mammary cancer in mouse strains.

Age in man may be assumed to lend its contribution partly through longer exposure to effective stimuli and partly, perhaps, through a changing reactivity of tissues dependent upon hormonal or other chemical influence. Sex, through local injury or inflammation (as in the case of cancer of the cervix), or through hormonal influence (as in the case of ovarian, breast, and prostatic cancer), is clearly an important factor. More remotely, sex influences may also reflect social changes as these impinge upon the marriage rate, fertility, and parity.

The Registrar-Generals' standardized mortality comparisons (1930-2) suggest that lower socio-economic status predisposes in some way to cancers of the upper alimentary tract and the skin, both of which give a death rate in social class V approximately twice that obtaining in social class I, with a steady gradient in the intervening classes.

Skin cancers, although not numerous in the population by comparison for instance with those affecting the breast and alimentary tract, have this advantage—that they can be diagnosed with greater certainty and that there can be little doubt about the accuracy of certifications. The skin, considered as an external organ exposed to recognizable environmental stresses of a chemical or physical kind which vary appreciably both in duration and in degree with social circumstances and nature of employment, may thus prove

particularly worthy of investigation from the point of view of cancer aetiology.

It has long been accepted that soot, pitch, tar, and shale oil give rise to occupational cancers of the skin, that x-ray burns and prolonged thermal injury can lead to cancerous changes, that chronic ulcers and arsenical and other forms of dermatitis may end in malignant degeneration, and that the starting-points of skin cancers include warts and moles and other initially innocent tumours. But cancer of the skin can also arrive independently of these influences. If social factors can be shown to have importance on the basis of statistical correlations, and if skin cancer (in common with a number of other diseases) is found to discriminate against the less privileged classes, then the most likely local factors would seem to be exposure to atmospheric dirt—whether through grimy occupations or lack of bathing facilities, or both—and, in the case of some other occupations, exposure to the ultra-violet radiations of direct sunlight. This, according to Molesworth (1927), with his extensive Australian experience, may be an important factor in outdoor workers, and especially in those whose skins do not acquire the protection due to tanning. In Australia, as contrasted with England, lupus is very rare and epithelioma of exposed sites very common. If dirt is an important factor, the sites of cancer might be expected to include those in which it is most apt to lodge. The listed sites for skin cancer do, in fact, include the external ear, the canthus of the eye, the umbilicus, the anus, the scalp, and the neck. These sites, like the scrotum, are apt to be more infrequently and ineffectively washed than some other parts, and their anatomical structure encourages the deposition and retention of atmospheric soot or other dirt. It must be noted that the face as a whole has been recorded in some mortality tables (see below) as showing a much higher incidence of skin cancer than other sites: the ear has second place. These parts are exposed to grime and heat in some occupations, but the face is certainly more likely than the rest of the body surface to be subject to daily washing. On the other hand, it is more exposed to the ultra-violet rays of sunlight than any other part. In considering aetiological factors in skin cancer due regard must be paid to the type of cancer as well as to its site. It would be unreasonable to suggest that social or occupational factors play a major part in melanomata originating in pigmented moles or in Kaposi's idiopathic haemorrhagic sarcoma. They might, on the other hand, have a significant association with basal or squamous-celled epitheliomata. Unfortunately—lacking, as we do at present any

readily available morbidity figures—it is difficult to discover the incidence of the several types of skin cancer or their incidence in relation to site. The best that can be done, therefore, is to consider the mortality of skin cancers as a whole, and their sites where possible, and to see whether any suggestive correlations can be effected with such factors as sex, geography, social class, or occupation. We are here concerned with statistical material drawn from the *British Isles* only.

Scrotal Cancer

In a very interesting paper on the social distribution of cancer of the scrotum and penis, E. L. and N. M. Kennaway (1946) indicated that cancer of the scrotum, unlike cancer of the penis (quite apart from the occupational cases) a definite social class distribution, and that its mortality, and presumably its incidence, should be considerably reduced by the elimination of causal social factors. It would even seem proper to infer from the evidence presented that if all classes could enjoy the advantages experienced by social class I (Registrar-General's classification)—whether in respect of freedom from cutaneous irritants or of facilities for frequent bathing, or both—scrotal cancer would disappear. The suggestion was made in an earlier paper by E. L. Kennaway (1925) that atmospheric soot may be the operative factor and that all town dwellers are in some very slight degree liable to chimney-sweep's cancer. The scrotum and penis, as contiguous parts and both protected from sunlight, supply particularly convincing data. Possibly the rugose character of the scrotal integument facilitates the lodgment of grime in undue degree.

In view of the importance of these conclusions it was deemed of interest to examine the statistics of skin cancer generally, excluding the penile and scrotal forms, to measure the magnitude of the problem, the secular trend, the geographical incidence, and the possible relationship between cutaneous cancer and social and environmental factors.

The data utilized in this study were obtained from the Annual Reports of the Registrar-General for the United Kingdom and Eire, and particularly from the Decennial Supplement, 1931, containing occupational mortality tables for England and Wales. For the most recent statistics of the disease in England and Wales we would like to thank Dr. Percy Stocks, who supplied us with the unpublished data of the age incidence for the years 1942 and 1943.

Incidence of Skin Cancer

The mortality due to skin cancer is not numerically unimportant, since in 1943 it caused 1,094 deaths—626 were in males and 468 in females.

(a) *Secular Trend*—The secular trend of the age-specific death rates has recently been described by Stocks and Mackay (1946) for the period 1911–44, and they stated that the skin cancer mortality began to decline at ages over 55 about 1931. They also presented data in the form of a Comparative Mortality Index (1938 basis) for each year between 1933 and 1944 for males and females separately, and their results are reproduced in Table I. In stressing

TABLE I—Comparative Mortality Index (1938 Basis) Cancer of Skin (Scrotum excepted)

Year	Male	Female	Year	Male	Female
1933	1.032	1.078	1939	0.942	0.873
1934	1.021	0.965	1940	0.932	0.896
1935	0.960	0.986	1941	0.945	0.850
1936	1.024	0.989	1942	0.849	0.890
1937	0.997	0.992	1943	0.938	0.881
1938	1.000	1.000	1944	0.812	0.860

the merits of this new method of measurement Stocks and Mackay state: "This comparative mortality index shows at a glance how the real rate of mortality at all ages compares with that in the year 1938 taken as a basis. Furthermore, by simply dividing one index by another the proportionate increase or decrease in any one year compared with any other year can be arrived at." The figures in the table indicate that a satisfactory improvement has occurred in recent years, and it is reflected in the fact that the average CMI both for males and for females in the two years 1943–4 was 15% less than the corresponding values in 1933–4.

(b) *Geographical*—There is a distinct geographical picture in the mortality from skin cancer in the United Kingdom and Eire, and since each country classifies its statistics according to a uniform standard—namely, No. 53 of the Detailed International List of Causes of Death (Fifth Revision, 1938)—the variance in their statistical experience must be ascribed to the influence of some localized causal factor rather than to any divergence in classification. Here it may be of interest to specify what is officially included under the heading No. 53 of the International List. The following is the specification according to the manual published in 1940:

* Cancer of abdominal wall	Cancer of scalp
" anus	" umbilicus
" auricle of ear	Epithelioma of neck
" buttock	* Malignant dermatitis
" canthus	* Pitch cancer
" cheek (external)	Rodent ulcer (site stated)
" ear	* Rodent ulcer (site not stated)
" face	* Tar cancer
" nose	* X-ray cancer
" perineum	* Epithelioma (unqualified)
" pinna	

*Denotes that the cause of death is referred by the Registrar General for England and Wales to the certifying practitioner for further information.

To avoid comparisons based on direct standardized death rates, which for Northern Ireland, Eire, and Scotland would be subject to large sampling errors in view of the small number of deaths on which the age specific death rates in these countries are based, the analysis was made on the basis of indirect standardization. For this purpose the age mortality rates from skin cancer for males and females in England and Wales for the triennium 1941–3 were used as a "yardstick." These rates at ages were applied to the populations at the corresponding age groups in each of the three countries in question and the calculated or expected number of deaths for males and females were thus obtained. The number of deaths actually recorded in each country during the triennium was then compared with the calculated number, and the significance of the difference was measured by the formula:

$$\frac{\text{Actual} - \text{Calculated}}{\sqrt{\text{Calculated}}}$$

When the difference in any instance exceeded three times its sampling error the result was regarded as being statistically important. The results are given in Table II, in which the excess mortality from skin cancer in both parts of Ireland as compared with England and Wales is

TABLE II—Showing the Actual and "Calculated" Number of Deaths from Skin Cancer during the Period 1941–3

Country	Males			Females		
	Act	Cal	Act - Cal	Act	Cal	Act - Cal
			$\sqrt{\text{Cal}}$			$\sqrt{\text{Cal}}$
Scotland	150	208	-4.0	174	156	+1.4
Northern Ireland	98	56	+5.6	60	37	+3.8
Eire	230	156	-5.9	120	90	+3.2

For males and females the difference between the actual and calculated number of deaths is five times and three times, respectively, greater than its sampling error.

In Scotland the female experience was only slightly in excess, but for males the recorded deaths were much fewer than would be expected to occur according to the statistical experience of males in England and Wales.

Sites of Skin Cancer

In view of the high mortality from skin cancer in Ireland compared with that in England and Wales, and also of the fact that its statistical distribution according to site of occurrence is published in more detail in Northern Ireland than is the case for the other home countries, it was of interest to ascertain the frequency of site involvement in that region of the country. The results for the period 1941-3 are shown in Table III.

TABLE III—Incidence of Skin Cancer According to Site in Northern Ireland

Site	Males		Females	
	No.	%	No.	%
Head	7	7.1	5	8.3
Face	20	20.4	—	—
Neck	53	54.1	46	76.7
Trunk	—	—	1	1.7
Arm	4	4.1	2	3.3
Leg	—	—	1	1.7
Hand (skin of)	4	4.1	—	—
Hand (inner wall)	1	1.0	—	—
Foot	1	1.0	—	—
Other skin	8	8.2	5	8.3
Total	98	100.0	60	100.0

It will be noted that for both sexes the face is the principal location. Face, cheek, and ear in males account for 16% of the skin cancer deaths. For females, face and neck contribute 85%. No female deaths from cancer of the ear are recorded. Dr Berenblum suggested to us that protection of the female ear from sunlight by hair might have to be considered in explanation of this sex difference. Without more detailed information bearing on occupations, these figures cannot be fully explained. Since a high proportion of the population in Ireland are agricultural workers and the women are included among these, suspicion might seem to fall on sunlight rather than atmospheric dust, but here it should be noted that Ireland has a humid atmosphere very different from that, for instance, of Australia. No similar figures relating to the site of lesions in urban England are available for comparison.

Social Status

In the very interesting statistics which the Registrar-General has published in the Occupational Mortality Tables for England and Wales covering the period 1930-2 he has concentrated chiefly on the age period 20-65 years, and the standardized mortality ratios which he has published relate to this period of working life. There are sound reasons which justified or determined this restriction. But in a discussion of occupational incidence on disease, particularly in relation to cancer, it is obviously important to include, if possible, the statistical experience after age 65, because many of the deaths occur at this stage of life and it may be that an occupational factor in the causation of cancer, at least in some sites, may not fully declare itself until the man has retired from work. But a difficulty arises and it has been pointed out by the Registrar-General in the following terms: "Statement on the Census Schedule of the former occupation of married males tends to be omitted as life advances." The statement in death registration the statement of the last

occupation can nearly always be obtained, and the result is that at ages after 60 the population returned as never occupied is too large, and the populations of the occupied are too small, to correspond with deaths similarly classified."

From an examination of the available data for the period 1930-2 the Registrar-General was satisfied that the error introduced in this way was of much less importance than at the previous census. "At ages 65-70 the transfer of the population, if spread evenly over the occupied classes, would increase the numbers at risk by only 3% throughout, and reduce the mortality rate in the same proportion." At ages 70-75 the reduction in mortality would amount to approximately 6% and at age 75 plus to about 11%.

To test the possible effect of this transference on the mortality from cutaneous cancer the standardized mortality ratio at age 65 plus was calculated for certain combinations of the Registrar-General's five social classes I and II representing professional and executive classes, III, skilled workers, IV and V, unskilled workers and labourers. (The standardized mortality ratio (S.M.R.), usually expressed on a percentage basis, indicates whether the recorded deaths in an occupation are equal to, greater than, or less than the "expected" number.)

The trend of the ratios according to their social significance was then compared with that shown by the similar ratios for the age period 26-65, which may be regarded in the present instance as the "control series." If there be a parallelism in the trend in the ratios at the two contrasted age periods, then it would be fairly legitimate to assume that the apparently disturbing phenomenon to which the Registrar-General called attention is not of very serious import so far as cutaneous cancer is concerned. The results are stated in Table IV, where it will be observed that the

TABLE IV—Actual and Calculated Deaths and S.M.R. from Skin Cancer during 1930-2 in England and Wales

Social Class	Age Group								
	20-65 Years			65+ Years			20+ Years		
	Act	Exp	S.M.R.	Act	Exp	S.M.R.	Act	Exp	S.M.R.
Males									
I and II	87	120	73	286	303	94	373	424	88
III	242	257	95	472	534	88	714	791	90
IV and V	244	199	123	579	404	143	823	603	136
Married women									
I and II	49	54	91	34	49	69	83	103	81
III	107	114	94	90	86	105	197	200	99
IV and V	92	79	116	76	59	129	168	138	122

correlation between mortality and social status shown for males and females in the age group 20-65 is also evident in the age group 65 years and upwards, but more so for females than for males. In view of this fair degree of similarity of gradient of the mortality of each of the two age groups it seemed legitimate to aggregate the statistical experience and base the discussion on the combined age group 20 years and upwards, as has been done in Table IV.

For wives, the S.M.R. in the combined classes I and II is 81, and it increases uniformly, attaining a value of 122 for those lowest in the economic scale. This marked association in the case of wives would seemingly rule out the possible influence of a purely occupational causation. On the other hand, the less uniform gradient in the mortality of males according to social grade would suggest that both occupational and environmental factors may be involved. In an attempt to disentangle any such causal connexion, the standardized mortality ratios for particular occupations were placed into four groups.

Group A represents workers with advantages in the matter of opportunity for cleanliness and working largely indoors. This

group in which there were 13 occupations comprises the professional classes clerical grades typists and policemen. Their social and economic equivalents in terms of the Registrar-General's classification are represented by social classes I, II and III.

Group B is composed mainly of occupations nine in number which are ascribed to social classes III, IV and V. They are coal hewers and getters, coal other workers below ground, coal other workers above ground, iron ore mine workers below ground, stone miners and quarriers, potters, ware makers, etc., textile strippers and grinders, cotton bricklayers, masons, etc. The work involved is heavy and dirty, especially in the coal fields, but the workers in coal who numerically dominate the group probably utilize to an increasing extent the facilities for cleanliness afforded by pithead baths. Long exposure to sun light is not a particular hazard in these occupations.

Group C—In this group there are five occupations: agricultural and gardeners, labourers (social class IV), builders, labourers (social class V), other workers (navvies) in buildings, etc. (social class V), water transport and dock labourers (social class V), general labourers and unskilled workers (social class V). The men engaged in them perform arduous labour involving grime and dirt. The workers tend to conform to types either indifferent to or having inadequate opportunity for desirable standards of cleanliness. They also include categories working in the open air.

Group D is composed of only two occupations: furnacemen and rollers and skilled assistants (social class III), boiler firemen and stokers (social class IV). This group relates to men higher on the average in the social and economic scale than either group B or C, but the men experience in their occupation the effects of prolonged exposure to both grime and excessive heat.

The statistical experience of each of these four categories of workers aged 20 years and upwards from skin cancer during the triennium 1930-2 is shown in Table V. It will

TABLE V—Actual and Calculated Numbers of Deaths and S.M.R. from Skin Cancer in Four Different Groups of Male Workers aged 20 years and upwards during 1930-2 in England and Wales

Group	No of Occupations	Deaths		S.M.R.
		Actual	Calculated	
A	13	103	148	70
B	9	130	127	102
C	5	511	319	160
D	2	27	12	225

be seen from the figures that there would appear to be both a social and an occupational factor involved in the causation of skin cancer, and that the latter is seemingly the more important. In group A, representing as it does workers who have a high standard of cleanliness, the mortality is 30% below the average, but in groups C and D it is 60% and 125% respectively in excess.

An attempt was made to evaluate the incidence of skin cancer amongst married women in groups A, B, C, and D. The experiment was not entirely successful because some of the occupations which provide the male groups were not listed for women in the Mortality Supplement, since only a few deaths from all causes occurred in them during the period 1930-2. The number of occupations for which the facts were ascertainable was 7 in group A, 6 in B, 4 in C, and 2 in D. This reduction detracts somewhat from the reliability of the calculated mortality ratios, which for age 20 and upwards were found to be

Group	Actual Deaths	Expected Deaths	S.M.R.
A	12	16	75
B	29	25	116
C	96	63	152
D	1	3	—

The operation of a causal social factor is evident in the gradient of the S.M.R.s from group A to group C—a gradient similar in character to that shown for males. The data in group D are insufficient for comment.

Unfortunately we have no means of ascertaining the specific sites involved in the excess indicated in groups C and D for males, as the Registrar-General does not publish the statistics for individual sites. The reason is, of course, the paucity of existing data. It would nevertheless be instructive if the statistics were available, particularly in their relation to occupation. The social circumstance and occupation of sufferers from skin cancer affecting sites which tend to retain dirt (ear, canthus of the eye, umbilicus, anus, scalp, and neck), and of cancers in other parts (face and hand) exposed to light, would make an interesting special inquiry for hospital departments of dermatology employing a standard method of recording. In view of the comparative rarity of cases, such an inquiry would need to be collectively, perhaps internationally, organized. We know from the information published for the other home countries that the face is the principal site involved. In Northern Ireland it constituted 54% of the total deaths from skin cancer for males (82% if cheek and ear are included) during the period 1941-3. The ear had second place with 20%. Somerford (1930), from a study of cases of cutaneous cancer, 57 of which were squamous-celled and 175 basal-celled, found that the face was the most common situation for both forms. From this he drew the following conclusion: "This fact in our opinion is against an occupational cause, since the face is the part of the body least likely to be brought into contact with irritating substances used in any occupation." This conclusion (for the face is the only part never covered) is not justified. In several of the occupations named (groups B, C, and D), grime or heat, or grime plus heat, are surely agents which cannot be overlooked. In others, outdoor work with long exposure to sunlight must be taken into account. According to group D of the present series, an occupational factor does seemingly operate, but at present it cannot be said if the facial site is the main involvement. More detailed statistics of location are required before any dogmatic assertions can be justified.

It would be an interesting paradox if soot and sunshine should both prove to have aetiological importance in skin cancer. In practice, however, it would be reasonable and not inconsistent to purify the atmosphere, to provide the people with baths, and to suggest protective measures for those unduly exposed to the radiations of the sun.

Summary and Conclusions

The annual number of deaths from cancer of the skin, excluding that of the penis and scrotum, is approximately 1,000 per annum in England and Wales, and the mortality in males is about 70% in excess of that in females.

The mortality for both males and females from cutaneous cancer is much greater in Ireland than in England and Wales, whereas the Scottish male experience is decidedly more favourable.

The face is the principal site involved. The ear is next in frequency.

The mortality has a definite gradient with social grouping for the wives of workers, but for the males it would seem to have both a social and an occupational relationship, and the latter is seemingly the more important.

These findings, and the anatomical character of some of the sites affected, suggest, on the one hand, that atmospheric soot or other grime (as in the case of scrotal cancer) may need to be considered as an aetiological factor. On the other hand, ultra-violet radiation from the sun may be responsible for skin cancers in exposed sites. Heat or heat plus grime, may be

operative in such occupations as that of furnacemen, if face and hands should be shown to be frequently involved in these workers.

Classification according to site in official returns is needed to increase the value of correlations with occupational or other factors. Correlations with geography, or hours of sunlight in different parts of the British Isles and elsewhere should have value.

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THE MEASUREMENT OF HUMAN SKILL*

BY

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The Grouping and Stability of the Constituent Items in Skill Performance

I now turn to the second of our three main problems—that of the grouping and stability of the constituent items in a skilled performance. This has been more often studied outside than inside the laboratory. The reason is that fully controlled investigations have been far too occupied with skill of the derviled repetitive kind, the order of constituent items being is definitely prearranged as their character. In daily life this happens very rarely. Variety of order or sequence is combined with a high degree of uniformity of issue or aim.

In *Live Hand*† a former Cambridge University golf captain has written what Bernard Darwin calls "an impassioned plea" for hands as the key to the game. He watched an Open Championship in America, and thus he describes the play of the experts: "Through the feel of their hands they swung the club head and brought it to the ball with the maximum speed and accuracy at the moment of impact. It seemed as if they had stayed behind the ball until after it was hit and that the whole weight of the body flowed in behind the shot." And so also for every other game of skill. The expert may discover his own key, the one thing or the few things that must be used with conscious effort and then everything else will happen right. The bother is that the expert is apt to treat his key as the master whereas differences of bodily build, and consequently the mechanics of bodily action, should make it clear that in this case as in many others, one man's salvation is another man's downfall.

We will begin with some simple but most illuminating experiments which have, however, received little attention. They are concerned with the sense or direction of movement in the manipulation of controls. Any direction or sense of control movement can easily be made to produce a corresponding movement of display: an upward adjustment of a lever for example may produce an upward, downward, right or left movement of a pointer or a spot of light. Under these circumstances practically everybody will tend to make fewer mistakes with the up-up-down-down than with the more and more culminating with the up-

down relation. Speaking generally, whenever, as in every form of skill, sensory reactions of differing mode have to be combined some combinations are fundamentally easier and more efficient than others. The study of these preferred combinations opens up an immense field of experiment which has so far been little explored.

It is possible to alter the sense of the manipulatory movement during the course of the experiment without the knowledge of the operator. Nearly everybody now makes a greater amount of error. But the increase is significantly greater in some cases than in others. Some operators make the display the "key," and are delicately perceptive of any change in visually presented motion. These are readily adaptable, changing an upward into a downward bodily action very often without at all definitely knowing what they have done. Others make their "key" the feel of the movement itself, and for these the required adaptation is relatively difficult. It seems as if, paradoxically, the muscular part of the skilled operation is the more efficient the less is known about it. There may be, and I think there are, instances in which the exact opposite is the case, but it is not very easy to find them.

Even when this does happen, as perhaps sometimes in the "feel of the hands" in golf, it never is the whole of the movements that emerge into consciousness. In this instance the enormously complicated follow-through of the whole body, with its complete readjustment of posture, "flows in" automatically. And when we think about it this becomes less paradoxical than it seems at first. For absolutely every skill has its immensely complex embryological basis, the first 40 weeks of which in the vast majority of human performers has proceeded with strikingly little direction from the interoceptive senses. During this early period all the major fundamental phenomena of posture are achieved. It is customary to regard them as coming to centre about and grow out of the three main types of postural reflex—the attitudinal, the righting, and the statokinetic. But these have none of the fixity and individualization which the later reflexes, dominated by external stimuli and the play of the special senses, show. They appear, disappear, and reappear. Though their pattern remains reasonably constant the ancillary movements which stream out from them change in order, direction, and number as they start now from one position and now from another.

Yet the structure which is later going to dominate all this machinery of the motor and muscular systems, as everybody knows, appears remarkably early and long before it can have much effective use. When the time comes for senses like the eyes and ears and for the central nervous system to play the leading parts in development—for learning proper to take the place of maturation—they have an immense and complex substratum of movement to play with.

So it is not as surprising as might be supposed that one of the very common features of diminishing skill is an increased awareness of what the whole body is doing. We found that the air pilot, fresh and keen, follows his instruments and their signals closely and lets all his bodily equipment, so to speak, do as it likes. When impulses from the body do "rise into consciousness," as the common phrase puts it, they are interpreted in terms of the machine, as in steep turns and banks, in rapid acceleration, in climb and dive. But as he gets tired and his skill tends to break up, the messages from the body become, in their own right, insistent and oppressive. He is cramped, too hot, or too cold, there is pressure here and there, sometimes it seems that the instruments cannot possibly be right.

The really important upshot of all this is that every skill has its key features. They differ from case to case and

* The second of two O. J. Sharp Lectures given at the Royal College of Physicians of London on Jan. 23. The first lecture was on "The Psychology of the Human Factor in Aviation".
 † *Live Hand*—London: Adam and Charles Black, 1946.

from body to body, but they are always there. In by far the great majority of what may be called "educated skills" they consist in operations of the distance senses and of central selection and judgment. If we can find them and discover how they are related to their unconsidered setting or scheme of posture and ancillary movement, the problem of how to measure skill has become simpler. It is the key features whose course must be plotted, whose efficiency must be recorded. In these last few years this has been done, or partly done, for many tasks: for the pilot in the air, for the tracking of targets, for the radar operator, for a number of skills which alternate periods of monotony with periods of intense activity, for the high speed reading of dials and banks of dials, for the sending and reception of messages in code, for steady winding with varying load. In all these—and the same is true for innumerable other activities for which similar methods can now be developed—it is not every descriptive item in a repertoire of skill that must be recorded and assessed, but the leading functions only.

When, with this in mind, we stand back and look at skill as it is done, we can perhaps see clearly how it is that the skilled performer must know more *what* to do than *how* to do it, and that at once leads us to our third problem, the functions of "the task."

Relation of Achievement to Means of Achievement

The best approach is to consider an actual problem. I will choose one which, in this field, is fairly simple—the operation of the bomb-aimer. For practical reasons this operation has been submitted to a very thorough experimental study. The area bomber approaching his target can see that its limits are marked by a number of flares of given colour which act as target indicators. His task is to judge as accurately as he can their central point of impact and to drop his bombs as near this as possible. Obviously the limits of area cannot for certain be exactly indicated, and the flare pattern can never for certain be exactly repeated. The number and clustering of the target indicators are liable to rapid and wide fluctuation. Sometimes a pattern will be relatively symmetrical, and sometimes there will be outlier flares which are known to constitute a kind of key item in the display and to distract judgment. Now it is possible to reproduce this situation in miniature, so that the flare patterns appear at the rate and with the visual properties which they have under operational conditions, and the bomb-release control movements are the same. Naturally much of the excitement of the operational task is lacking, but a few experiments showed that this makes little difference. The errors produced in the experimental setting were almost the same, in direction and amount, as those made in operational conditions.

In the experiment the bomb-aimer is briefed so that he knows the general character of the area which is to be delimited. He watches the target indicator pattern approach, and presses the bomb-release switch at what he judges to be the correct moment. Two points are all important: first, he must precisely understand what he has to do—that is, to drop his bomb as near as possible to the central point of impact of the flare pattern—and, secondly, having performed his job, he must know the exact degree of his success. The common belief that "practice makes perfect" is not true. It is practice *the results of which are known* that makes perfect. There is some evidence, though it is not quite conclusive, that the more the results can be expressed positively in terms of success the better.

Under these conditions a normal operator will improve very rapidly and maintain his improvement from trial to trial. Now suppose we take a set of entirely new target indi-

cator patterns, so that, given a constant fixation point, the retinal areas stimulated are different ones, and suppose we demand a new type of bomb release pressure, so that the tactile areas and the muscles used are different. Provided these two things remain constant—the task and the knowledge of how successfully it has been performed—and there is no very marked change in the general environment, the skill which has been acquired remains with no increased time requirement and no greater fluctuation of success within a wide range. Ask the operator how he has done his work, and different persons may invent, or at any rate describe, very differing techniques. The plain fact is that most of them do not know and do not need to know, for the precise sensations and movements develop out of the setting of the task much as the specific arm or leg movements grow out of the attitudinal reflex, and they are fixed by knowledge of success as the very early movements must be fixed by some kind of biological efficacy, and with a similar but even wider range of variability.

Now, I think we have assembled all the chief items required for the experimental measurement of those forms of skill which combine bodily and mental behaviour. First it is necessary to have some direct measure of achievement. This may, however, throw no light on the means of achievement. Since we must know not only how well a thing is done but within what limits of success it can continue to be done, a measure of immediate achievement is not enough. Continuance of skill depends chiefly upon the maintenance of key features, both in receptor and in effector response, and on their time relations. These key features may vary from person to person or from group to group, but in many cases they remain remarkably constant for all, and always they display great constancy from effort to effort in the same operators or operator groups.

Receptor key items can usually be determined experimentally by the design of the display or stimulus pattern. The important factors are positional, directional, intensive, qualitative—as in the cases of colour, form, clustering, or pattern qualities—and numerical. It must be admitted that at present the determination of effector key items demands much the same process as clinical diagnosis, and perhaps it always will, for, as we have seen, the exact movements made in skilled performance are apt to escape any known form of exact objective registration. When key features are determined the kind of measure that is needed is a plot of their course, of the way in which and the degree to which they appear and reappear in continued exercise.

Finally, since all skill can be rightly treated as a continued interlinkage of receptor and effector responses, and the efficiency of this depends most of all upon timing, the third measure that is required is one of what I have called "total reaction time" in a series. The measurement of achievement tells us nothing for certain about means, the plot of key items by itself gives us no information about the efficiency with which the task is done, the record of timing by itself does not indicate what are the key features or what success attends the effort. All three are needed.

Is it possible to simplify still more, to find a single measure which will indicate what may be called the "level" of skill in a given individual? The answer is "Yes," but the simplification may be more apparent than real.

The best single measure of skill level is one of its "range of constancy," its degree of resistance to disintegrating conditions. This measure can be expressed in any one of the three basic ways. But a record of degree of achievement alone can obviously be extremely misleading for with interference conditions a less successful achievement must be equated with a better one. Apart from a very prolonged experiment it is not possible to know how to do

and at the best it can be done only in a very approximate and statistical manner. A plot showing how key features are maintained is better, but is rarely satisfactory because use it is not uncommon to find the operator switching from one set of key features to another, holding one for a while and then switching back again. And, the continued exercise may itself be a disintegrating condition. This may well be one of the best ways of maintaining level of skill. A random fluctuation of key features is, however, always a sign of the imminent break-up of skill. If level of skill is defined by its capacity to resist interference, the measure of total timing of successive responses is the best single criterion, for if timing gets out of step nothing can for long stop the complete break-up of the skill. A combination of all three types of measure, however, remains the best criterion that can be used.

Is the Exercise of Skill a Discontinuous Function?

I do not now turn to a brief and, I am afraid, very incomplete consideration of a fundamental question about the nature of operative skill which is raised by all these investigations. At the very beginning I suggested that skill comes with the graded response, when the characters, and especially the intensive characters, of the stimulus are faithfully reflected in the response. But how are we to picture the grading? It has long been evident that from an efficient sensory point of view there is no such thing as an absolutely continuous grading of response, but rather a series of steps which, set end to end, so to speak, produce an appearance of continuity. Moreover, these steps are affected by a large number of conditions, among which very important ones are, in some cases, the rate of application of the stimulus, the duration of the stimulus, and the rate of adaptation of the peripheral organs. Within limits the faster the rate of application, the more durable and the more within the range of adaptation the stimulus, the smaller the steps.

Similarly the effector side of the process may have a discontinuous character. In positional tracking, for example, an operator may appear to move continuously from his starting point on to the target, and then, when it is stationary, or moving at a regular rate in the same direction, hold it continuously. But experimental records show that the normal thing for the operator to do is to produce a series of oscillations each lasting very consistently for about one-quarter to two-fifths of a second. With other forms of control the oscillations have a somewhat longer duration but are even more marked.

Other illustrations are better known. For example, in scanning a visual field for the identification of an inconspicuous object the observer will consider that he is making a smooth continuous exploration. But it is very easy to demonstrate that he proceeds in a series of saccadic eye movements with interfixations. The pattern of movements and pauses varies considerably from individual to individual, but remains very consistent for any particular person. The mean fixation time, in free search for short objects is approximately half a second with a mean interfixation interval of 5°.

These facts and many others appear to suggest strongly that human skill is basically a discontinuous function both on the receptor and on the effector sides. But about the important questions which arise if this is the case we know little. How the discontinuity of reception is related to that of action is obscure, but each must affect the other in continued exercise. Moreover, it has been practised a few times the picture is

complicated by anticipation and some factor very like inertia which may well tend to counteract any initial discontinuity.

Meanwhile it does seem as if we have to consider the human being as fundamentally operating somewhat after the manner of the ballistic galvanometer. For each skill there may be some minimal effector impulse which, once it comes into operation, prevents any further exteroceptive change from doing anything at all until the effect of the impulse and recovery from the effect are complete. If so this may be why timing and variations of timing are the central significant measures for all kinds of bodily skill. It would also follow that if ever a mathematician adequately descriptive of human skill becomes possible, it will be a mathematician of discontinuous functions.

Mental Skill

Last of all I must say something about those highly developed forms of skill which are called mental. The most impressive characteristic of mental skill is its use of symbols, and particularly of symbols which can be given a permanent form. The distance senses upon which psycho-physical skill mainly depend set man free from the confines of immediate space. The symbols and their means of preservation which he has developed make possible enormous strides further in the same direction. They mean that timing, the vital feature up to this point, becomes of little direct importance or takes new forms. Now for the first time a new type of correction becomes possible, before the skill product need be given any public expression, actual or possible. In verbal skill it may be a substitution of word or phrase, in plastic skill of form, colour, mass, in music of tone, melody, with the items substituted picked out here and there and not in any settled serial order.

We are forced to use new vaguer criteria, of rhythm and proportion (which are no doubt still forms of timing), of meaning, relevance, truth, beauty, fitness. These appear to be almost infinitely fluctuating. Are they perhaps only approximations—so far to be placed in no known scale of quantities—to human conventions widely but impermanently established, or are they measurable by the nearness of their approach to something fixed and final? We can only speculate.

There is one suggestion which I believe could be studied with reasonable control. It occurs in the deeply interesting book by Jacques Hadamard called *The Psychology of Invention in the Mathematical Field**. In this book he refers several times to the appearance of error in mathematical reasoning. "Good mathematicians when they make errors, which is not infrequently, soon perceive and correct them. As for me (and mine is the case of many mathematicians), I make many more of them than my students do, only I always correct them so that no trace of them remains in the final result."

"Time will have its revenges." Here perhaps it comes back on us in a new form. Maybe the best single measure of mental skill lies in the speed with which errors are detected and thrown out, a function which becomes possible only when skill has first a symbolic expression.

How is this done? We do not yet know, but we can set to work to find out, and if we do one thing is certain: we shall find that when man achieves the symbol and its permanent expression he does not really cut himself adrift from the age-long ways of the simpler kinds of skill. The topic replaces the task. Given the topic the words or numbers, or colours or tones, develop out of it as movements from the task. Both have their tremendous

* Princeton University Press, 1945 (in England, Oxford University Press).

embryology, so that in both cases there is no necessary prior recall of items before use. Generally what we style recall is use.

There is a very simple and rather beautiful experiment which Henry Head used that may, I think, give us a clue. Before certain of his aphasic patients he set a number of solid shapes of triangles, squares, cubes, and the like, which were to be viewed but not touched. The objects were covered and then either exactly similar or different ones were placed in the hands of the patient behind the patient's back, and he had to indicate whether the object now being tactually explored had or had not previously been among those seen. No patients had any difficulty in making the required identifications accurately, but the order of original exposure could not be indicated without difficulty and error. The identification of form was immediate and required no necessary prior recall of the visual qualities concerned. One sensory pattern—tactual—fitted another sensory pattern—visual—of different mode. Head called this process "matching". It could cope with shape, but order requires the use of a symbol of the word-type, and was out of the range of his particular observers.

Now it has frequently seemed to me that matching, the immediate fitting of one set of responses to another or of one content to another, may well be a process which has a much wider range than is often realized. For every task, for every topic, at every level of psychological development there are perhaps the fit reactions and expressions, and there is perhaps some mechanism characteristic of each level of development which can identify the ones that are fitting or throw out the ones that are unfitting.

I think, perhaps, that what Hadamard suggests in the case of the good mathematician is just as true of the great clinical physician. It is not that he makes fewer mistakes than less-skilled people, but that he knows his mistakes more quickly and does not follow them so often to the stage at which they become irremediable. After, sometimes long after, it may become possible to identify and quite definitely to characterize the item of error. But at the time there is literally nothing except the knowledge that to go on along this line will not fit. The several patterns and functions involved must be very different from those of direct sensorial matching, and the content used may require a highly abstract and symbolic representation, but fundamentally the process is the same at the high level as at the lower.

And, of course, if this is a right way of approach, mental skill, even in its highest reach, is not merely an approximation to temporary convention, but is an achievement of combinations of response which do, as a matter of fact, fit well together. Whether or not a measure of such skill can be obtained in terms of relative sensitivity to errors or false starts is indeed still a matter for investigation, but at least this hypothesis is not beyond the bounds of an empirical study.

NOTE—Most of the work which I have referred to in these lectures is as yet unpublished, though it has been the subject of a large number of reports. The great majority of them from the Cambridge Psychological Laboratory. I wish to acknowledge first the generous support by the Medical Research Council through their establishment of a Unit of Applied Psychology at Cambridge, by the R.A.F., chiefly through the Flying Personnel Research Committee, and by the Ministry of Supply, mainly through bodies concerned with tracking problems and the development of servo mechanisms. There is practically no member of the research and teaching staff of the Cambridge Psychological Laboratory who has not contributed in important measure to the success of the undertakings involved, but it is perhaps permissible to refer especially to the insight and initiative of the late Dr K. J. W. Craik and to the vital experimental studies of Dr W. E. Hick, Miss M. A. Vince, Dr D. Russell Davis, Dr N. H. Mackworth, Dr A. W. Carpenter, and Mr G. C. Grundley.

MODERN TREATMENT IN PSYCHOLOGICAL MEDICINE*

By

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Progress in psychiatry was for many years slow, and hospitals for mental disorders were used primarily for custodial care rather than therapeutic centres for such illnesses. Between the two world wars, however, considerable progress was made in the treatment of psychiatric conditions, and a milestone was passed when the treatment of GPI was successfully instituted by Wagner-Jauregg in Vienna in 1917. During the same period the treatment of agitated and restless patients was tried under continuous sleep by Klati of Switzerland and other workers, and this was found to be of considerable value.

It was recognized that schizophrenics rarely suffered from epileptic seizures, so trial was made of the treatment of schizophrenia by inducing epileptic fits with convulsant drugs, among them leptazol and triazol. It was found, however, that in those cases of schizophrenia in which depression was marked the improvement in the depressive element of the illness was striking, while the schizophrenia as a whole was not greatly improved. Depressive illnesses were therefore treated by artificially induced fits, with much more satisfactory results than in schizophrenia. This method of inducing fits by these drugs was, however, found to be unreliable in that fits did not always occur and often caused great fear and apprehension in the patients. The use of convulsant drugs was replaced by a machine which produced fits by passing an electric current through the head. The patient felt no ill effects, and the fits occurred in over 90% of cases.

Following the abandonment of the convulsion treatment of schizophrenia another milestone was passed by the introduction of the insulin treatment of schizophrenia, which was begun by Sakel of Vienna about ten years ago. Previously a certain number of schizophrenic patients recovered spontaneously by having remissions in their illness, but the prognosis and duration of the condition have been materially altered by the introduction of this form of treatment. At the same time that these physical methods were being developed, psychological methods were also being improved upon. Thanks to the work of Freud and various of his followers, such as Jung and Adler, the psychopathology of mental diseases was understood for the first time. Previously the patient's delusions, thought content, and actions had no meaning to the psychiatrist. Following on the work of Freud, however, it was possible to understand why the patient said, for instance, he was "too wicked to live" or why he was continually washing his hands, etc. From this understanding of the psychopathology of mental illness it became possible to probe into the patient's unconscious mind and so deal with the conflict which was the cause of his neurosis or psychosis. The technique of psycho-analysis was developed by those who themselves had been psycho-analysed, but this is a costly and lengthy form of treatment. Other methods of psychotherapy—to be discussed later—have been evolved for dealing with the patient's illness in a much shorter space of time, and in many cases are just as efficient.

At the outbreak of war in 1939 this roughly was the position regarding the treatment of psychiatric illnesses. It

* A paper read to the Sutton and District Medical Society on Feb 7, 1947.

The numbers of psychiatric casualties would be more the civilian members of the population as a whole while the Armed Forces would have their own psychiatric casualties also. Long and costly methods of treatment would not be possible for large numbers of psychiatric casualties as neither the psychiatrists nor the beds would be available. Various techniques of treatment were devised, and it is proposed to discuss those which are likely to prove of value in the treatment of psychiatric illness in civilian life, although they were first applied to psychiatric illness occurring during the war. For simplification, treatment may be divided into physical and psychological methods, but in most cases a combination of these can and must be used.

Physical Methods

Continuous Narcosis

For those suffering from acute anxiety, agitation, or manic reactions continuous narcosis is an invaluable method of treatment. By this means the patient can be kept in a state of twilight sleep for a period varying from 4 to 7 days. During this time he is completely cut off from his environment, and as a result his mind is in a state of complete rest. Various drugs, such as "somniafene," "aphorbitione," and "dial," can be used for this purpose, but in my experience sodium amytal is the most efficacious. This drug acts rapidly, is rapidly excreted, does not tend to accumulate in the body, and toxic symptoms are uncommon. The usual dose is 6 gr (0.4 g) every four hours while if additional sedation is necessary 2 dr (8 g) paraldehyde can also be given. The patient, who is kept in a darkened room, can be roused to take his meals and the next dose of sedative should be given after a meal and after he has used the bed-pan, etc., so that he is not disturbed unnecessarily. It is essential to see that plenty of fluids are taken, as this helps to ward off toxic symptoms. The usual check is kept on pulse, temperature, and blood pressure while the daily output of urine should be measured. When the patient is finishing treatment the dose should be gradually withdrawn, as instant withdrawal sometimes produces major epileptic seizures. On waking round from the drug the patient is often "muzzy" for a few days, but the result of the rest in many cases is to remove the acute anxiety symptoms when the patient is able to be approached from the psychological point of

where patients are undergoing continuous narcosis and their appetites are poor, modified insulin treatment can be combined with the narcosis with great effect.

Insulin Coma

This treatment is used for all forms of schizophrenia, but is said to be most effective in the paranoid types. It has been found of value not only in cutting short the attack but also in resocializing a patient for whom a poor prognosis would previously have been given. There are certain physical contraindications to this method of treatment, and in those patients who have had tuberculosis there is a definite risk of reactivating the infection, so for this reason it is unwise to use the treatment in such cases, nor should it be used where there are grave circulatory or kidney disturbances. The treatment can obviously be given only in hospital, with nursing and medical staff specially trained in the method. The ideal arrangement is to have a complete unit with medical and nursing staff in continual attendance during treatment, with emergency trays containing equipment for both nasal and intravenous methods of interruption of the coma always at hand. In addition, trays containing stimulants such as adrenaline, nikethamide, etc., should always be ready. As in the modified insulin method of treatment, the patient is given his injection of insulin at 7 a.m. fasting, the usual commencing dose being 10 units. The dose is increased daily by 10 units, and in a number of cases 300 units or more may be required to induce coma. The patient gradually goes into coma with profuse sweating, often stertorous breathing and restlessness, and is allowed to remain in coma for about half an hour. However, should he develop epileptic fits, irregular pulse, falling blood pressure, respiratory stridor, etc., the coma must be interrupted at once. As a routine this is done nasally by giving 33% glucose, if the condition is urgent it is given intravenously.

When the patient is roused he is rubbed down, put into dry clothes and a dry bed, and given sweetened tea and a meal. It is necessary to keep the pulse, respiration, temperature, and other such records carefully from the time he is given the insulin until he comes out of his coma, and such patients, after treatment, should not be allowed far from their ward, as they may develop late hypoglycaemia. Patients should be encouraged to carry some lump sugar or chocolate in case they feel faint. The patient is allowed up by lunch-time and then takes part in the other forms of treatment, etc. to be mentioned later. As with modified insulin treatment is given five days a week. Most favourable cases respond in two months, but if no improvement occurs after the third month the likelihood of recovery is poor.

Insulin Treatment

Many patients suffering from chronic neurosis, such as anxiety states, tend to lose weight and as a result feel that there is something wrong with their bodily health. In such cases their appetite is poor, they do not wish to eat, and a vicious circle is set up. Early in the recent war small doses of insulin were given to such patients in the morning, but it was found that by gradually increasing the dose the patient passed into a state of sopor and became comatose. The dose of insulin which starts at 10 units is increased to about 80 units is given at 7 a.m. The patient is allowed to remain in this state of sopor until he is given a cup of sweetened tea, and a small portion of food (as a substitute for sugar, etc.) is given together with his ordinary breakfast. He is allowed to go into coma, and after this treatment is given for five days a week for a few weeks the patient improves considerably and there is a large gain in weight. The positive effect of putting on so much weight is the main object of the modified insulin treatment, as it is of great value in the more chronic cases. The use of insulin is a feature in some cases

Electric Convulsion Therapy

This form of treatment is now used effectively in depressive illnesses. It has been found of most value in depressive illnesses which are constitutional or endogenous and arise from the personality of the patient. Where, however, the illness is reactive to an external situation convulsion therapy can be of help in giving a "fillip" to the patient when he seems to be stuck in a groove and unable to make progress. In those forms of depression occurring at the involutional period it is probably of the greatest value. Here again the contraindications are similar to those for insulin treatment, while patients with high blood pressure, arteriosclerosis, and brittle bones are not good subjects. The patient is given the treatment fasting and at our hospital he is controlled in a special jacket which helps in preventing fractures (the commonest being a

crush fracture of the lumbo-sacral spine) that occasionally occur, while a gag is inserted in the mouth to prevent tongue-biting. If the patient is nervous he can be given 3 gr (0.2 g) of sodium amylal before the treatment, while patients who suffer from rheumatoid arthritis with some stiffness of the joints have been given tubocurarine to produce muscular weakness so that the pull on the bones will not be so great. When the patient is held in the correct position a current is passed through his head by means of two electrodes, and a typical major epileptiform attack occurs. He is put back to bed, and for a time may be confused and complain that he cannot remember. These symptoms clear up in the course of a few hours and may recur temporarily when the next fit is given. Some authorities maintain that permanent memory disturbance and intellectual impairment result from this form of treatment, but this seems to be the case only when the treatment is given too frequently. The number of fits depends on the progress made, and in some cases an occasional fit as an out-patient keeps the patient going, whereas otherwise his condition would be chronic and mean a permanent stay in hospital.

Prefrontal Leucotomy

Moniz first used this operation on patients suffering from incurable mental disorders. After injecting alcohol into the subcortical white matter of the prefrontal lobes cores of white matter in the prefrontal areas were separated with a steel leucotome but not removed. Since Moniz first employed the method various techniques have been devised, it is obviously not practicable to describe the technique here, as the operation can be successfully carried out only by a neurosurgeon. Post-operative care and nursing are important, a careful check being kept on the pulse, respiration, and blood pressure for at least 48 hours. For restlessness $1\frac{1}{2}$ gr (0.1 g) of soluble phenobarbitone may be given intramuscularly, and 1 gr (65 mg) of codeine phosphate four-hourly may be used for the relief of headache. Morphine must on no account be given.

The operation, which should be performed only when all other methods of treatment have been tried and failed, has been carried out successfully on disturbed and noisy schizophrenic patients, thus making them more easily managed and rendering the nurses' task less irksome and difficult. In a limited number of cases such patients have been able to live outside hospital and in the care of relatives. In involutional and other long-standing depressive illnesses leucotomy has been successful, while experimental work on the value of the operation in antisocial mental defectives, post-encephalitics, etc., is still being carried out.

In the neuroses, such as obsessional and anxiety states—illnesses which can as completely incapacitate the individual as the psychoses—successful results have been reported. The tension and anxiety are relieved and the obsessional thinking, rumination, etc., although still present, are much less vivid and do not handicap the patient to the same extent as before operation. It is important before operation to inquire very fully into the patient's personality, as aggressiveness and other such traits causing antisocial conduct may become more pronounced after operation.

The intellectual capacity is said not to undergo any reduction. Obviously where the patient was previously doing a job for which a high degree of intelligence was not required the point is not important, but where such a high degree is required careful thought must be given as to the advisability of operation. The patient, however, may become less self-critical, more demanding, and hasty-tempered, with resulting conflict with his environment. The

mortality rate is low and usually death is due to haemorrhage, while a late complication may be the appearance of epileptic fits and status epilepticus.

Narco analysis Abreaction

It has long been recognized that an unpleasant traumatic experience is repressed from the conscious into the unconscious mind. The result of this repression leads in many cases to a gap in the memory, or fugue, which extends from a short time prior to the trauma to some time after it. The resultant loss of memory is a source of worry to the patient, as sometimes he wonders what happened during this period of amnesia, and he may think that he has committed a criminal act. Hypnosis and psychotherapy were formerly employed to try to re-establish this loss of memory, together with the unpleasant episode, and in many cases considerable time had to be spent before the psychiatrist was successful in bringing about a cure. During the war this type of hysterical reaction in which the patient went through a harrowing experience was common, and as it was necessary to try to restore the memory rapidly, sodium amylal, given intravenously, was first used. A dose of $7\frac{1}{2}$ gr (0.5 g) in 5 ml of water is given slowly at the rate of about 1 gr (65 mg) per minute, and when the patient has received about 5 gr (0.32 g) he becomes relaxed and in a state resembling that of drunkenness, in which he is garrulous and talkative. The patient's conversation is then led from the last thing he recollects before the incident until the actual incident itself is recalled and re-enacted. In many cases several sessions are necessary before the full incident is recounted, and during these sessions the patient relives the experience and a terrific amount of emotion is released. When it is considered that the patient has talked sufficiently at that session the injection of sodium amylal is completed, after which he sleeps for several hours. It might be argued that it is unwise to restore an unpleasant incident which is upsetting to the patient, but the loss of memory is productive of much more worry to him than a knowledge of the incident, which can be explained to him and be accepted in a reasonable light. This abreaction, or getting rid of pent-up emotion, has also been called "mental catharsis" or "emotional diarrhoea".

Various other drugs have been employed for this purpose—namely, thiopentone, hexobarbitone, and ether. The last named is now more commonly used than sodium amylal to produce abreaction. This form of treatment is also of value in peacetime in hysterical loss of memory and acute anxiety states where obviously some traumatic incident has been repressed.

Psychological Methods of Treatment

I do not propose to discuss at length the various techniques of psychological treatment, as the specialized forms such as psycho-analysis should be left to those specially trained in this type of treatment, while hypnosis, suggestion, and persuasion are constantly used as adjuncts to physical methods of treatment or by themselves.

The importance of suggestion is seen when a patient is admitted to hospital. When he enters the ward he should be made to feel the business-like atmosphere and air of confidence among the medical and nursing staff, rendering him hopeful about the outcome of his illness. This suggestion plays an important part in the whole hospital atmosphere, while the giving of medicines, even though they may be only placebos, can help in this way. Psychotherapy, such as detailed history-taking, the talking over of difficulties, discussion of home and other worries, must be used in every case. Group psychotherapy, where several patients meet and discuss their symptoms and difficulties collectively, is also of value.

Patients erect situations which they find difficult and which they are ordinarily unable to face this technique is called psychodrama. These methods of treatment allow every patient to receive treatment at the same time and help to develop team spirit also. In dealing with the psychological approach to the patient I should like to mention certain aspects which have been evolved as a result of our own experiences and which can be carried usefully into civilian life. At the outbreak of war men were called up for the Army and if medically fit were sent into various branches irrespective of their training in civilian life or degree of intelligence. As a result it was found that men who were possibly labourers and were dull intellectually were sent to workshops where skilled engineers were required, while skilled engineers were likely to find themselves doing labouring jobs in the Pioneer Corps. The result was that the man who had had no skilled training and was unable to do his job became anxious and worried about it and broke down, while the skilled man became "browned-off" and bored with the dull monotony of his job and also broke down because of the lack of opportunity for him to use his skill. This led psychiatrists and psychologists, with the co-operation of the appropriate Service authorities, to devise selection in the placing of recruits into jobs more in keeping with their knowledge and capabilities. When a man had no skilled trade or profession in civilian life he was tested by the psychologist from both the intellectual and the vocational point of view so that he might be trained along the lines for which he showed some natural aptitude or bent. In this way recruits with a tendency to artistic work might be employed in cartography or draughtsmanship, while no time would be wasted in training an intellectually poor man with little or no natural aptitude when he was obviously suited only for menial and labouring jobs. This personal selection proved of great value in preventing unnecessary breakdowns among Army personnel, and is now being used in civilian life in industry. It is important that the right job should be found for each type of person wherever possible. In addition, it was observed during the war that some men were able to shoulder responsibility up to a certain degree, but when promoted above this point were unable to cope with the added responsibility, and broke down if not allowed to revert to their previous rank. In civilian life the same thing applies—some people are able to rise only to a certain level and if promotion means added responsibility to which they cannot adapt themselves they must be content if they wish to lead normal useful and happy lives, with a lower income level than the man who can accept that responsibility. This point is dealt with in a little more detail later on.

Rehabilitation and Occupational Therapy

The treatment of the neurotic differs from that of the physically ill patient in that the former, except when undergoing special treatment, is not confined to bed and his day must be planned in some useful way for him if he is to be prevented from becoming bored and brooding over his troubles. For this purpose various adjuncts to the treatment already mentioned are provided in a neurosis centre. Physical training, varying from light to full, should be given daily to those who are physically fit for it. In many cases the neurotic has a poor posture, and the correction of this by physical training helps in restoring confidence. Occupational therapy must also be provided, and this can be divided into recreational, diversional, and vocational. The first consists in providing reasonable recreational activities in the form of indoor and outdoor games. In the nature of games it is wise to have inter-vara competitions, to provide healthy rivalry and stimulate team spirit.

Concerts, entertainments, and discussion groups are held, while recitals by well-known instrumentalists, who at the same time give talks about the instruments and the history of music, help to stimulate the patients' interest. Lecture discussions are held every week, all the lecturers being authorities on their subjects. Politics, geography, history, and other topics are discussed.

Diversional occupation consists in the making of various articles in the workshops. Among the types of occupation are rug-making, leather work, perspex work, making soft toys, carpentry, and gardening. The patients are allowed to choose the kind of work they wish to do, and when an article is completed they are allowed to purchase it at cost price. The accomplishment of making an article brings with it a sense of pride and helps to restore the loss of confidence from which most neurotics suffer. Lastly, the vocational type of occupation provides a means by which a patient who has no trade to go back to can be trained—for instance, in gardening or carpentry—and the foundation laid for him to begin a more thorough training that will help to rehabilitate him in the outside world. Patients are not dragooned into working, but are encouraged to do so, and they usually respond well.

It is important that neurotic patients should be allowed out of hospital to visit their homes, local cinema, etc., so that when the time comes to leave hospital the task of readaptation to social life will not be so difficult.

Industrial Neurosis Unit

An experiment that is being carried out at Sutton consists in the development of an industrial neurosis unit. One hundred beds for both sexes are being set aside to which neurotics who are misfits in industry can be admitted. For some considerable time it has been known that men and women go to employment exchanges almost weekly asking for new jobs as they are unable to cope with their present ones. Jobs are changed at very frequent intervals and for trifling reasons—namely, that the work is too noisy, the conditions under which they work are too hot or too cold, or they cannot tolerate the foreman. These people are to be referred to a psychiatric out-patient clinic for an opinion. If there is a psychiatric condition which requires treatment this will be dealt with by out-patient attendance if possible, otherwise the patients will be admitted to the industrial unit.

It is hoped that it will be possible to treat and "vet" such patients in the course of a few weeks and that a maximum stay of six weeks in hospital will be required. The patient will be tested by a psychologist to assess intelligence and to find out what his natural aptitudes are. A social worker will investigate his home conditions and attempt to straighten out any difficulties, while appropriate psychiatric treatment will be given for his condition.

Additional workshops are being supplied for the unit, and it is hoped to provide for hairdressing, tailoring, secretarial work, bricklaying, plastering, and interior decorating. These shops will be staffed by skilled instructors, each of whom can teach about 10 patients at any one time. It is also hoped to establish a liaison with local firms where hospital patients may be sent to work in an unpaid capacity for a few hours each day. This will help in vocational selection. A Government training centre will provide 20 vacancies a week for patients who are found to be suitable for teaching a particular trade, while a full-time disablement resettlement officer of the Ministry of Labour will be attached to the unit to help in placing the patients after discharge and to send reports to the patient's local employment exchange. After-care will in most cases be of

great importance, and a social worker will cover both the patient's home and employment after discharge.

This, briefly, is an outline of the scheme, and it is hoped that many patients who formerly helped to swell the ranks of the unemployed will be returned to work either in the open market or in sheltered employment.

Conclusion

There is no doubt that psychiatry is fast becoming, or has become, an important branch of social medicine. Adequate housing and education, the teaching of the individual how to enjoy his leisure time without becoming bored, and financial security are all important factors in promoting mental health and in preventing relapse of those who have recovered from mental ill-health. The removal of public prejudice against mental disease, and an attempt to make everyone appreciate that psychiatry is a scientific subject, are of paramount importance in the promotion of mental hygiene.

PENICILLIN IN THE TREATMENT OF DIPHTHERIA

BY

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Penicillin Sensitivity of *Corynebacterium diphtheriae*

In 1929 Fleming reported that a slightly purified extract of a broth culture of *Penicillium notatum* was active against the pyogenic cocci and rather less so against *Corynebacterium diphtheriae*. This observation was confirmed by Clutterbuck *et al* (1932) and by Chain *et al* (1940). Young and Mood (1945) tested six strains for penicillin sensitivity and found all to be inhibited by concentrations between 0.004 and 0.06 unit per ml. In contrast to this Ercoli, Lewis, and Moench (1945) found that over 1 unit per ml of penicillin was required to inhibit growth. Long (1946b) tested thirty strains and obtained sensitivities between 0.02 and 0.004 unit per ml. It is probable that the size of the inoculum used is an important factor in accounting for these differences, though even if an organism is resistant enough to require over 1 unit of penicillin per ml to inhibit growth the possibility of successful treatment is not excluded.

Experimental Work on Treatment in Guinea-pigs

Reports on the treatment of experimental diphtheria in guinea-pigs are conflicting, Young and Mood (1945) claiming that infection could be prevented by extremely small amounts of penicillin mixed with the inoculum, and cured by larger doses given as long as 23 hours after inoculation with a larger dose of culture. Ercoli, Lewis, and Moench (1945) on the other hand, state that penicillin had only a negligible action on the course of an infection following a small inoculum.

It would appear that there is not sufficient evidence on which to judge the effect of penicillin on artificially induced diphtheria in the guinea-pig, but even if the evidence were conclusive it is doubtful whether it would be safe to argue from guinea-pig to man. The degree of susceptibility and the lesion resulting from injection of culture in the guinea-pig are not comparable to the naturally occurring disease in man. Further, diphtheria in man is commonly complicated by secondary infection with haemolytic streptococci, Vincent's organisms, and mixed

anaerobes. All these organisms are markedly penicillin-sensitive and are almost invariably present in the disease, though the haemolytic streptococcus is less common than the others.

Penicillin-treated Cases in the Literature

Symons (1945) reported the case of a boy of 13 years who received antitoxin and sulphonamides on the second day of the disease. One day later, as a result of the development of bull neck and spreading of the membrane, penicillin was administered, 24,000 units being given three-hourly. This was followed by the membrane "separating, disintegrating, and almost disappearing within 24 hours." *C. diphtheriae gravis* and haemolytic streptococci were obtained from swabs before treatment.

Archer (1945) describes the dramatic improvement in the local condition of a patient with "mixed KLB, haemolytic streptococci, and Vincent's infection." Diphtheria antitoxin and antistreptococcal serum had been given previously without effect. Christie and Preston (1946) refer to two patients both with mixed *C. diphtheriae intermedius* and haemolytic streptococcal infections. Case 1, aged 15 years, had severe pharyngeal diphtheria with a bull-neck. The day of the disease is not given, nor is the state of activity of the membrane. He was treated with antitoxin and a sulphonamide on admission, three days later a petechial rash appeared, and systemic penicillin (100,000 units a day) with an hourly throat spray (500 units per ml) was started. The throat had almost completely cleared in another two days. Case 2, aged 17, had severe pharyngeal diphtheria of "not more than three days' standing." On admission the patient was treated with antitoxin and penicillin as in the previous case. The membrane separated in two days, though the general condition remained unchanged. Death occurred from heart failure, preceded by immobility of the palate.

Dodds (1946) reported 13 cases treated with penicillin and antitoxin, and 13 controls treated with antitoxin alone. *C. diphtheriae gravis* is stated to have been present in a "high proportion" of these cases, though exact figures are not given, neither is the presence or absence of secondary infection noted. 200,000 units of penicillin were administered daily for two days, followed by 100,000 units daily for three to six days. The conclusions reached were that penicillin "appeared to have been in some degree beneficial in most cases treated," though it "seemed to have little effect on the rate of clearance of the membrane." Symons (1946) reported a further case from which virulent diphtheria bacilli were not isolated.

De, Chatterjee, and Ganguli (1947) describe the successful treatment of 27 Indian children alleged to be suffering from diphtheria, penicillin being administered by three-hourly injections of 10,000 units. Antitoxin was withheld, since the work was undertaken "to ascertain whether the drug can be used in the place of serum," "the risk being minimized by selecting early cases, under the assumption that the child can destroy and/or eliminate a certain amount of diphtheria toxin." Of the 27 cases treated 11 are described as bacteriologically negative, in the remainder the organisms appear to have been identified on morphology alone. In view of the unusually high fever (10 of the patients had temperatures between 102 and 104° F (38.9 and 40° C)) it is unfortunate that no indication is given of the presence or absence of secondary infection and, in particular, of haemolytic streptococci. Their cases are classified into four groups. Group I early cases, bacteriologically positive. Group II early cases, bacteriologically negative but clinically diagnosed as classical diphtheria. Group III moderately severe cases, bacteriologically

spite of the fact that it was markedly penicillin-sensitive. This suggests that the dosage was too low. The strain of *C. diphtheriae gravis* was inhibited by 0.004 unit of penicillin.

Further Cases—Three further cases have been treated. All were mild and all received one million units of penicillin a day for three days, and in none was I able to demonstrate diphtheria bacilli after the first day's treatment.

Discussion and Conclusions

Though there is agreement that *C. diphtheriae* is penicillin-sensitive, considerable disagreement exists as to the degree of sensitivity recorded. A possible explanation is the absence of any standard technique for the estimation of sensitivity, and in particular of the size of the inoculum.

The experimental work in animals has produced conflicting results, so that there is little evidence on which to judge the possibility of effective treatment in man.

An attempt has been made to review all the cases of penicillin-treated diphtheria that have been described in the literature at the time of writing. In this country no case of diphtheria without secondary infection appears to have responded to treatment in a convincing fashion. By far the most important observations on this subject are those of Karelitz *et al.*, who, in spite of relatively large dosage (160,000–240,000 units a day), failed to observe any increase in rate of clearance of the membrane or any reduction in the incidence of toxic complications. The value of their report is impaired by their failure to use tellurite media and penicillinase for culture purposes, if they had done so their figures for the persistence of diphtheria bacilli would probably have been from 10 to 30% higher.

The most valuable criterion on which to judge the response to penicillin treatment would appear to be the time taken for *C. diphtheriae* to be eliminated from the lesions, thus excluding the effect of secondary infection. The dose of penicillin employed might reasonably be supposed to be that which reduces this time to the minimum.

Evidence is presented that *C. diphtheriae* can be eliminated in under 24 hours in severe cases of diphtheria with a dosage of 1,000,000 units a day. Though a smaller dose than this would probably be inadequate, a larger dose might be even more effective.

Summary

The available experimental and clinical evidence on the penicillin treatment of diphtheria is reviewed.

Experimental and clinical evidence is brought forward to show that it is possible to remove diphtheria bacilli from the upper respiratory tract within 24 hours.

A plea is made for larger dosage, at least 1,000,000 units a day would appear to be desirable in severe cases.

The value of penicillin is particularly striking in the presence of secondary infection.

The importance of early adequate antitoxin administration is stressed.

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SPLINTS FOR FRACTURED NOSES

BY

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Fractures of the nose are common injuries, but their early treatment is often unsatisfactory because displacement is obscured by haematoma and oedema. If telescoping of the septum does not obstruct the airway and there is no lateral deviation or depression of the bridge-line, no active surgical treatment is required. If any or all of these displacements have occurred, early treatment by the classical Gillies-Kilner (1929) technique of disimpaction and reduction yields excellent results with a minimum of discomfort to the patient. Should the displacement be missed in the early stages serious disability and disfigurement result which can be put right only by more extensive procedures such as nasal refracture or bone-grafting (Oldfield, 1944).

After reduction of a recently fractured nose a simple type of splint is required such as a "cellona slab" (Fig. 1).

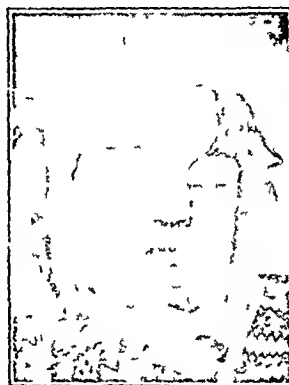


FIG. 1



FIG. 2

FIG. 1—A "cellona slab" used for splinting a recently fractured nose after reduction.

FIG. 2—A Saffian brace.

a cellulose splint reinforced by a moulded lead plate, or a Saffian brace (Fig. 2), all of which serve to hold the nose in the correct position until union occurs in the correct alignment. This usually takes place in a very short time. If the bridge-line has been depressed, the "St. Louis method" is indicated (Fig. 3). Nasal refracture is required.



FIG. 3



FIG. 4

FIG. 3—"St. Louis method." Two lateral acrylic struts held in position by two through and through mattress sutures.

FIG. 4—Nasal splint in position.

When the nose has been allowed to unite in malposition Even if over-correction has been attained and a wedge of bone removed from the convex side there is always a tendency for the nose to slip back into malposition unless fixed by a rigid splint for a considerable period

A plaster head-cap is notoriously inefficient as a fixed base for facial splintage, but a dental-cap splint attached to the maxillary teeth gives an excellent base for rigid fixation of a nasal splint The splint described below has the added practical advantage that each lateral element can be adjusted in three planes and pressure can be applied wherever it is required The patient does not find it uncomfortable to wear, as no head-cap or straps are necessary It requires the close co-operation of a dental colleague for the fixation of the cap splints and at least four sound maxillary teeth for efficient anchorage (Fig 4)

Construction of the Splint (Fig 5)—(A) One brass plate for attaching the extraoral portion to a dental-cap splint The plate carries two arms of brass rod, gauge 4 mm, which are shaped to avoid the upper lip (B) Four modified Clouston-Walker universal joints for connecting A to C by means of straight brass rods (C) Two nasal supports, each consisting of a rubber-cushioned brass plate and arm Small nuts are threaded on to the ends of all the rods so as to prevent the apparatus from becoming disconnected when the universal joints are slackened

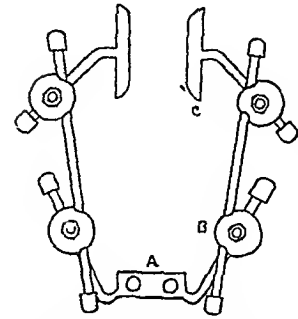


Fig 5—Diagram of nasal splint (For description, see text)

Method of Use—Stage 1 Preliminary to the operation for refracture and reduction, an impression is taken of the maxillary teeth and then a cast-metal cap splint is made and fixed in position on the patient Stage 2 At the end of the operation the nasal splint is attached to the dental-cap splint by means of two 6-B A screws The surgeon places the lateral supporting cushions in the desired position while an assistant locks all four universal joints with a spanner

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The Société Internationale de Chirurgie will hold its twelfth Congress in London on Sept 14-20, with Dr L Mayer (Brussels) presiding Chairman of the English committee is Prof G Grey Turner, and the hon sec is Mr W S Wright The subjects to be discussed are as follows (1) The Operative Treatment of Fractures, by Prof R Danis (Brussels), (2) the Role of Penicillin in Surgical Practice, by Sir Alexander Fleming (London), (3) Recent Advances in Arteriography and Venography, by Prof R dos Santos (Lisbon) (4) Recent Advances in Vascular Surgery, by Prof R Leriche (Paris), (5) the Surgical Treatment of Pulmonary Stenosis, by Prof Blalock (Baltimore), (6) the Role of Vasodilatation in Arterial Diseases, by Dr J Diez (Buenos Aires), (7) the Results of Heparin in Surgery, by Dr Crafoord (Stockholm) (8) Skin Defects their Repair by Flaps and Free Skin Grafts, by Prof T Pomfret Kilner (Oxford) (9) Results of Early Operation in War Wounds of the Lungs, by Dr M Bastos Ansart (Barcelona), (10) Recent Progress in the Treatment of Burns, by a Russian surgeon Translated summaries of the papers will be circulated beforehand Members of the society do not pay an additional fee to attend the congress, but the subscription for the years 1939-47 must be paid The sum is 1,000 Belgian francs Members who have already paid a subscription at a higher rate will be credited with the extra amount, those who have not yet paid their subscription should send it to Dr Paul Lorthioir, 76, rue Faider, Brussels, or to the local treasurer if transfer of funds out of the country is not allowed Those intending to be present should notify Dr L Dejardin, General Secretary 141, rue Belliard, Brussels

Medical Memoranda

Temporary Hydronephrosis

The following case report seems to be interesting enough to merit publication

CASE REPORT

The patient, a corporal aged 25, was admitted to the British Military Hospital, Amriya, on Oct 9, 1946, with a history of urinary dysfunction for three days This consisted of dysuria, a poor stream, and frequency—he passed urine three times nightly He had no penile discharge, and the prostate was slightly enlarged but not tender Pus could not be forced into the external urinary meatus on prostatic massage Full physical examination elicited no further abnormality

Two days after entry into hospital his symptoms were unchanged, but the prostate was now very large and tender, prostatic massage producing a free flow of pus He developed a pyrexia of 101° F (38.3° C), which became intermittent A diagnosis of acute prostatitis was made Direct smears after prostatic massage were negative for organisms on repeated occasions Five midstream urine specimens contained many pus cells, but no other abnormality was found No organisms were grown Three 24 hour urine specimens were negative for acid fast bacilli, both on culture and on guinea pig inoculation The blood urea was 32 mg per 100 ml The white blood cells numbered 10,600 per c mm (polymorphs, 70.5%, lymphocytes, 19.5%, monocytes, 8%, eosinophils, 2%) A skiagram of the chest showed no evidence of a lung lesion



Fig 1—Pycelogram showing gross bilateral hydronephrosis and hydro-ureter

Seven days after the sudden marked prostatic enlargement an intra-venous pycelogram was performed This showed gross bilateral hydronephrosis and hydro-ureter (see Fig 1) He was started on a course of sulphadiazine and penicillin, 40 000 units three hourly, and this was continued for five days During this time his symptoms were unchanged, he still had an intermittent pyrexia and his prostate remained large and tender The chemotherapy produced no apparent result and was discontinued after five days On Oct 28 the prostate was much smaller, the temperature fell and remained normal, and his urinary symptoms became less pronounced He still complained of slight pain on urinating, but his stream was good and he passed urine only once or twice nightly On Nov 11 he was symptom free and the prostate was normal in size A second intra-venous pycelogram showed a great reduction in the size of both renal pelves and well pointed calyces (see Fig 2)



Fig 2—Pycelogram, taken four weeks after Fig 1

We can conclude that the hydronephrosis developed in one week, as the enlargement of the prostate occurred quite suddenly on the third day after admission The pycelogram showing gross hydronephrosis and hydro-ureter made us think that these changes might be permanent It may not be generally appreciated that marked hydronephrosis may occur suddenly and can be reversible if the obstruction is removed early enough These facts are well illustrated by this case

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Reviews

NUTRITIVE VALUE OF FOODS

The Nation's Food. A Survey of Scientific Data. Edited for the Society of Chemical Industry (Food Group) by A. L. Bacharach M.A. F.R.I.C., and Theodore Rendle F.R.I.C. With an Introduction by Sir Joseph Barcroft, F.R.S. (Pp. 349 18s.) London: Society of Chemical Industry, 1946.

Bacharach writes on the relative values for human nutrition of wheat offals eaten as such by human beings and given to milch cows as follows: "But knowledge and understanding of the facts is essential to any nationally sound solution of the problem. In 1939 when Britain had to formulate a food policy, many of the facts discovered since the first world war were scattered throughout the literature, some were little known and others misreported. The Food Group of the Society of Chemical Industry held a series of meetings from 1940 to 1943 at which thirty-two scientists discussed the nutritive value of foods. The papers were published at the time in *Chemistry and Industry*, they have now been revised and collected in this book, and even those who have made a special study of the subject will find it most convenient. The foods considered are eggs, potatoes, other vegetables, cereals, and meat. It is useful to have readily available definite statements about, for example, the distribution of ascorbic acid in potatoes and the effects of peeling on the degree of retention of ascorbic acid. Those who have not had the opportunity to collect and file such data will find information here that is in no other book."

Subjects that the authors discuss and about which many specialists may know little include the effects of cooking on nutritive value and the variations in the composition of meat. It is interesting to learn how great the losses may be when eggs are poached, why potatoes turn black on cooking, and that the temperature inside boiled eggs and roast beef may be too low to kill pathogenic bacteria. The chapters on the biology of potatoes and of fish are interesting, particularly the former, where Dr. Salaman discusses the diseases of potatoes, on which he has done much work. Here we find the answer to the question "Why do we buy Scotch seed potatoes?" Food control is still with us: the facts collected in this book should help to solve its problems.

J. R. MARRACK.

BOVINE TUBERCULOSIS IN MAN

Studies on the Risk of Infection with Bovine Tuberculosis to the Rural Population with Special Reference to Pulmonary Tuberculosis. By Jón Sigurdsson. (Pp. 250 15s.) Copenhagen: Einar Munksgaard, London: Geoffrey Cumberlege, Oxford University Press, 1945.

The studies of K. A. Jensen and his colleagues during the ten years or so before the war showed that in Denmark the distribution of tuberculosis of bovine origin in man corresponded fairly closely to that of tuberculosis in cattle. Following this lead Dr. J. Sigurdsson has investigated what part the bovine tubercle bacillus plays in the causation of pulmonary tuberculosis and how the organism gains access to the human respiratory system. Between 1932 and 1940 a total of 566 strains of tubercle bacilli from patients with pulmonary tuberculosis in different parts of Denmark were typed at the State Serum Institute, Copenhagen. Nearly all the patients were over 15 years of age and over half of them came from Ribe County in the west of Denmark. Ninety-one of the strains were of bovine and 475 of human type. Investigation of the patients' place of residence showed that 40.6% of those infected with the bovine type had lived during the previous two years in rural districts, 28.2% in urban and rural districts, and 3.6% in urban districts. When the history of contact with tuberculous cattle was inquired into it was found that of 67 rural patients infected with the bovine type 94% had been in contact with strongly tuberculous herds, 6% with herds containing healthy reactors, and none with only tuberculin-negative herds. The conclusion reached therefore is that pulmonary tuberculosis of bovine origin in man is essentially an occupational disease resulting from close contact with tuberculous cattle. The results of two

special surveys in country districts supported this view. The author provides evidence to show that infection occurred usually not by ingestion but by inhalation.

This is a most interesting and well documented monograph. It goes far towards clarifying the problem of the mode of infection of the human being with the bovine tubercle bacillus. [This monograph was also commented on in a leading article in the *Journal* of May 24. Ed. B.M.J.]

G. S. WILSON.

CLINICAL PSYCHOLOGY

Modern Clinical Psychology. By T. W. Richards, Ph.D. (Pp. 331 17s. 6d.) New York and London: McGraw Hill Publishing Co., Ltd., 1946.

This book is intended for non-medical psychologists. The author defines clinical psychology as the study of the behaviour of the individual, in contrast to general psychology, which covers the general behaviour of men and animals. He considers that the psychologist should study the normal behaviour and minor maladjustments of the individual, leaving greater disorders to the psychiatrist. However, since their interests must sometimes overlap, the psychologist should know something of mental and even physical disease. He indicates three fields of observation in studying the behaviour of the individual: (1) Motivation, which may be security, wealth, fame or individualization and freedom from social ties; (2) capacity, chiefly intellectual, which may be innately defective or obscured by emotional conflict; (3) control, by which the author means not the Hughlings Jackson concept of individual cortical control of lower impulses but the effect of environmental inhibitions on individual impulses and the efforts to avoid the impasse such as withdrawal of energy or of the whole personality, hysterical manifestations, and obsessive compulsive behaviour.

The rest of the book contains details of how the clinical psychologist may gain information and insight into the personality of his patient. The estimation of capacity necessitates various forms of intelligence test, and these are described. Motivation is related to aggressive drives and especially to sexual adaptation. The author stresses the ubiquity of the homosexual component, which may be expressed apart from overt genital behaviour. He refers briefly to the pervasions as distortions of heterosexual adjustment. In estimating 'control'—the influence of the environment—he relies on the Rorschach tests and claims that they allow the subject to display his reactions to the environment without the intervention of suggestions from the examiner. He also uses the "Minnesota Inventory"—a series of propositions presented to the subject who divides them into 'true and false'. In a chapter on pre-occupation and predisposition he considers the hereditary, constitutional and disease factors influencing the personality, and in a final chapter on readjustment briefly indicates the lines of treatment required—some degree of analysis though not necessarily with the most complete psychoanalytic technique.

The medical reader may ask whether the non-medical psychologist should undertake all this and further, whether the nearly normal subject requires such an elaborate investigation except for purposes of pure research. May not the psychologist be tempted to treat the more severe case? However, the medical psychologist will be interested to read Dr. Richards's clear exposition of methods of investigating the personality.

R. G. GORDON.

PROBABILITY IN MEDICINE

Whether Medicine: From Dogma to Science? By Antony Fidler, M.D. (Pp. 116 6s.) Edinburgh: Thomas Nelson and Sons.

In this little book the author attacks what he calls "causal medicine" and proposes that the "medicine of probability" be substituted for it. In the first part of the book he has no difficulty in demonstrating that the generally accepted idea of causes of disease is unacceptable to the philosopher and that what we take to be a cause is often no more than a deduction from certain 'sense-data'. For example, because insulin is obtained from the pancreas by a chemico-physical process it is a fallacy to conclude that insulin is produced by the gland *in vivo* and the fact that certain lesions follow the inoculation into a guinea pig of a fluid which cannot otherwise be demonstrated to contain bacteria does not conclusively prove that the

fluid contained tubercle bacilli. Many other investigators have made these and similar observations. He shows that medicine and its ancillary sciences are based not on what is proved but on what is probable, and since the estimation of probabilities is the function of the statistical method, we support Dr Fidler when he advocates the more frequent use of statistics in prognosis and therapeutics.

His enthusiasm for numbers leads him, however, to some curious conclusions. He appears to believe that the "medicine of probability" will supplant "orthodox" medicine, yet obviously its true function is to aid it. He expects that his statistical tables, when they are sufficiently elaborated, will enable the physician to use them for the prognosis of disease in the individual. "We imagine that with the development of the numerical scheme we shall be able to predict with a probability bordering on certainty that this particular individual will die within the first week, that that individual will live fifty-one weeks, whereas another will live four years and nine weeks, and so forth." He advises us also to reject the objective criteria of disease—admittedly inadequate though they are—and to substitute for them "the subjective feeling of the person concerned." "Health is a feeling of comfort and 'disease' a feeling of discomfort."

Now when we are accustomed to pay close attention to the patient's story this definition is good, but it is not sufficient. Are we to ignore the x-rayed lung lesion, the silent mitral stenosis and the unexpected up-going toe because our patient makes no complaint? Are we to ignore Freud's work and accept what the patient says at its face-value? Is the man not ill because he protests his well-being? Measurement is the basis of science and the statistical method is but an extension of it. In bidding us abandon the objective approach to our patients as materialistic, Dr Fidler would curb the growth of medical science.

D V HUBBLE

The period of six years which has elapsed since the issue of the fourth edition of L. B. AREY's *Developmental Anatomy* in 1940 and the publication of the new fifth edition (W. B. Saunders Company, 35s) has been marked by important additions to our knowledge of the early developmental stages in human and macaque monkey embryos. Brief descriptions of this work, which have been largely carried out by well-known American embryologists, have been incorporated in the present volume, and simplified reproductions of many of their illustrations are also included. Moreover, allusions have been made to much recent work which has been accomplished in connexion with the determination of sex, and the assumed equal division of distribution of genes which accompanies the splitting of chromosomes, and the bearing of this assumption on heredity. The hormonal actions and control of the anterior pituitary gland, ovarian follicles, and corpora lutea, and the interstitial cells of the testis, are also discussed in connexion with their relation to the reproductive cycle, the induction of ovulation, the functional development of the mammary glands during pregnancy, and also the development in both sexes of the sexual characters. Work on experimental embryology has also received due notice and is discussed in relation to the influence of environment upon growth and variations, induced by such factors as (1) mechanical force, (2) physico-chemical agents, (3) radiations, such as those of heat, x-rays, or ultra-violet rays, (4) chemical, through ionic changes. Considerable changes and improvements have been made in other sections of the book, more especially by the introduction of a large number of explanatory drawings, which make the study of what is sometimes regarded as a difficult subject easy and attractive for a beginner, as well as for more advanced students and medical practitioners.

Ophthalmic Literature a new journal published quarterly by the British Journal of Ophthalmology, Ltd., under the editorship of Sir Stewart Duke-Elder, is a welcome addition to the literature of ophthalmology. It is working in close association with the B.M.A. Abstracting Service. The editor suggests in the preface that ophthalmology has become too isolated a specialty in recent years, this journal should provide that wider background that ophthalmologists are seeking. Abstracts of papers on general medicine, surgery, and pathology that have an ophthalmological bearing will be printed and references included to the current literature in optics, physics, physiology, biochemistry, and so on. The present number opens with a review of penicillin in ophthalmology, characterizing its value as immense and on occasions revolutionary, and concluding with 3½ pages of references. There follow over 200 abstracts from the whole field of ophthalmology. The journal is an excellent production and the matter well displayed and printed.

BOOKS RECEIVED

[Review is not precluded by notice here of books recently received]

The 1946 Year Book of Urology By Oswald S. Lowsley, M.D., F.A.C.S. (Pp. 392, 21s.) London: H. K. Lewis, 1947.
A summary of recent advances in urology.

Management of Common Cardiac Conditions Edited by William G. Leaman, Jr., M.D., F.A.C.P. (Pp. 306, 24s.) London: J. B. Lippincott, 1946.

Subjects discussed include the penicillin treatment of subacute bacterial endocarditis, the medical treatment of hypertension, and psychosomatic aspects of cardiovascular disease.

Sinn und Gehalt der Sexuellen Pervertionen By Dr. M. Boss. (Pp. 130, 12 Swiss francs.) Berne: Hans Huber, 1947.
An investigation into the nature of sexual perversions, with case histories.

Die Bedeutung der Seelenkunde von Klages für Biologie und Medizin By Dr. E. Frauchiger. (Pp. 99, 6.80 Swiss francs.) Berne: Hans Huber, 1947.
An account of von Kries's conception of the soul in biology and medicine.

Die Blutweisskörper des Menschen By P.-D. Dr. med. F. Wührmann and Dr. Ing. Chem. Ch. Wunderly. (Pp. 354, 36 Swiss francs.) Basle: Benno Schwabe, 1947.
The blood proteins in man and their clinical significance.

Metallschädigung der Osteosynthesen By Dr. R. Nicolet. (Pp. 74, 8 Swiss francs.) Basle: Benno Schwabe, 1947.
A study of the damage that may be caused by the metals used in bone fixation.

Nucleic Acid Symposia of the Society for Experimental Biology No. 1 (Pp. 290, 35s.) Cambridge: University Press, 1947.
Papers on nucleic acid by various authors read at Cambridge in July, 1946.

Law Relating to Hospitals and Kindred Institutions By S. R. Speller, LL.B. (Pp. 399, 22s. 6d.) London: H. K. Lewis, 1947.
A textbook on hospital law for hospital administrators, with an introductory outline of English law.

Diseases of the Basal Ganglia and Subthalamic Nuclei By D. Denny Brown, M.D., F.R.C.P. Ed. by H. A. Christian, A.M., M.D., F.A.C.P. (12s. 6d.) Oxford: Geoffrey Cumberlege, 1947.
An account of diseases that result from disturbances of the structure and function of the basal ganglia and subthalamic nuclei.

Endocrine Function of the Hypophysis By H. B. Friedgood, M.D. Ed. by H. A. Christian, A.M., M.D., F.A.C.P. (25s.) Oxford: Geoffrey Cumberlege, 1947.
Describes the development, structure, and function of the hypophysis and its hormones.

Treponematosis By Ellis H. Hudson, M.D., D.T.M.H. Ed. by H. A. Christian, A.M., M.D., F.A.C.P. (12s. 6d.) Oxford: Geoffrey Cumberlege, 1947.
The main theme is that syphilis, yaws, and the 'aphiloids' are caused by the same species of treponeme.

Ulcer of the Stomach, Duodenum, and Jejunum By Ralph C. Brown, M.D. Ed. by H. A. Christian, A.M., M.D., F.A.C.P. (12s. 6d.) Oxford: Geoffrey Cumberlege, 1947.
A clinical account of peptic ulceration, with differential diagnosis and treatment.

Introduction to Surgery By V. A. Frintz, M.D. and H. D. Harvey, M.D. (Pp. 216, 12s. 6d.) Oxford: Geoffrey Cumberlege, 1947.
An elementary introduction to pathology, surgical technique and anaesthesia.

Essentials of Clinical Proctology By M. G. Spiermann, B.S., M.D. (Pp. 238, 21s.) London: William Heinemann, 1947.
Discusses the embryology, anatomy, surgery, and post-operative care related to proctology.

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THE PSYCHOLOGY OF SKILL

The subject of human skill is of interest to the medical profession in two ways. First, one of the commonest results of disease and ill-health is an impairment of skill in the broader sense of that word, while the restoration of skill is one of the chief aims of the physician. Secondly, the practice of medicine is itself a supreme example of human skill, and consequently it is desirable that those who enter the profession should show an aptitude for acquiring that skill and that the instruction they receive should enable them to develop it. If we give the term its widest possible meaning, almost every activity of a living creature is essentially an act of skill. Between the simpler adaptive activities, such as respiration or digestion, and the highest types of dexterity exhibited by the professional man there is merely a difference of degree. But ordinarily when we talk of skilled actions we mean, as Prof F C Bartlett points out, much more than the mere "basic fact" that an appropriate muscular response is called forth by receptor stimulation. We mean "behaviour in which many receptor and effector functions are interlinked, all joined in the pursuit of some task which can be evaluated and even measured in its own right." Thus skilled behaviour usually implies behaviour, that has been acquired or developed by experience. For this reason the study of skill has formed one of the chief topics for research in modern psychology.

In his Oliver-Sharpey lectures, delivered at the Royal College of Physicians at the beginning of the year and printed elsewhere in this and in our previous issue, Prof Bartlett gives an admirable review of recent efforts to study and measure different forms of human skill. The investigations which he describes have for the most part been carried out in the Psychological Laboratory at Cambridge. They have been largely rendered possible by the assistance given by the Medical Research Council, by the Flying Personnel Research Committee of the Royal Air Force, and by the Ministry of Supply. Some of his most arresting and instructive examples are drawn from experiments carried out in the study of the skill required by pilots or bomb aimers. The ways in which this type of operational skill may be affected by undue stress, by neurotic predisposition, and even by temperamental idiosyncrasies, is further illuminated by the reports recently published by the Air Ministry,¹ and discussed in the leading article at page 891

of this issue. Perhaps the chief lesson to be learnt from these experimental studies is that in the past neither the purely physiological approach nor yet the purely psychological approach has proved adequate, progress has been most rapid where the two standpoints have been combined.

All skilled responses involve both grading and timing. Skill whether bodily or mental (and what is popularly called bodily skill is essentially mental in its nature), has "from the beginning the character of being in touch with demands which come from the outside world." Hence one of the most obvious methods for evaluating the efficiency of a skilled action would seem to be to measure the success with which it is graded to meet the specific needs of the external situation. But this, as Prof Bartlett rightly observes, is by no means enough: the timing of the component reactions is far more important. "If we could understand the simple timing mechanisms which the body and mind must be able to use and the way in which they work we should have got much further towards a measure of the degree or level of skill." Nearly one hundred years have passed since Donders first worked out the technique of measuring reaction times. Yet the investigation of reaction times by the classical method has thrown but little light on the nature of the reactions involved in skilled behaviour or on the problem of their measurement. Indeed, until recently, most of what we know of the acquisition of skill, and of the best method of measuring it, was due to the investigations of the educational psychologist working in the classroom, supplemented by studies on animals carried out partly in the laboratory and partly in the field.

On the loss of skill the most brilliant researches are still those initiated by Henry Head, and the experimental methods adopted by Head himself in his studies of aphasic, apraxic, and ataxic patients have formed a suggestive starting-point for many of the ingenious procedures worked out by Bartlett and his colleagues. Some of the conclusions that he has reached have a direct bearing on methods of treatment and re-education. One of the first signs of diminished skill is that the operator, instead of remaining calmly concentrated on his ultimate object, becomes conscious or even self-conscious about the methods he is employing. "there is an increased awareness of what the body is striving to do." Slowing down the action, instead of making it easier as is commonly supposed, often makes it harder. Thus, paradoxically, skill that is threatening to deteriorate can often be restored by an objective increase in the difficulty of the action. To forestall a deterioration an essential condition is a continuing but moderate degree of novelty—a novelty which is great enough to oppose both the peripheral processes of adaptation and the central tendencies to mechanization and yet not so great as to throw the whole process out of gear.

The industrial psychologist, adapting the devices of the educational and clinical psychologist to the problems of selection and training for industry, has still further added to our knowledge. Yet he also has been too greatly engrossed with what is commonly called "repetitive skill

¹ Air Publication 3139 *Psychological Disorders in Flying Personnel* H.M.S.O. 1947

In practical life, when we attempt to assess a man's efficiency, there are two thresholds with which we are really concerned the one is a measure of what the operator is able to do and the other a measure of what he treats as worth doing. Thus, what Lewin and his pupils have termed the "level of aspiration" may be quite as important as the actual level of success. These conclusions have been amply confirmed by a recent report² on work carried out during the war. This report of an "Expert Committee" is the subject of an annotation at page 892 of this issue. The assistance of psychologists in testing and assessing recruits for different types of aptitude and skill proved invaluable in all three Services. Their success has prompted the suggestion that similar methods might usefully be employed in selecting applicants for the Civil Service, for various university courses, and in particular for the medical profession. Such methods have been employed in the past in assessing entrants to the teaching profession, particularly at times when the number of applicants has been far in excess of the number of vacancies. In a paper³ published in our last Educational Number D. H. Smyth described the methods adopted by the Faculty of Medical Sciences at University College, in co-operation with the Department of Psychology, for selecting suitable candidates for the medical profession. The results would appear to agree with those obtained in studies on personnel selection in the Forces. What is called "intelligence"—that is, innate, general, cognitive ability—is the first essential to the acquisition of every form of higher skill. The more complex and the more varied the skill to be acquired, the higher is the intelligence needed to acquire it. Such tests, therefore, have at least a negative value, they indicate which of the applicants are unlikely to complete their courses successfully and to pass the requisite examinations. Tests of this kind will undoubtedly save wastage during the training period. But beyond this they can hardly profess to go. The detection of specialized aptitudes and the assessment of character or personality must be left in the last resort to a competent board of interviewers, and interviewing itself is a highly skilled technique. Above all, what has been found true in the Services will hold good of every profession. "selection and training are not distinct and separable functions, but successive stages in a single procedure."

THE PSYCHIATRY OF WARTIME FLYING

Most of us had some idea of the wartime strain imposed upon the crews of R.A.F. aircraft. We guessed at the high casualty rates, and we imagined the fear, discomfort, monotony, and fatigue which were the essence of so much of their work. Citations of the achievements of such leaders as Cheshire and Edwards gave some insight into the experiences of the members of operational crews, but our understanding was limited by the secrecy which veiled so many of the details of their activities.

The Medical Directorate of the Air Ministry have now published a comprehensive account¹ of the stresses to which air crews were subjected in all types and conditions of flying throughout the war, and the psychological effects of these stresses. "Air Publication 3139" contains two dozen long and thoughtful reports presented to the Air Ministry at different stages of the war. Most of them are detailed clinical and statistical studies of neuroses, with field surveys of their contributory causes carried out by Air Vice-Marshal Sir Charles Symonds and Wing Commander Denis Williams, but there are also statistical analyses of performance by Squadron-Leader D. D. Reid. The work had an urgent practical background and for the most part was concerned with the psychiatric difficulties of men already carrying out duties. There is only one report, though a long one, on the psychological and psychiatric aspects of personality testing and vocational selection.

The size of the problem is indicated by the number of men who had psychological disorders sufficiently severe to call for psychiatric investigation and treatment—nearly 3,000 a year in the last three years of the war. This represented an annual incidence of about 12% in operational bomber crews in the year 1942–3. This means that one in eight of all bomber crews who survived long enough to develop symptoms had them so severely that the squadron medical officer sought psychiatric advice. There seems to have been no pressure upon the medical officer to do this, for an interesting report on the place of the squadron medical officer in preventing neuroses suggests that many more men with psychogenic symptoms were successfully treated on the station than were referred to the psychiatrist. Indeed, a study of the statistical surveys seems to show that the prognosis for return to duty of those who did reach expert psychiatric care was not good, only a little over a third of these men ultimately resumed flying duties. This is no reflection on the psychiatrists, but rather the reverse. It is clear that many of these men were predisposed to breakdown in conditions of operational flying and as they had already shown inability to withstand the hazards of their duties their removal from them seems eminently sensible. There was a close linear relationship between the assessment of the degree of predisposition to neurosis as a response to flying duties and the likelihood of the man being removed from those duties, through failure to recover from the psychological disorder. The degree of predisposition was assessed on the basis of a life history obtained at one interview. The points which related most closely to an assessment of marked predisposition have been analysed in the report on vocational selection.

In other respects also the serving psychiatrist, who has been something of a whipping boy, particularly in the lay Press, comes out of this critical and factual analysis with distinction. Prof. Bradford Hill and Dr. Denis Williams scrutinized statistically the agreement between independent psychiatrists who carried out several assessments without knowledge of each others' findings. They show in over 500 cases that in most instances agreement was fairly close. For instance, there was agreement in 85% of cases as to

² Report of an Expert Committee on the Work of Psychologists and Psychiatrists in the Services. H.M.S.O. 1947.
³ British Medical Journal 1946 2 357.

¹ Psychological Disorders in Flying Personnel of the Royal Air Force from 1939–45. Air Ministry. Air Publication 3139. London: H.M.S.O. Pp. 344. 7s. 6d.

whether flying duties had or had not played a significant part in precipitating the illness. In only 2% of cases was there serious disagreement as to the degree of psychological stress experienced in flying, on the basis of a three-point scale. Incidentally, these specialists were hybrids—neuro-psychiatrists—for there was no sharp distinction between neurology and psychiatry such as was made in the Army and Navy. This detailed study of the psychiatric assessment of predisposition to neurosis also contains much interesting material on the personality traits which were found to handicap a man in flying.

In one important respect these collected reports command attention. The authors have presented a mass of psychiatric material, collected from unusually large groups by many psychiatrists, in an objective, and perhaps in some places, in a rather dry statistical manner. Where facts could not be recorded and subjected to statistical scrutiny opinions have been pooled, and whenever possible their validity has been tested. This rigid method of presentation must surely have had some influence in securing the acceptance of the findings by many practical critics in the R A F who, with a highly objective approach to the problems of air crews, would otherwise have rejected the psychiatric method. The serving officer has always been hostile to any theory unsupported by hard facts, but he must have been influenced in his management of aircrew by the evidence presented here. The statistical method has been extended in these reports by orthodox clinical psychiatric studies, and by descriptions of observations made in operational stations and on squadrons, where observation was reinforced by a synthesis of the statements and opinions of senior officers. The reports are in effect a detailed survey of the psychiatry of fear evoked in a highly specific set of circumstances, circumstances so uniform and primitive that the psychiatric situation is an unusually simple one. Because of this—except in the methods employed—the observations have little direct application to the problems of peace. On the other hand, they present a wealth of knowledge which cannot be accumulated in peacetime but which would have immediate application if men had to fly offensively again, whatever might be the conditions and circumstances in which they had to do so.

PSYCHOLOGY AND PSYCHIATRY IN THE SERVICES

In the early years of the war it was apparent to the authorities that both psychiatrists and psychologists had a considerable part to play in the organization of efficiently operating armed Forces. Psychiatrists were called on to treat men suffering from various forms of nervous and mental disorder and to weed out, either from smaller groups such as task forces or from the Service as a whole, those who were specially prone to nervous breakdown or were otherwise unlikely to contribute to operational efficiency. Psychologists were given duties in such fields as security, camouflage, education, and publicity, and had also to provide tests of intelligence and educability which would allow the most effective allocation of individuals. Both groups of specialists had important duties which were not strictly medical, and which involved close liaison with executive officers. It is not surprising that such a revolutionary innovation led to a good deal of criticism, and that at times both psychologists and psychia-

trists met with hostility and obstruction. Those least acquainted with these specialties were probably easiest to convince of their value. Psychiatrists found on the whole that they met with more criticism from medical than from executive officers. Psychologists met with more criticism from psychiatrists than from medical or executive officers. The pressing need for specialist advisory and other services on the one hand, and this widespread criticism on the other, led to the appointment of an expert committee to examine and report on the whole problem. Its report is now published,¹ and although it is "after the ball is over" the deliberations of the committee and preliminary knowledge of what its recommendations were likely to be must have greased the wheels of Service machinery at a relatively early stage. Now that the report has appeared it is likely to exercise a decisive influence on the future organization of psychological services of all kinds in the Armed Forces.

Approximately a quarter of the report deals with Service psychology and psychiatry under separate headings: their scope, Service applications, the training of staff, their use in the armed forces of other countries. Conclusions and recommendations follow, and the rest of the volume consists of a number of appendices. The conclusions and recommendations provide an emphatic vindication of the value of applied psychology and psychiatry in this field and a justification for their continuance. Perhaps the most important recommendation is that there should be a considerably greater degree of integration of psychology and psychiatry in the Navy, the Army, and the Air Force. It is suggested that there should be an inter-Service body consisting of the senior Service psychologists, and in psychiatry that there should be some recognized meeting-ground at which the senior Service psychiatrists could discuss common problems and make available to one another the procedures developed in each Service. Close contact should be maintained between field psychiatrists in the three Services, and a central co-ordinating and statistical section should be established for bringing the civilian Neurosis Centres of the Emergency Medical Services into closer contact with one another and with the corresponding Service departments. An interesting omission is that no recommendation is made that the work of psychologists should be done under the direction of psychiatrists.

These recommendations are of crucial importance. To take the field of psychology, work of great practical importance was done in fitting men into Service occupations where they would be most efficiently employed, and in defining the qualities and abilities demanded by these various occupations. As a result there was a much more efficient distribution of man-power within each of the Services. Perhaps even more important than this is the distribution of men between the Services, and implementation of the recommendations contained in this report would be a useful first step in this direction. It is also suggested that all officers should receive some training in the psychological aspects of their duties, and some of them a specialist training, that psychologists should be represented on the principal scientific and advisory committees, and that they should participate as observers in battle operations and exercises. Psychiatrists should, in collaboration with psychologists, contribute to appropriate aspects of selection, classification, training, mental hygiene, and the maintenance of morale; they should be employed in screening procedures, and psychiatric training should be given to both medical and combatant officers in these aspects of their duties.

¹ *Report of an Expert Committee on the Work of Psychologists and Psychiatrists in the Services* 1947. H M S O. Price 2s. net.

In criticism of the report it must be said that it is extremely indigestible and lacking in technical value. No attempt is made to give in precise and factual terms a description of the conditions encountered, the actions carried out, and the results observed. There is no discussion of methodological developments. The factual material embodied in the appendices is disproportionate, incomplete, and uncritical. For instance, the use of films for time and motion studies of squads of men at work, which was one of the most interesting applications of psychological methods made by the Army, receives scant appreciation and no description. The differences in the use made by the Army, the Navy, and the Air Force of psychological methods in training speak for themselves but are the subject of only brief comment. The association between the present crime wave and desertion from the Services is now publicly acknowledged, but no suggestion is made that psychological methods of personnel management might be more widely applied in serving units.

BACTERIAL WARFARE

If a third World War occurs it is likely to be even more unpleasant than the 1939-45 disturbance. What with rocket-propelled atomic bombs, radioactive sprays, and poison gases calculated to make mustard gas seem no more distressing than a slight overdose of sal volatile, the next war is hardly likely to see many survivors. To complete this tale of horror we are from time to time solemnly warned that bacterial warfare will be freely used.

The idea that infection can be deliberately spread by evilly disposed persons is not new. When Europe periodically suffered from outbreaks of bubonic plague perfectly innocent persons were almost invariably accused of spreading the disease by poisoning wells, an accusation to which, curiously enough, they often pleaded guilty. In the same way outbreaks of trypanosomiasis, cerebrospinal meningitis, and influenza in tropical Africa are generally attributed to the malignant witchcraft of some unfortunate man or woman. Europe, however, is no more civilized than Africa. Despite the various pacts and international conventions which have outlawed bacterial warfare, it would almost certainly have been used had the Nazi rulers of Germany been convinced that it would favour their grandiose aggression. It is now no secret that shortly before the beginning of the last war an enemy agent actually did attempt to gain possession of a virulent strain of yellow fever virus. In the autumn of 1939 Dr Goebbels, broadcasting from Munich, accused the British of attempting to introduce yellow fever into India by transporting infected mosquitoes from West Africa and liberating them from aeroplanes over Indian cities, the whole scheme being presided over by a high permanent official of the Foreign Office.

There has been so much uninstructed talk of the possibilities of bacterial warfare that a critical and well-documented discussion such as that provided by Rosebury, Kabat, and Boldt¹ is of considerable value. Bacterial warfare, including under that term the use of pathogenic protozoa and viruses, can obviously be directed not only against man himself but against his domestic animals and cultivated crops. The suitability of potential agents can be estimated by criteria such as their infectivity and virulence for the particular host against which the attack is directed, the availability and resistance of the causal agent, its means of transmission, ease of detection and epidemicity, the availability of methods of immunization and

specific treatment, and the possibility of what is called "retroactivity", in other words, the possibility that the infection may involve not only the attacked but also the attackers. Infectious agents to which a given population has never been exposed have obvious points in their favour. Several plant diseases pass this test and are considered eminently suitable for damaging an enemy's food supply, while insects such as the Colorado beetle might well be added to the list. A detailed study of human and animal infections serves to eliminate a considerable number of pathogenic organisms on the grounds that their infectivity is low, their control comparatively simple, or the knowledge available of their methods of spread too meagre. However, some 33 bacteria and viruses remain, among them being agents transmitted by water, air, and insects. Viruses are obviously prime favourites, for at present chemotherapeutic treatment is lacking, and, apart from vaccinia, vaccines are either not available or are manufactured only in quantities quite insufficient for mass immunization. Strains of bacteria rendered resistant both to penicillin and the sulphonamides might be difficult to deal with since it would take some little time to discover that the organisms really were drug-fast. Among the virus diseases which might possibly be used are yellow fever, psittacosis, Rift Valley fever, louping-ill, equine encephalomyelitis, foot-and-mouth disease, rinderpest, fowl plague, and Newcastle disease, while bacterial infections which might be employed include pneumonic plague, brucella infections, anthrax, botulism, glanders, melioidosis, and tularaemia. The causal agent of the last infection would doubtless have to be rendered resistant to streptomycin. Unfortunately these diseases do not exhaust the possibilities, for dried suspensions of rickettsiae could easily be produced in large amounts, while in the Tropics the introduction of an efficient malarial vector, such as *Anopheles gambiae*, into a country where malaria is but mildly endemic might easily give rise, as it did in Brazil, to a devastating malarial epidemic. Biting flies, such as *Stomoxys* which can convey trypanosomes directly by their bites, might well serve to destroy cattle in large numbers by infecting them with *Trypanosoma congolense*. Special attention is directed by Rosebury and his colleagues to those viruses which have given rise to infections among laboratory workers, yellow fever, for instance, caused a large number of such infections before an efficient means of immunization was developed, for the virus can readily pass through the nasal mucosa or conjunctiva and through the apparently intact skin.

It seems doubtful whether at the moment bacterial warfare could be directed against man on a nation-wide scale, but it could well be used against particular cities or isolated strong points during the course of hostilities, and the occurrence of strange epidemics or epizootics before an outbreak of war might so disorganize a people and lower their morale that their will to resist aggression would be seriously impaired.

For bacterial warfare to be an efficient aggressive weapon far more must be known of the effective dose or concentration of different agents when sprayed from the air. Also much more knowledge would be required of the infectivity of finely divided lyophilized bacteria and viruses and of their survival after dissemination from aircraft, with and without smokes and poison gases. Similarly the capacity of spore-forming bacteria to withstand dissemination in explosive projectiles is still unknown. Answers to these and similar questions, however, could readily be obtained.

The control of bacterial warfare by international agreement is even more difficult than the control of air

bombs, it may, in fact, be regarded as impossible. Much, however, might be done to guard against bacterial warfare by intensifying the search for chemotherapeutic agents active against viruses and by the construction of masks which can hold back even the smallest viruses. It also seems somewhat ludicrous that most of the laboratories capable of turning out vaccines on a large scale should be situated in some of the most vulnerable areas in this far too vulnerable island. There is one ray of hope. The factors governing the epidemic spread of a particular organism are as yet but little known. To initiate an epidemic at a particular moment in a given population would be a unique experiment far less certain in its results than the explosion of a mere atomic bomb. In the past attempts to start epizootics among animals have not been very successful. Pasteur,² it will be remembered, produced an epizootic among rabbits with the bacillus of fowl cholera, but a more recent attempt to destroy rabbits in Australia with the virus myxomatosis, a far more specific and deadly pathogen, was completely unsuccessful.

RADIOACTIVE ISOTOPES AGAIN

The Medical Research Council has shown both wisdom and foresight in inviting Prof. Robley D. Evans, of the Massachusetts Institute of Technology, to visit this country. Several British medical physicists^{3,4} were fortunate enough to share in Toronto in some of the wartime applications of the new radioactive isotopes to biological and medical research, and with Sir James Chadwick,⁵ whose interests are not primarily medical, they have since done their best to convey to others some idea of the possibilities which have been opened up by these new techniques. No British physicist, however, would claim to equal either the length or variety of the combined experience of Prof. Evans and Dr. J. G. Hamilton, of the Radiation Laboratory, Berkeley, California, who accompanies him. Prof. Evans combines in rare degree the qualities of modesty and enthusiasm, and he has allowed himself to be worked as hard as the most exacting and appreciative of hosts could have desired. The most valuable results of such a visit must be personal and intangible, for, in the application of any new technique, however simple in principle, there are inevitably points of detail and procedure which can be satisfactorily communicated only by word of mouth. Such contributions cannot be readily measured or assessed, but at the conclusion of his lecture at the Royal Institution last week he received an ovation of a kind which can have been given to few others in that historic theatre.

Four points may be picked out from his address. The first is an illustration, by graphic simile, of the power of the method. If all the atoms in a tumbler of water could be labelled, as with radioactivity, and then tipped into the sea and there left to distribute themselves about the oceans, the number of atoms so marked which one might later expect to recover in any random tumblerful of sea-water from any part of the world would be 5,000. The illustration was not claimed to be original, but it brings out, as many more lengthy explanations might fail to do, why it is that such small quantities of radioactive substances will go such a long way in research. The second point, which is connected with the first, is that human subjects have little to fear from such experiments knowledgeably conducted. After seven years of research on dogs, and some 300 experiments on human beings, the safety factor is

regarded as sufficiently established. Moreover, it has been algebraically expressed in a simple formula which with knowledge of the necessary physical constants, can be applied to any particular radio isotope. Alternatively, it may be said that an additional intensity of radiation equivalent to one-half of the normal cosmic ray intensity at sea-level, to which the body is in any case permanently exposed, is enough for research purposes.

The third point is one of method and equipment. In describing in some detail the now classic investigation of the efficacy of different preservatives of stored blood and the activity of such blood after transfusion,^{5,6} which Sir James Chadwick has already made familiar in general terms, Prof. Evans must have astonished many by his account of the extent to which mechanization and standardization of procedure have been carried. In a suitably equipped laboratory it is possible to place two dozen specimens for radioactive determination on a mechanically operated turntable, to indicate on a series of punched cards the percentage accuracy to which each is to be assayed, and then leave the machine to "count" for periods suitable to each, and work out and record in permanent form the numerical answers. Two trained assistants can prepare and put through more than two hundred samples during an eight-hour day. The lesson is not one which the Medical Research Council is likely to ignore. The number and complexity of possible investigations is so great, using these new methods, and the numerical computation which may be necessary so considerable, that the saving of time of responsible investigators, and the virtual ensurance of standardized procedures, must in themselves make an important contribution to success.

Finally, Prof. Evans proceeded some little way beyond the published record in describing the results which have been obtained in the treatment of Graves's disease, first with the original "12-hours" radio-iodine, and later with the more convenient and stable "8-days" variety. Using the former, 65 cases have been treated, of which 27 have been published.⁷ With the latter a further 29 have so far been treated. Results are described as uniformly encouraging, with no unfavourable results at any stage. Moreover, the hyperthyroid activity of cases showing only a transient response to thiouracil has been reduced to a normal level by radio-iodine, and so continued without subsequent relapse over considerable periods. By comparison with the results of partial thyroidectomy the return to normality is relatively slow, and biopsy has been found of value as a routine procedure. The therapeutic case for radio-iodine has clearly been strengthened by further experience, notwithstanding, with the possible exception of lympho-sarcoma, that the opposite has been the case with radio-phosphorus.⁸ It may be recalled that some 415 artificial radio isotopes are now known, including at least one for each of the chemical elements, and, like others whose views command respect, Prof. Evans has left no doubt that their most valuable contribution is likely to be in research.

The generous donor who endowed the Commonwealth Travelling Professorship in Medicine announced at the Royal College of Surgeons of England last November is Mr. Arthur Sims, a prominent New Zealand industrialist with commercial interests in this country. Sir Hugh Cairns, Nuffield Professor of Surgery in the University of Oxford and a member of the Council of the Royal College of Surgeons of England, has been unanimously elected the first Arthur Sims Travelling Professor.

² *Ann. Inst. Pasteur* 1888 2 1

³ Mitchell J. S. (1946) *British Journal of Radiology* 19 481

⁴ Mayneord W. A. in preparation

⁵ *British Medical Journal* 1947 1 263

⁶ Publication in progress

⁷ Chapman and Evans (1947) *J. Amer. med. Ass.* 131 86

⁸ *British Medical Journal* 1947 1 259

INTERNATIONAL CONFERENCE OF PHYSICIANS

The opening session of an International Conference of Physicians will be held at the Royal College of Physicians of London (Pall Mall East, S.W.) on Monday, Sept 8, at 11 a.m., and the conference will continue daily at various institutions and hospitals in London until Friday, Sept 12. In addition to the scientific programme, outlined below, a social programme, including a Government luncheon, a banquet in the Guildhall and a reception at the Royal College of Physicians of London is being arranged.

The organizing secretary of the conference is Dr G B Mitchell Heggis, FRCP, to whom applications for admission, which is confined to medical practitioners and is by invitation only, must be made, care of the Royal College of Physicians of London.

Scientific Programme

The conference has been arranged in eight sections, and the subjects for discussion and the names of the speakers are as follows

SECTION OF CARDIOLOGY

President Sir Maurice Cassidy *Secretary* Dr K Shirley Smith, 122, Harley Street, London, W1

Sept 9—Surgery of Congenital Heart Disease (with Section of Paediatrics), Dr Helen Taussig (U.S.A.), Dr C Crafoord (Sweden), Dr J W Brown (Britain), Dr A R Gilchrist (Britain), Mr O S Tubbs (Britain), Mr I Holmes Sellors (Britain)

Sept 10—Pulmonary Heart Failure (with Section of Disorders of the Chest), Dr J McMichael (Britain), Dr P H Wood (Britain), The Clinical Value of Chest Leads, Dr F Wilson (U.S.A.), Dr C W Bain (Britain)

Sept 11—The Use of Phonocardiogram in Clinical Cardiology, Dr William Evans (Britain)

Sept 12—Repetitive Paroxysmal Tachycardia, Dr J Parkinson (Britain), Dr C Papp (Britain), Sympathectomy for Hypertension, Preliminary Experiences, Dr G Bourne (Britain), Tomography in the Study of Cardiovascular Disease, Dr J H Wright (Britain), Dr E Tisceno (Britain)

SECTION OF DISORDERS OF THE CHEST

President Sir Robert Young *Secretary* Dr J G Scadding, Brompton Hospital, London, S.W.3

Sept 9—Transient Pulmonary Infiltrations, Prof W Löffler (Switzerland), Dr J L Livingstone (Britain)

Sept 10—Pulmonary Heart Failure—Acute and Chronic (with Section of Cardiology) Dr W D W Brooks (Britain)

Sept 11—Sarcoidosis (with Section of Dermatology), Dr C Hoyle (Britain), Dr C Cameron (Britain)

Sept 12—BCG Vaccination (with Sections of Social Medicine and Paediatrics), Dr J Heimbeck (Norway), Dr W H Tytler (Britain)

SECTION OF DERMATOLOGY

President Sir Archibald Gray *Secretary* Dr M Sydney Thomson, 106, Harley Street, London, W1

Sept 9—Vitamin D in the Treatment of Cutaneous Tuberculosis Dr J Chirpy (France), Dr G B Dowling (Britain), Dr S Lomholt (Denmark)

Sept 10—Clinical Meeting

Sept 11—Sarcoidosis (with Section of Disorders of the Chest), Prof L M Pautrier (France), Prof H Haxthausen (Denmark), Dr A H T Robb-Smith (Britain), Dr W Freudenthal (Britain)

Sept 12—Scurvy and Pediculosis, Dr P G Stock (Britain), Dr K Mellanby (Britain), Dr G H Percival (Britain), Dr P A Buxton (Britain)

SECTION OF NEUROLOGY

President Dr Gordon M Holmes *Secretary* Dr Macdonald Critchley, National Hospital, Queen Square, London, W.C.1

Sept 9—Malnutrition of the Nervous System, Dr W Russell Bruin (Britain), Prof J R Marrack (Britain), Dr M A Ruggs Gunn (Britain), Mr T Keith Lyle (Britain), Dr F E Posthumus Meyjes (Holland)

Sept 10—The Role of the Pyramidal System in Movement, Dr F M R Walshe (Britain), Dr E G T Liddell (Britain), Prof J A Barre (France), Dr Ludo van Bogaert (Belgium), Prof Mogens Fog (Denmark), Dr P van Gehuchten (Belgium)

Sept 11—Spinal Fluid and Cerebral Fluid—A Comparison Prof M Alajouanine (France), Altered Melody of Language (Accent) in Extrapyramidal Lesions and in Aphasia, Dr G H Monrad Krohn (Norway), Autodermography, Dr R Ceray (Czechoslovakia), Maternal child Incompatibility Problem in Relation to the Nervous Sequelae of Haemolytic Disease, Prof D F Cappel (Britain), Pathological Anatomy of Kernicterus, Dr J G

Greenfield (Britain), Operative Treatment of Myasthenia Gravis, Mr Geoffrey Keynes (Britain), The Use of DFP in Myasthenia Gravis, Dr Andrew Wilson (Britain)

Sept 12—The Functions and Connexions of the Frontal Lobes (with Section of Psychiatry), Dr W Ritchie Russell (Britain), Prof W E Le Gros Clark (Britain), Prof K Henner (Czechoslovakia), Dr G de Morsier (Switzerland)

SECTION OF PAEDIATRICS

President Sir Leonard Parsons *Secretary* Dr R C Lightwood, 86, Brook Street, Grosvenor Square, London, W1

Sept 9—Surgery of Congenital Heart Disease (with Section of Cardiology)

Sept 10—Haemolytic Anaemia, Dr S van Creveld (Holland), Dr I A B Cathie (Britain), Cathepsine as a Gastric Enzyme, Prof E Freudenberg (Switzerland), Steatorrhoea, Prof A C Frazer (Britain), Amino acids in the Feeding of Infants, Dr Rothe Meyer (Denmark), Dr J M Smellie (Britain)

Sept 12—BCG Vaccination (with Sections of Social Medicine and Disorders of the Chest), Prof A Wallgren (Sweden)

SECTION OF PSYCHIATRY

President Dr Bernard Hart *Secretary* Dr R D Curran, 6, Devonshire Place, London, W1

Sept 9—Genetics in Relation to Mental Deficiency, Dr J A Fraser Roberts (Britain), Genetics in Relation to Mental Disorders, Dr Eliot Slater (Britain), Dr F J Kallman (U.S.A.), Prof T Sjogren (Sweden)

Sept 10—Psychodynamics of Depression, Dr T A Munro (Britain), Dr W Clifford Scott (Britain)

Sept 11—Social Surveys (with Section of Social Medicine), Prof E Stromgren (Denmark), Dr E O Lewis (Britain)

Sept 12—The Functions and Connexions of the Frontal Lobes (with Section of Neurology), Dr G Rylander (Sweden), Dr W Mayer Gross (Britain)

SECTION OF SOCIAL MEDICINE

President Sir Wilson Jameson *Secretary* Dr J A Charles, Hillside House, Stanley, Co Durham

Sept 9—Care of the Aged and Infirm, Sir Ernest Rock Carling (Britain), Dr A Hojer (Sweden), Dr J Frandsen (Denmark)

Sept 10—Social Medicine in the Curriculum, Dr Jon B Grant (U.S.A.), Prof J A Ryle (Britain), Prof J M Mackintosh (Britain), Prof Axel Strom (Norway)

Sept 11—Social Surveys (with Section of Psychiatry), Dr C P Blacker (Britain)

Sept 12—BCG Vaccination (with Sections of Disorders of the Chest and Paediatrics), Prof G S Wilson (Britain)

SECTION OF GENERAL MEDICINE

President Lord Moran *Secretaries* Prof G W Pickering Ninnings, Denham Lane, Chalfont St Peter, Bucks, Dr M L Rosenheim, University College Hospital, Gower Street, London, W.C.1

Discussions are being arranged on the following subjects

Sept 8—Penicillin

Sept 11—Infective Hepatitis

Sept 12—Pain

BIRTHDAY HONOURS

The names of the following members of the medical profession were included in a Birthday Honours List published in *Supplements* to the *London Gazette* on June 12

Privy Counsellor

The Hon Sir GODFREY MARTIN HUGGINS KCMG CH, FRCS Prime Minister of Southern Rhodesia since 1934

K.C.B. (Military Division)

Surgeon Vice-Admiral HENRY ST CLAIR COLSON CB, CBE MB, BS, RN

K.C.V.O.

Sir HUGH LETT Bt, CBE, DCL, MB, FRCS President of the British Medical Association

Surgeon Rear-Admiral HENRY ELLIS YEO WHITE CVO, OBE, MD, FRCS Ed, RN Honorary Surgeon to the King

Knighthood

WILLIAM NORWOOD EAST MD, FRCP For services to the study of criminal psychology

DAVID KENNEDY HENDERSON MD, FRCP, FRFPS Professor of Psychiatry in the University of Edinburgh

ERNEST LAURENCE KENWAY MD DSc FRS, FRCP
Emeritus Professor of Experimental Pathology in the University of
London. Lately Director of the Chester Beatty Research Institute
of the Royal Cancer Hospital London

ALEXANDER McCALL MD For public services
ARCHIBALD HECTOR MCINDOE CBE, MS FRCS FACS
Civilian Consultant in Plastic Surgery to the Royal Air Force
Colonel GEORGE REID McROBERT CIE, MD, FRCP, IMS
Inspector General of Civil Hospitals, Bihar. Lately Professor of
Medicine, Madras Medical College, and Physician, Madras General
Hospital

THOMAS WILLIAM MEAGHER MB, BS Lord Mayor of the City
of Perth Western Australia, 1939-45 For public services
ROBERT ARTHUR YOUNG CBE, MD, FRCP Consulting
Physician, Middlesex and Brompton Hospitals

C B (Military Division)

Major General WILLIAM FOOT MC MB, BCh, late AMS
Honorary Physician to the King

C.M.G

JOHN MALCOLM MD Emeritus Professor of Physiology in the
University of Otago, New Zealand For services to the medical
profession

Colonel PHILIP GRAHAM STOCK CB, CBE, MB, FRCP
Medical Officer, Ministry of Health

C.I.E

Colonel LLOYD KIRWOOD LEGER OBE, MRCS, LRCP,
IMS Inspector General of Civil Hospitals and Director of Public
Health, Central Provinces and Berar

C.V.O

GEOFFREY SYDNEY TOOO OBE, MB, FRCP Medical Super-
intendent, King Edward VII Sanatorium, Midhurst Sussex

C.B.E (Military Division)

Temporary Surgeon Captain ROBERT GREGORY HENDERSON MD,
RNVR

C.B.E (Civil Division)

GEORGE LINDOR BROWN MB, ChB, FRS For services to
medical research in the Royal Navy

HENRY ANSTEY COOKSON MB, FRCP Ed, FRCS Ed For
public services in the County of Durham

ERIC WILFRED FISH MD DSc, DDS Honorary Dental
Surgeon, St Mary's Hospital, London, W

CONRAD TRELAWNEY FITZGERALD MD Medical Health Officer
for the Department of Public Health and Welfare, Trinity East,
Newfoundland

JAMES ANDREW GUNN DM, DSc FRCP Chairman, British
Pharmacopocia Commission Professor of Therapeutics in the
University of Oxford and Director of the Nuffield Institute for
Medical Research

SAMUEL THOMPSON IRWIN MCh Belf, FRCS Ed Chairman,
Northern Ireland Medical War Committee

ALOWYN BROCKWAY STOKES BM, BCh Lately Member of
National Advisory Council on the Employment of the Disabled

KHONG KAM TAK MBE, MB, BCh For public services in
the Malayan Union

O.B.E (Military Division)

Surgeon Commander EDWARD WILLIAM BINGHAM MB, BCh
RN

Lieutenant Colonel (Acting) CHARLES DAVIO BRUCE MB, ChB
RAMC

Lieutenant Colonel FREDERICK GRACE SMITH MBE, ED
Officer Commanding Ceylon Medical Corps

O.B.E (Civil Division)

VERNON FITZCLARENCE ANDERSON MD, Colonial Medical
Service Senior Medical Officer, British Honduras

Major HUBERT JOSEPH CURRAN MB, BCh, IMS Principal
Medical School Darbhanga Bihar

CATHERINE HARROWER MB, ChB Member of the Glasgow
Burg Insurance Committee

DAVID WINN HOOGLASS LMSSA, Colonial Medical Service
Lately Principal of the Central Medical School, Suva, Fiji

NORMAN HOWARD-JONES MRCS, LRCP Director, Medical
Department, British Council

Lieutenant Colonel ROBERT KELSALL DSO MD Chairman
High Wycombe Medical Board

DAVID JAMES MASTERTON MacKENZIE MBE MB ChB
Director of Medical Services, Bechuanaland Protectorate

WILFRED ERIC STANLEY MERRETT BM BCh, Colonial Medical
Service Acting Principal of the Medical School and Lecturer in
Physiology, Nigeria

PATRICK JOHN MONAGHAN MB, BS Chief Medical Officer
Western Samoa

Lieutenant Colonel WILLIAM THOMAS TAYLOR MB BCh, IMS
Deputy Director General, Indian Medical Service (Stores)

Honorary OBE (Civil Division)

KRIKOR SOLOMON KRIKORIAN Senior Medical Officer Palestine
Miss SOO KIM LAM LMS For public services in the Malayan
Union

MBE (Military Division)

Major JOHN COLSTON BABBAGE MB, ChB, RAMC

MBE (Civil Division)

KRISHNALAL VITHALAS AOALJA MB, BS For public and social
welfare services in Kenya

Captain NUGENT DAVY JEKYL MB, BChir, IMS Agency
Surgeon and Medical Officer, Central State Scouts North West
Frontier Province

Captain GERALD EDWARD McDONALD I.A.M.C.
ROBERT SCOTT REID MB, ChB Admiralty Surgeon and Agent
LAURESTON HEWLEY WHARTON, MRCS, LRCP Medical
Superintendent, Leprosy Hospital, British Guiana

VISIT TO CZECHOSLOVAKIA

Thirty British medical men were the guests of the Government
of Czechoslovakia from May 15 until June 1 and received an
enthusiastic welcome. The general impression gained was that
Czechoslovakian medicine was turning to the West, and in
particular to Great Britain, for help and inspiration in the
task of reconstruction. The Department for Diseases of the
Chest at the Bulovka Hospital, Praha, was visited. It is well
equipped and has a fine x-ray installation. The lines on which
treatment is carried out are similar to those at the best chest
centres in Britain. Both at the university clinics under Prof
Charvat and Prof Jurasek and also at the Bulovka Hospital it was
encouraging to see the high standard of medicine and surgery
and the enthusiasm of the young postgraduate medical per-
sonnel, a high proportion of whom spoke English. They still
need more English textbooks on medicine and surgery.

There is a shortage of nurses, mainly due to the higher wages
paid in industry. Their hospitals are also handicapped for
accommodation, with the result that beds are too close
together. Their practice of general anaesthesia is somewhat
out of date, but this is realized and they are making great
efforts to advance, as many postgraduate students as possible
are coming to Britain. The teaching staff is rather strained
at present training undergraduates to fill a national health
service.

Every spa is a first class health resort situated in beautiful
surroundings. The treatments are very little different from
those given before the country was cut off from Western
research hence they are still characterized by a certain
empiricism. Many of these health resorts are directly
supported by the Czechoslovakian Government and are
being used for the rehabilitation of workers of all classes.
All the patients seen appeared to be very content. Their diet
would certainly cause envy in similar institutions in Britain.
Tuberculous patients were getting as much meat in one day
as patients in England get in a week, and the meals were well
cooked and served.

ROYAL MEDICAL BENEVOLENT FUND

The annual general meeting of the Royal Medical Benevolent
Fund was held on June 5, when Sir Alfred Webb Johnson was
elected president, Dr C L Batteson, Honorary Treasurer,
and Mr V H Riddell, Honorary Secretary. A vote of thanks
was proposed from the chair, and unanimously carried, to the
British Medical Journal for the help extended to the Fund
during the past year, and especial thanks to it for the pub-
licity afforded to the Christmas Gift Fund and to Westmoreland
Lodge.

LADY TATA MEMORIAL TRUST

International Awards for Research in Blood Diseases

The trustees of the Lady Tata Memorial Fund announce that, on the recommendation of the scientific advisory committee in London, they have made the following awards for research in blood diseases, with special reference to leukaemia, in the academic year beginning Oct 1

Grants for research expenses and assistance—Dr Jorgen Bichel (Denmark), for work at Aarhus, Denmark, Dr Pierre Cazal (France), for work at Montpellier, Dr Pierre Dustun (Belgium), for work in Brussels, Dr Peter A Gorer (Great Britain), for work in London, Dr Maurice Guérin (France), for work in Paris, Dr Josef Japa (Poland), for work in Cracow, Dr Edith Paterson (Great Britain), for work in Manchester, Prof Edoardo Storti (Italy), for work at Pavia, Dr Johannes Clemmesen (Denmark), for work in Copenhagen Dr Tage Kemp (Denmark), for work in Copenhagen

Scholarships (for whole-time or part time research)—Dr Simon Iversen (Denmark), for work in Copenhagen, Dr Claus Frederik Munk Plum (Denmark), for work in Copenhagen, Dr Guido Hilmer Rafael Totterman (Finland), for work mainly in Helsinki

COLONIAL MEDICAL RESEARCH STUDENTSHIPS

On the recommendation of the Colonial Medical Research Committee, the Secretary of State for the Colonies has instituted ten research studentships for graduates in medicine and cognate sciences who desire by this means to prepare themselves for research work in tropical medicine and related subjects. The studentships will entitle the holders to an allowance at the rate of £260 per annum, free of income tax, and normally will be held for a period of two years subject to satisfactory report at the end of the first year's work from the supervisor, who will be nominated by the committee. They will be awarded on the advice of the committee and will be tenable at any approved university or other appropriate institution. If a student should cease his training before the expiry of the term for which his allowance was granted he will be required to refund any money paid to him for a period subsequent to the date on which he ceased his training. Any award will be terminable at any time in the absolute discretion of the Secretary of State. Candidates should be British subjects and graduates of British universities. Students successfully completing their courses will be offered posts in the projected Colonial Medical Research Service, details of which are not yet fully worked out, but they are intended to include superannuation provisions analogous to the federated superannuation system for universities and interchangeable with it. In view of possible employment overseas later, candidates for studentships may be required to undergo medical examination. Application should be made, through the head of the candidate's department, to the Secretary, Colonial Medical Research Committee, c/o Research Department, Colonial Office, London SW1 and should include, in addition to details of the candidate's academic record, some indication of the subject preferred.

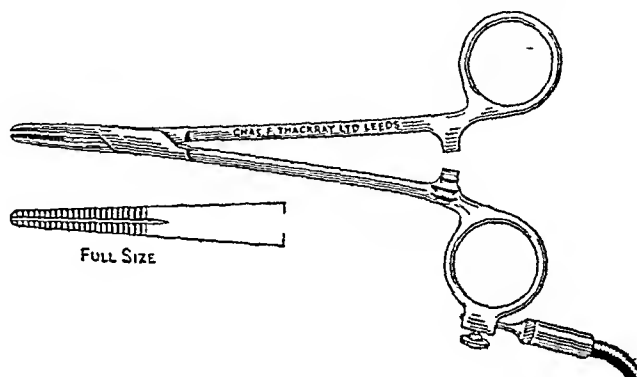
At a meeting of the directors of the Society for Relief of Widows and Orphans of Medical Men, held on April 9, with Dr R A Young, president, in the chair, the deaths of one member and four widows in receipt of grants were reported. One widow had been on the funds for over 30 years and had received £2,300 in grants. A first application for relief was received from the widow of a member, and a yearly grant of £50 from the ordinary funds and £25 from the Bruckwell Fund were voted to her. Dr E J Blackett, secretary of the society for 42 years tendered his resignation, which was accepted. The annual general meeting will be held on Wednesday, May 21, at 5 p.m. Relief is granted only to the widows and orphans of deceased members. Membership is open to any registered medical man who, at the time of his election is residing within a twenty mile radius of Charing Cross. Full particulars may be obtained from the secretary, 11, Chandos Street, Cavendish Square, W 1.

Preparations and Appliances

DIATHERMY HAEMOSTATS

Mr WILSON HEY FRCS, Manchester Royal Infirmary, writes

For fifteen years almost all my patients at operation have been connected to some form of diathermy apparatus with the active terminal connected to haemostats of various types. The usual type is shown in the diagram and is in three sizes, $5\frac{1}{2}$ -, 7-, and 9-inch, the shortest for surface and the longest for deep work. The blades are fine-pointed because the bleeding vessels must be picked up lightly and finely so as to leave only a minute carbon mass. The central groove is for the insertion of a fine round-bodied needle which enables the instrument to be used for cutting, the smallest haemostat is not grooved. They are all of the Moynihan pattern with box joints and of stainless steel. To prevent the cable wire from



breaking at its junction with the connecting metal terminal both should be encased by a two-inch piece of rubber tubing. Attempts to cover the whole instrument except the points with some boilable insulating material have so far proved unsatisfactory. Consequently both the patient's body and the surgeon's hands must be insulated at all points liable to contact with the haemostat, which is clipped to a towel when not in use. The instrument will quickly discover punctures in the surgeon's glove although it can be held with impunity if grasped firmly by the naked hand. The importance of a close, even fitting of the inactive electrode, and of the protection of the patient from contact with all metal parts of the table should be known by every diathermy user. The current is controlled by the surgeon's foot.

Most named vessels and a few unnamed ones near the larger vessels should be ligated. The surgeon using only one haemostat throughout an operation naturally saves innumerable movements. He can in a few seconds seal a dozen or more vessels caught by his assistants. The saving of time, labour, and bleeding in many operations, such as the radical breast operation, is enormous. More perfect haemostasis is obtained in any wound, because the surgeon takes the trouble to stop every tiny oozing point which he could not, or would not, trouble to deal with by ligature. Bleeding in remote and hidden places can be more easily sealed. A radical breast amputation is done in a third less time, with less exertion, bleeding and shock, the average number of ligatures in the radical breast operation is twelve, in a subtotal thyroidectomy six. With an efficient assistant working his own diathermy only half a dozen haemostats are necessary for any operation.

In over 1,000 prostatectomies no single ligature has been used. One result is that the catgut bill for the theatre will diminish by more than 90%. Asepsis is more certain if vessel-sealing is caused by a minute fragment of sterile carbon than by a massive ligature, whether absorbable or unabsorbable. Very little practice is required.

These instruments are made for me by Messrs Chas F Thackray, Ltd, of Park Street, Leeds. They also make for me Stiles tissue forceps and Scott's long tonsillar forceps with similar connexions, but any type of haemostat can be modified for diathermy.

Correspondence

Calories

SIR—Prof J R Marrack's letter (June 7, p 821) is a welcome contrast to what was said in 'another place'. A further objection to the use of global statistics is that all the "calories" legally assigned to human stomachs do not reach them by a direct route. It is even said that some hardened criminals feed their chickens on potatoes. Whether this is a mere debating point or an appreciable source of error I do not know.

One might have hoped that 'calories,' like foreign affairs, would have been kept out of party politics, this has not been done—with potentially serious consequences. It may not be true that Government departments pigeon-hole scientific reports the contents of which are disagreeable to departmental chiefs but it *might* be true, and a contributor to your editorial columns quoted (April 19, p 535)—but without indication of source—some ominous sentences. Indeed, quite apart from political emotions most of us retain something of a child's pleasure in secrets. During the late war I sent in to an official committee a note on a small statistical matter. A few days later I extracted from a nest of sealed envelopes a numbered copy of my little note which I was instructed to peruse and return to headquarters by a similarly romantic route. For quite 30 seconds I was so thrilled that I could almost believe that the binomial theorem was my own invention, a deadly secret weapon I was aiming at the enemy's heart.

Dietary samplings on a sufficient scale to be valuable can only be undertaken by public authorities—central or local. It may still not be too late to revive the waning public faith in official statistics of "calories." In the first place an accurate and readable account of the way in which the official surveys are carried out should be prepared. I have little doubt that an accurate statement is already printed in some official document, but official accounts of statistical investigations tend to be either too curt or too technical for a general reader. The best plan would be to circulate a draft to the editors of the medical and other serious weekly journals. The final product should be well advertised. Then the monthly or quarterly statistics of 'calories' should be sent to all the newspapers whether they show improvement or deterioration. No doubt political half-wits on both sides would try to make capital out of rises or falls, but Ministers and Civil Servants always underrate the intelligence of the general public—naturally enough, because both are the prey of talkative fools and mistake a biased for a random sample of the public. If Government departments are too haughty and too secretive to do this, perhaps some of the more important local authorities could take on the work.

A statistical veteran is bound to have a (rather pathetic) faith in the efficacy and popular appeal of statistics, but almost anything would be better than the partisan handling of a subject of universal interest to which Prof Marrack has drawn attention. I need hardly say that the faults have not been only on one side. In fact if I had to pick out the worst and most reckless statements I—but this is to pass from statistics to politics, of which I am an even worse judge than of statistics—I am, etc.,

MAJOR GREENWOOD

Dried Egg and Salmonella

SIR—In the leading article 'The Egg as Poison' (April 5, p 456) reference is made to the isolation by Gordon and Buxton¹ of *Salm typhimurium* from ducks and *Salm thompson* from chickens. We would point out that in addition to these two salmonella types and to *Salm pullorum*, *Salm gallinarum* and *Salm enteritidis* the following have also been recorded²: *Salm californica*, *Salm bareilly*, *Salm monteideo*, *Salm anatum* and *Salm london*. Recently, we have also isolated *Salm bovis moribundans* from a serious outbreak of disease in chicks. There is little doubt that the presence of these latter types is associated with the importation into this country of American spray-dried egg which is known to have been fed to poultry either directly or indirectly in canteen or camp swill. The incidence of these salmonella types in poultry is very similar to that recorded³ in

man and pigs during the same period and an increase of over 200% in the incidence of avian salmonellosis was reported⁴ during the years 1941-4.

Unlike *Salm pullorum* these other salmonella types do not usually infect the ovary of the adult bird, and in a study of the pathogenesis of *Salm thompson* (in press) it has been shown that the infection of egg meat generally occurs only when conditions of egg storage are suitable to allow the penetration of the organism through the egg shell. It is probable, therefore, that the danger to public health from the consumption of clean chicken eggs is almost negligible.—We are, etc.

R F GORDON
A BUXTON

Weybridge Surrey

REFERENCES

- ¹ *Mon Bull Emerg Publ Hlth Lab Serv* 1945 4 46
- ² *J Hyg Camb* 1945 44 179
- ³ *Med Res Cncl Rep*, 1947 No 260 London
- ⁴ *Vet J* 1946 102 187

Treatment of the Maladjusted Child

SIR—I agree with the statement of Drs Elizabeth G W Barker and W Liddell Milligan in their article (June 7, p 805) that in the treatment of a maladjusted child removal from home is sometimes essential for a time. However, I cannot feel that admission to an adult mental hospital is the correct solution for this problem. If adequate hostels are provided by local authorities in connexion with their child guidance services, only a very few children cannot be given the accommodation they need. These few are those whose behaviour is too grossly disturbed for hostel or foster-home, and they are usually psychotic or pre-psychotic cases.

But according to the paragraph indicating the sources of the children admitted to St James's Hospital such cases only amount to 4% of their admissions. To admit other types of maladjusted children to an adult mental hospital seems to be just the state of affairs one wishes to avoid at all costs. If they could go to a special children's admission ward or villa it might not be so bad. But the article states "Some children were treated for a time in the male or female admission wards or villas, but the majority were housed in a special wing of the female convalescent villa." Reference is made to an annexe where children are transferred after a preliminary period of observation and, if necessary, treatment in the main hospital. This must mean the children mixing with various types of acute and chronic psychotic adults, which seems to be highly undesirable.

I would suggest that psychiatrists should stimulate local authorities to open more hostels for maladjusted children rather than open the doors of the adult mental hospital admission wards to children who, though maladjusted, do not show psychotic features. However, other mental health services would do well to follow the example of Portsmouth and make some special provision for the more seriously disturbed child who cannot be cared for in a hostel—I am, etc.,

Nottingham

W H WHILES

SIR—It is unfortunate that the work of seven years on 'Inpatient treatment of the Maladjusted Child' should have been reported by Drs Elizabeth G W Barker and W Liddell Milligan (June 7, p 805) in terms so vague that its evaluation is impossible. Ages, we are told, "varied between 4 and 15 years," but the majority admitted were between 7 and 11 years old, with a peak at 9 years, etc. This tells us almost nothing about the scatter. In this context, "the majority" might be anything from 51% to 98%. Period in hospital is similarly treated. The paragraph on intelligence adds little but inaccuracy to the general vagueness. The average intelligence was not unnaturally above the normal after the lower end of the distribution curve had been gratuitously eliminated. No mention is made of the test used. From the girl of 13 with an IQ of 170 I think one can safely infer that the test used was Cattell Scale III. It would have been less misleading if this fact had been mentioned, since IQs on this test particularly at the upper end of the scale are not comparable with other tests. Though Cattell's scale does go up to 20 years further than most psychologists would allow there is certainly no justification for speaking of a mental age of over 20.

There was a positive correlation between stealing with enuresis and rejection. Coefficient of mean square contingency presumably? But, since the sample was by no means large, the standard error of C could not be calculated. A 2x2 contingency table would therefore seem to have been indicated, which does not give a correlation coefficient. In any event, what about the associations stealing rejection, stealing-enuresis, and enuresis rejection separately? From the foregoing account it will be seen that some 80% of the children were greatly benefited by in-patient treatment. This can only be seen from the statement that roughly 80% returned home. Without some more valid criterion of benefit no conclusion can be drawn.

It is quite possible that much valuable therapeutic work has been done which would warrant a vast extension of in-patient treatment of maladjusted children, but in the report of the work there is not one shred of evidence to support this conclusion—I am, etc.,

Dumfries

G A FOULDS

Health of Children Attending Day Nurseries

SIR—Truly the fat is in the fire! Dr Margaret E McLaughlin's observations (May 3, p 591, and May 10, p 631) suggest—as some of us had already begun to suspect—that in erecting and staffing day nurseries this country has gone to a great deal of trouble and expense in order to make a great number of children less healthy. What a douche of cold water for our sentimental and well meaning "social workers"! What a further shock for that once smugly self-satisfied institution at the bottom of Whitehall! No wonder there is a protest that one investigation is not enough, that further observations must be made (with the obvious hope that the later will refute the earlier). By all means let us obtain more facts, indeed we must have the fullest investigation into the whole problem. The health of the children is a matter that concerns the whole country.

There is one aspect of the question which has hardly been considered at all—many of those who advocate day nurseries are aware of their disadvantages but believe in their necessity. Dr Nora Johns, for example, refers to "mothers forced to work." Now who are these mothers who are "forced" to work in time of peace? There are a relatively small number who have lost their husbands, but in my experience of twenty-seven years of general practice the great majority of these women are (a) masculine, (b) irresponsible. A masculine woman is not typically an Eton cropped female with a masculine figure and hair on her face (this is an extreme example), but she has certain well defined characteristics—menstruation begins late and is painful, she marries late and suffers from dyspareunia or frigidity, in pregnancy vomiting is troublesome, labour is difficult, and she does not breast-feed her baby, she has one or at most two children. On the other hand she does well at business, gets on well with the men—as a man would—and earns a good salary. She dislikes housework but likes going out to business. In short she does well at men's jobs, badly at women's. Now this type of woman frequently marries a man who from ill-health or laziness or both does not earn a good wage, hence she is "forced" to go out to work (which in fact is exactly what she wants to do).

She is also irresponsible for having brought a child into the world, she escapes the responsibility for a large part of its early upbringing, and incidentally passes it on to the care of other women who have no children of their own but take a hand in bringing up other peoples'. So if anything goes wrong the mother blames the nursery and the nursery blames the mother.

Are we Sir being fair to the children?—I am, etc.,

London SW 15

F GRAY

Penicillin for Osteomyelitis in Childhood

SIR—Reading the paper by Messrs T Twistington Higgins and Denis Browne and Dr Martin Bodian (May 31, p 757) on the treatment of acute osteomyelitis with penicillin based on three cases from Great Ormond Street Hospital we have got the impression that the administration of small doses of penicillin (1 000 units per lb (454 g) per 24 hours) the aspiration of pus without further surgery, and early mobilization form the method of treatment which the authors recommend for all cases of acute osteomyelitis in childhood irrespective of gravity or

age. As we think that others may also have got this impression we should like to advance a word of caution for the benefit of those without much experience in the use of penicillin in this disease.

We have ourselves only treated cases from an older age group than those on which the experience of Higgins *et al* is based, and our remarks must therefore be understood as referring primarily to these. Fifty-four out of our 55 cases have been over two years of age (five were adults), whereas 16 out of the Great Ormond Street series of 31 cases were under two years. Green and Shannon pointed out from a series of 95 cases under two years, in 1936, the difference in the pathology and the reduced severity of the disease in infants, and to this difference may probably be attributed some of the discrepancies between our experience and theirs. Further, the cases from Great Ormond Street appear to have been less severe than ours, 50% of our cases and only 7% of theirs had positive blood cultures and it is especially the severely ill cases which we find do not respond to the treatment recommended. We differ on three main points—type of surgery, dosage of penicillin, and immobilization.

Type of Surgery.—In our hands aspiration has proved an unsatisfactory method of removing pus, and we have studied the table attached to the paper with great care for an explanation of the discrepancies between their experience and ours, but we confess that the more we study the table the less we understand the text. These authors write "Where our treatment differed from that generally followed was in 13 cases in which pus formed outside the infected bone," and that "surgery was confined to aspiration of pus." But when we read the table we find that 17 cases had some form of surgical treatment and that of these five had open surgery. "Abscess incised" occurs three times, "bone drilled" once, and "sequestrectomy" once. The drilled case had apparently already had nine aspirations. Thus only twelve of the 17 cases needing surgery were treated with aspiration alone, but, of these, four had a septic arthritis when treatment was started, and the data given suggest rather a primary suppurative arthritis complicated by osteomyelitis—none had a *Staph aureus* infection—and we fail to see why they were not grouped with others of primary suppurative arthritis which are dealt with separately in the paper. Two further cases with one aspiration only had negative local cultures, and presumably no pus was obtained.

Thus we are left with only six cases of acute osteomyelitis with pus formation treated by aspiration alone. None of these cases had a positive blood culture and they were therefore probably of the mild type. One case had acute osteomyelitis of the maxilla, his result was good, but so it was in the two maxillary cases treated by open surgery. Two cases had osteomyelitis of the fibula and now have normal radiographs, three tibias complete the story, but they have had considerable bone damage—one after 11 aspirations—and if one includes the tibia which had nine aspirations and then drilling of the bone the efficiency of aspiration for the removal of pus is hardly convincing in this series. If the cases with joint involvement must be included, the picture is even less gratifying. One shows delay of epiphyseal development, another ankylosis, and another no evidence of ossification in the heads of the femur and humerus. These cases may now have normal function, but with abnormal epiphyses their future is by no means bright.

In our experience we cannot satisfactorily remove pus by aspiration, and have repeatedly proved this by aspirating on the operating table immediately before incision as much pus as we could from the soft tissues. Invariably we have found on incision considerable quantities of pus left in the soft tissues, sometimes two or three times the amount aspirated, apart from the pus within the bone, which is of course never tapped by aspiration. There may be some fault in our technique, but when we read that six, seven, nine, eleven aspirations have been performed by these authors, we are tempted to think that it is not our technique but the inherent limitations of aspiration which are to blame. We know that in the presence of appropriate blood levels of penicillin, and after adequate removal of pus and of any dead tissue by open surgery and drilling of the bone to reduce the danger of its necrosis by pressure, new pus does not form, and for this reason we have advocated primary suture in all cases thus overcoming the reasonable objection offered by these writers to incision—that of secondary infection of an "open wound." If full sterile precautions, as used for clean bone operations, are observed at operation and the part is afterwards adequately immobilized, secondary infection does not occur.

Penicillin dosage.—Again we repeat that we have almost no experience in infants, but in older patients we have been forced to adopt a bigger dose for two reasons—first, because one must allow for organisms of greater resistance than the standard Oxford staphylococcus, until the laboratory report on sensitivity is obtained, and secondly because the bigger dose causes a more rapid control of the septicaemia and consequently of the toxæmia, whose continuation

or even fatal results in severe cases of the disease. It is of mention that the blood culture remains positive from our to seven days which we regard as far too long. We have not ourselves tested many cases for repeated positive blood cultures, because of the rapid improvement in their clinical condition, but in those cases which we have tested the second culture has been sterile except in one case which had a penicillin resistant infection for which we had at the time insufficient penicillin. We advocate an arbitrary daily dose of 400,000 units (equal to the whole course advocated by Higgins *et al* for many of their cases) falling to a minimum of 200,000 units daily given by intramuscular drip for patients of all ages. If infants are unsuitable for drip administration we should give this dose by two hourly injections during the acute stage in order to be certain of a constant bacteriostatic level of penicillin in the blood.

Buchanan in a paper on dosage of penicillin in infants, for infections generally advocates a routine dosage of four times that used by Higgins *et al* given three- and not four hourly (4,000 units per lb per 24 hours by three hourly injections). She found that 1,000 units per lb per 24 hours was often insufficient for obtaining inhibition with serum dilution 1/1, that 2,000 units per lb was sufficient, but that 4,000 units per lb gave better maintained results. We read in the paper by Higgins *et al* that one child with a streptococcal infection of 12 times the normal resistance to penicillin made a complete recovery on the standard dosage of penicillin and that makes us wonder how much has penicillin really affected this series. But on referring to the table we see that 'complete recovery' includes 'erosion of the head of the humerus, now delay in epiphyseal development'. And it may be that some of the local recoveries do not differ as they should from those which would have been seen in pre-penicillin days.

Immobilization—We read in the paper that 'immobilization was not prolonged much beyond the period of penicillin treatment, and movement was encouraged as soon as it was painless even in cases with marked radiological changes' (The italics are ours). We should have been afraid that such a policy might have produced sooner or later a pathological fracture, a fact which is substantiated by these authors' experience for in the table—again without comment in the text—we find 'fracture' in a case of osteomyelitis of the tibia. Before allowing movement and weight-bearing we do carefully consider both the clinical and laboratory findings for evidence of residual inflammation on the one hand and the radiograph for soundness of the bone on the other, and we tend to conservatism if there is any doubt. Only such careful consideration can prevent unnecessary complications such as pathological fracture.

We are very sorry to be forced to stress our points of disagreement with the views of Higgins *et al*, especially as they offer us one of the largest series of acute osteomyelitis in infants treated with penicillin which has so far been published, and the authors' conclusion on cases in this group can be discussed by few with comparable experience.—We are, etc

Oxford

J. TRUETA
M. AGERHOLM

SIR—We have read with great interest the report by Mr T. Twistington Higgins, Mr Denis Browne, and Dr Martin Bodian (May 31, p. 757) on the treatment of osteomyelitis with penicillin. Our own experience in one surgical unit at the Royal Hospital for Sick Children Glasgow confirms many of their findings and our preliminary report is awaiting publication. We find comparison with other reports difficult as the virulence of the disease varies in different localities and there are no fixed criteria of diagnosis nor standards of cure. It would seem desirable for example to classify separately infants under 1 year old. In this age group the clinical picture is not strictly comparable with acute staphylococcal osteitis in older children.

The report on blood cultures is confusing. It would appear that only two positive staphylococcal cultures were found. In our own series positive cultures of coagulase positive staphylococci were found in 20 of the last 36 cases of acute osteitis. During this period we treated 18 cases of subacute staphylococcal osteitis. Infections of the skull facial and small bones tend particularly to be subacute in type. We find it difficult to concur in the view that the abortive action of penicillin is so great that a diagnosis made on purely clinical grounds may never be confirmed in any other way. Staphylococcal soft tissue abscesses are common in children and in the absence of radiological evidence of bone involvement we prefer to exclude unconfirmed cases from our series even in the presence of a positive blood culture.

As regards dosage we have been unable to maintain a therapeutic blood level of penicillin using 1,000 units per lb (0.45 kg)

body weight, nor have we been able to maintain an adequate level for 4 hours with individual doses of less than 20,000 units, irrespective of age and body weight. Routine marrow punctures are performed in all our cases, and penicillin sensitive staphylococci have on occasion been grown from the marrow until the 35th day of parenteral administration. Surely penicillin must be given until the marrow cavity is sterile? It is difficult to see how this can be achieved by parenteral administration in the case in which the blood supply to the affected area of bone has been cut off. We agree wholeheartedly about the dangers of secondary infection but consider that there is still a place for evacuation of pus by incision followed by primary suture.—We are, etc

Glasgow

MATTHEW WHITE
WALLACE M. DENNISON

Primary Malaria in London Children

SIR—Many readers will have been interested in the report by Drs C. Bland Levick and M. E. MacGregor (May 31, p. 764) on primary malaria in London children. In view of the fact that inoculation malaria produced either by means of a blood transfusion from a donor with latent malaria or of an injection by a dirty hypodermic syringe, is the commonest form of primary malaria in a person living in a town in a non-malarious country, it is surprising that no definite statements excluding these possibilities were made. In neither case do the histories suggest that this was a possible explanation, and as there was more than one relapse in the first case it seems most unlikely that this was a case of trophozoite-induced malaria, yet negative statements would have added to the scientific value of the paper. Perhaps these could now be made—I am, etc,

London W 1

L. EVERARD NAPIER

Oxygen Poisoning in Man

SIR—Dr Kenneth W. Donald's article on oxygen poisoning (May 17, p. 667, and May 24, p. 712) is remarkable for the record number of human experiments done on volunteers and the proof that no ill results from convulsions produced by oxygen poisoning. He does not however, make clear that the research was carried out in the experimental department and with plant and appliances (only three units of which are figured in the articles) which Sir Robert Davis had the prescience and enterprise to set up at great cost at Messrs Siebe, Gorman and Co's works during the many years of research carried out by him under deep diving, high altitude, and poison gas conditions, in which I have assisted, and lent by him for the use of the Admiralty voluntarily and free of charge for the duration of the recent war. Dr Donald thanks Sir Robert for help and advice while grateful acknowledgment is given to others. It should have been recorded that the whole research was made possible by the loan of Sir Robert's experimental department and the information on past experiments and facilities afforded him at Messrs Siebe, Gorman and Co's works, including offices, sick bay, etc.

Dr Donald is entirely wrong in attributing to the late Prof J. S. Haldane work done in conjunction with the Admiralty Deep Diving Committee of 1930-3 of which I was the physiological member. Sir Robert Davis, at his expense and with the help of Capt. Damant, by extensive researches on animals extended the diving decompression tables set up by J. S. Haldane for depths up to 210 feet (64 m). The experiments showed that while the Haldane tables were satisfactory up to 210 feet, they were not satisfactory beyond the depth, and new factors had to be taken into account to make the tables of decompression safe for 300 feet (91.4 m) and over reached at the trials in Loch Fyne. To prevent any excess of CO in the breathing circuit Siebe Gorman and Co contrived the addition of an injector apparatus (and CO absorbent chamber). This invention and the new tables proved most satisfactory, and the latter were adopted by the Admiralty and have been used successfully ever since.

The danger of breathing pure oxygen at depths beyond a certain pressure have been known to, and avoided by, Sir Robert Davis for many years. In 1929 he submitted to the Admiralty for trial a self contained diving apparatus in which a mixture of 50% oxygen and 50% air was used at depths to about 70 ft (21 m). Trials by H.M.S. *Caro* in the Mediterranean proved this apparatus to be 'highly efficient and satisfactory,' but owing to a financial

renchment policy at that time its use was not extended to smaller vessels as proposed. It was, however, supplied and used by foreign countries with quite satisfactory results and at greater depths when using suitable mixtures of oxygen and air. Apparatus on the same principle was used extensively in the last war for midget submarines, human torpedoes, shallow water diving apparatus for removing mines, suits with frog feet (a very old invention), etc. The midget submarine successfully used against the *Tirpitz* was built with an emergence chamber, as designed and patented by Sir Robert Davis early in 1915, the diver using it being equipped with self contained diving apparatus enabling him to leave the vessel, place an explosive charge, and to return thereto. At the time, however, it was thought that such small vessels could not be usefully employed.

In the submersible decompression chamber invented by Sir Robert oxygen is breathed by the diver during decompression from 60 ft (18.3 m) to the surface to shorten the decompression time. No oxygen poisoning symptoms have resulted during the many times of its use. Dr Donald's results show that shallower depths are not always safe. The mixture of oxygen and air should, therefore, always be used as recommended by Sir Robert Davis.

The greater risk of oxygen poisoning found by Dr Donald in under water experiments cannot, he says, be attributed to CO_2 accumulation, which, as shown by me, enhances oxygen poisoning. He found no excess of CO_2 in the breathing chamber, but has left out of account the dead space of the mouthpiece and respiratory air tubes. An experienced diver told me he believed the effect was due to rapid shallow breathing by less experienced and stable men when under water. Such breathing would greatly enhance the effect of the CO_2 in the dead space.

Argyll Campbell showed that oxygen breathing interferes with the transport of CO_2 from the tissues and puts up its tissue partial pressure greatly. Similarly Bean, J. W. (*Physiol. Rev.* 1945, 25), has pointed out that nitrogen, and still more the heavier gas argon, at high pressures interferes with the diffusion outwards of CO_2 from the lungs. Helium and hydrogen, owing to their light weight, have in comparison no such effect, and have no narcotic effect when used with oxygen for deep diving. CO_2 may then be the cause both of oxygen poisoning symptoms and the anaesthetic effect of nitrogen in deep dives. This last question can be settled by measuring the partial pressure of CO_2 in the tissues when breathing argon and oxygen. The heavier gases krypton and xenon have much greater effect but are very difficult to obtain (Lawrence, J. H. *et al.* *J. Physiol.* 1946, 105, 197). So soon as enough argon can be obtained a trial will be made.

I may add that a copy of Dr Donald's report to the Admiralty was shown to me a year or two ago and I then pointed out the claims of Sir Robert Davis for adequate recognition, but no notice of these has been taken.—I am, etc.,

Chalfont St Peter Bucks

LEONARD HILL

Refrigeration Anaesthesia

SIR—In his interesting article on the results of refrigeration analgesia in Melbourne Mr E. S. R. Hughes (May 31, p. 761) seems to have reached much the same conclusions as British anaesthetists. At the same time there is one point which should I think be clarified. Mr Hughes does not regard a tourniquet or its equivalent as of much importance—for example, "the tourniquet is not an essential requirement at any stage of the procedure and may be dispensed with altogether." With all deference may I suggest that the proper application of a tourniquet is an essential and indeed a vital part of the technique?

If a limb of an aged and toxic patient is cooled down to 5°C without a tourniquet the process takes a long time and is accompanied by a pronounced fall in the general body temperature. This is a most dangerous condition and is frequently followed by gradual deterioration and eventual heart failure, often associated with anuria and a low grade bronchopneumonia. It will be noticed that in Mr Hughes's series of 25 amputations under refrigeration the total mortality rate was 44%, while 20% of cases developed a fatal bronchopneumonia. These figures seem high and it would be interesting to know how many of the fatal cases were refrigerated without a tourniquet. The latter device can be applied painlessly if a sausage shaped ice bag is applied at the appropriate level round the limb for 30 minutes beforehand. The time for subsequent refrigeration can then be reduced to $1\frac{1}{2}$ to 2 hours. In our experience it is better to avoid post operative refrigeration of the stump in spite of some theoretical advantages.

It may be argued by those who dislike tourniquets that therapeutic limb cooling is often carried out without them in cases of defective circulation in order to lower the tissue

metabolic rate to a point at which the limited blood flow is adequate. This is true, but the necessary temperature drop is not great, and such patients are usually younger and fitter than those undergoing amputation for gangrene—I am, etc.,

St Albans

C. LANGTON HEWER

Basal-cell Carcinoma at Site of Trauma

SIR,—Trauma rarely figures in the aetiology of basal-cell carcinoma. The following case is similar to that recently recorded by Reah (1947).

CASE REPORT

Male, aged 38, brunet, normal skin texture. In 1943, recaptured after some months at liberty in Germany after escape from prison camp, he was beaten about the head and face with a revolver butt. Lacerations were produced on the forehead, cheek, and nose, and were sutured shortly afterwards, stitches being removed after about a week. All the wounds healed normally except for one gash on the forehead over the outer end of the left eyebrow.

This lesion never healed completely, and it discharged a little pus until early in 1947, when it dried up. There had been a very slow peripheral spread during the whole time. When first seen in March, 1947, the lesion was a typical superficial cicatrizing basal cell carcinoma, $3/4$ in by $1/2$ in (1.9 cm by 1.25 cm), with central scarring and elevated pearly edge. The diagnosis was confirmed by biopsy.

—I am, etc.,

London SW 1

JAMES MARSHALL

REFERENCE

Reah, T. G. (1947) *British Medical Journal* 1 412

Pethidine in Labour

SIR—I would like to comment on that masterly paper by Miss Josephine Barnes (April 5, p. 437) on the use of pethidine in labour. I must say that I have not been so favourably impressed by the results following the use of this drug. I agree with your correspondent, Dr James Ross (May 24, p. 738) when he says that "its action is unreliable." That has been my own experience.

I cannot agree with Miss Barnes that pethidine satisfies the first part of her No. 1 criterion. In my experience—a much smaller one than that of Miss Barnes—an alarming, sudden, and anxious drop in blood pressure has immediately followed the administration of the drug in several cases. As regards the effect of pethidine on the baby, I have almost always found the infant slow to breathe and giving definite cause for worry, even in cases where such could not be attributed to operative interference or abnormality of any kind. Like Dr Ross I believe heroin (diamorphine hydrochloride) to be a vastly safer and more reliable drug, and I have discarded pethidine altogether.—I am, etc.,

Belfast

J. H. P. GIFF

Behcet's Syndrome

SIR—Dr E. W. Prosser Thomas's article on Behcet's syndrome (Jan. 4, p. 14) has just come to my notice, and I think it will be of interest to express our views on the so called syndrome as well as on thrombophlebitis. In the *Proceedings of the Medical Society of Athens* (1930, p. 586) Dr B. Adamantiades presented the first known case of recurrent iritis with hypopyon, insisting at the same time on the small ulcerations of the mouth and genitalia. All these three elements were characterized by recurrences, appearing either at the same time or at independent periods. Later (*Annales d'Oculistique* 1931, 168, 271) followed the same description of this syndrome in French. In 1931 Dr Daskalopoulos (*Proceedings of the Greek Medical Society, Athens*, p. 717) describes a record case. There follows the description of Whitwell (1934), and later again in 1937 Behcet, of Constantinople, describes the syndrome in the *Dermatologische Wochenschrift* (105, 1152), in German. The same author (Dr Adamantiades) in a careful study of two other cases which came under his notice, found that a fourth element is quite common and describes in detail the thrombophlebitis either of the central vein of the retina or of the legs (Greek Ophthalmic Society, June 7, 1945, and *Annales d'Oculistique* 1946, 179, 143). This element was also observed by Urbanek, J. (*Zt f. Augenh.* 1929, 69, 174),

Vol. 1 (Zt f Augenh 1937 91 129) Delord E (*Annales d'Oculistique* 1941 177 366) and Tebevan and Kalfayan (*Archives d'Oculistique* 1945 178 335), either on the legs or in the retina. We are pleased to see that this thrombophlebitis was also observed by Dr Prosser Thomas.

Dr Adamantides describes this syndrome as the complex syndrome of recurrent iritis with hypopyon which according to the rules of nomenclature is the name and term accepted by Greek medical literature. May we add that this syndrome is compared to the disease known as 'periodic ophthalmia (moon-blindness) of horses' according to the same author. I should like to add that Dr Thomass contribution to the subject is much welcomed in Greek medical circles in Athens—I am, etc

Athens

NIKOS LORANDOS

Vaginal Operations

SIR—May I be allowed to reply to Dr T F Redman's letter (May 31, p 784), in which he criticizes my statement 'carcinoma of the vaginal portion of the cervix only occurs in women who have been pregnant'. Perhaps I did not make myself clear enough in that in this statement, I referred only to that type of carcinoma which arises from epithelium similar to that which lines the vagina—namely, squamous-celled carcinoma. I quite agree that columnar-celled carcinoma occurs quite frequently in the cervical canal in nulliparous women. This type of carcinoma, although occurring in the vaginal portion of the cervix if this be judged on a strict anatomical basis should, I think, be considered on a pathological basis—namely as a continuation of the uterine cavity, although of course the type of columnar-celled carcinoma is modified in the endocervical portion of the uterus.

I have investigated the 108 Mayo Clinic cases of stump carcinomata referred to by Dr Redman and a considerable proportion of these would seem to be cases of columnar-celled carcinoma, and the incidence of these cases would not be affected by previous pregnancy. Again, in this series I cannot find any reference to the question of a previous abortion. This point I consider important since I should like to make it clear that when I mentioned pregnancy I also included those cases with a previous history of abortion. The table of Dr Hurdon in which she compares the incidence of carcinoma in single and in married women is of little value, since pregnancy and abortion are not confined entirely to married women.

My original statement was based upon the teaching of Mr T G Stevens and in my five years as his registrar I had ample opportunity to confirm the aetiological relationship which occurs between the incidence of squamous-celled carcinoma of the cervix and pregnancy or abortion. Naturally I am aware that this type of investigation must of necessity be unsatisfactory since one has to rely entirely upon the truthfulness of one's patient. If however, Dr Redman is prepared to concede that squamous-celled carcinoma of the cervix occurs more frequently in women who have been pregnant than in those who have not been pregnant then my original object which was to strongly support Mr Wilfred Shaw in his advocacy of vaginal hysterectomy in certain types of prolapse will have been attained—I am etc

Southport

JOHN H HANNAN

Printed Clinical Lectures

SIR—I read with considerable interest Prof L J Witts's review (May 3 p 602) and Dr Edwin Bramwell's letter (May 24 p 741) on this subject and would like to support Dr Bramwell. I feel there is a distinct place in academic medicine for the clinical lecture from the verbal and written point of view. A lecture centred round a patient is invested with a definite personal touch and the subsequent committing of it to print may be of benefit to those who were unable to be present. I have derived much pleasure and profit in reading over my notebook of notes taken while a clinical student. These represent a very fascinating medical and surgical anthology in diverse topics of fundamental clinical importance.

Doctors feel that to day there is a certain deterioration in the art of lecturing and it should be the rule that only those members of an academic staff of a hospital should lecture who

are gifted in that manner. A man may be a born clinician but not necessarily a teacher as well. It is inspiring to pick up a volume of clinical lectures by such a giant as Sir James Paget who we are told would rehearse his lectures walking up and down in the open air to realize the profundity of clinical as well as classical knowledge that he possessed. An apt literary quotation may do much to tone up a discourse on a dull topic although, well taught, medicine never should be dull. As a student at Bart's I recall many an issue of the hospital journal contained a printed clinical lecture delivered by one of the chiefs of the hospital. I was always grateful to the editor for printing it and so making it available to a far wider audience—I am, etc.

Sutton Surrey

J B GURNEY SMITH

General Knowledge and General Practice

SIR—The subject of medical education is one of perpetual joy for committees and correspondents. Representatives of all branches of medical science—the pediatricians, the physiologists, the psychiatrists, the protagonists of social medicine and the others—continually advocate extending the curriculum (with especial regard to their own subject) so as to make the student a more capable medical practitioner. Neither they nor anyone else seem to consider making the student a better citizen, humanist, or scientist. While they stress the technique of the profession they forget the broad cultural background.

This letter is a plea for recognition that a 'duly qualified medical practitioner' able to treat disease is not necessarily a 'doctor' fully competent to take an active part in public life and enlightened circles. For that he needs a fair amount of extra-curricular non medical knowledge. He must know not only the divisions of the peroneal artery but also the divisions of the Liberal Party, not only the development of the normoblast but also the development of uranium 235, not only the difference between Arnold Pick's disease and Friedel Pick's disease but also the difference between George Moore and Henry Moore.

Since matriculation many of us have had no formal contact with politics and the humanities, economics, and the arts, and only the most far sighted of our teachers bothered to remind us of their existence. The London medical schools (in particular) seem nowadays almost to be technical colleges for the study of anatomy, cardiology, and all the other 'subjects'. Perhaps it is still possible for an enlightened dean to sponsor a series of lectures on the economics of foreign policy or a courageous university to introduce into the third MB a question on existentialism. It is the examining bodies who, by not insisting on a reasonable standard of general knowledge, allow some number of medical practitioners to be merely

'clinical technicians'. To raise this standard it is up to these bodies to include a compulsory general paper in the final examination. The practice in many countries abroad (with what results I do not know) of having medical students take an arts degree first is I believe considered impractical here for reasons of time, expense, and shortage of doctors—I am, etc

London NW 4

D N BARON

Remuneration in NHS

SIR—It may take many months for a doctor's capitation list of new Health Service insured persons to approximate in numbers to his present adult private patients. There will therefore be a considerable time lag during which every general practitioner entering the new Service will find his income depleted yet he will be working harder than ever with so many potential patients awaiting his 'free' services—patients who do not appear on his list and for whom he will receive no payment until they do so appear—usually when they are in need of treatment which may be months or even years after the appointed day.

I write to point out that steps should be taken now to ensure that future insurable persons will in fact apply for inclusion on the list of the doctor of their own choice on the given day, not only by arranging for publicity in the daily Press but by the distribution of application forms to post offices, insurance agencies and doctors and that some penalty might be devised for those who do not join within three months—for instance,

that for every month delayed beyond three months a patient should pay private fees for one month before qualifying for free treatment

The establishing of a central pool into which bulk payment is made by the Ministry for all persons insured and from which payments would be made to doctors according to the numbers on their lists is not good enough, as practices now mainly private ones would inevitably suffer at the expense of those with full or preponderating panel lists—I am, etc.,

Birmingham

W W NEWTON

Shortage of Nurses

SIR—I am grateful to "Surgeon Commander, R N" (May 24 p 740) for so ably expressing the official opinion on the training of medical orderlies. I suggest that this attitude has done and is doing a great deal of harm to the prospects of ex-orderlies. The Service authorities consider that a Service-trained medical orderly should receive full civilian recognition. The General Nursing Council, not unnaturally, is unwilling to grant such recognition until Service nursing examinations are made to conform to certain standards. Neither party will budge, and the result is a deplorable impasse with the unfortunate orderly as the main sufferer.

Those in the Services who are interested in the welfare of orderlies would gain more by co-operation than by this obstinate "good enough for Nelson" attitude. I entirely agree that many ex-orderlies are experienced nurses suitable for immediate inclusion in the Register. My only concern is that future orderlies should receive a training—and a diploma—that will place their status beyond question—I am, etc.,

London NW 1

R HOWELL ROBERTS

SIR—With reference to the letter of 'Surgeon Commander, R N' (May 24, p 740) on shortage of nurses, I feel he is an old friend of State Registered nurses and therefore deserves an answer from one of them. I have met him occasionally during my 64 years in the Q A R N N S R. He walks into a ward, gives his orders to the first V A D or orderly he meets, and when to his pained astonishment these orders are not carried out, who does he blame? Not the V A D, not the orderly, no, the sister in charge, who did not receive the order, is held responsible. The Commander has forgotten that she has probably spent 5 years in training and so is the obvious person to receive his orders and see that they are carried out. He may not know that from 1939 onwards all V A Ds were urged to leave their organization and train as S R Ns—an opportunity which was availed of by many, in fact all who were genuinely interested in nursing.

Surely "Surgeon Commander, R N" would be among the first to condemn a quack in his own profession. I do not hesitate to condemn them in mine. As a wartime measure the services of V A Ds were much appreciated, but to suggest that they should be granted State Registration on demobilization (even with recommendations by Service medical authorities) is to revert to the days of the Crimea. But perhaps this is pleasing to the Commander whose ideas are purely retrogressive, he would then have the opportunity of becoming a second Florence Nightingale.

The following facts may be of interest. (1) All sisters that I met in the Navy were agreed that they were unable to allow even the simplest dressing to be done by V A Ds, whose technique, unless under close supervision was 'fingers instead of forceps'. If the Commander is willing to sacrifice asepsis for speed in his zeal to dismount the GNC from its "high horse" then may it not be my lot to fall into his hands or into those of his staff? (2) My sister, an M O in the R A M C, while convalescing from typhoid fever, assisted the sister of her ward by charting the temperatures from the 4-hourly book. Her own temperature was carefully recorded each night by the night V A D as anything varying from 98.4 F (36.9°C) to 100.8 F (38.2°C) despite the fact that neither the V A D nor the thermometer had made any appearance during the night. To such people does 'Surgeon Commander, R N' entrust the care of the sick. He must remember that "a little learning is a dangerous thing"—I am, etc.

Glasgow Co. Cork

EX Q A R N N S R

SIR—The full effect of the "Mowbray" scales for male and female domestic workers became known after the memorandum (June 7, p 819) on this subject was written. The financial position of nurses in relation to that of resident ward maids and ward orderlies in London hospitals is now seen to be even more anomalous than was stated in the memorandum. It appears that a nurse who becomes State registered in general or fever nursing and remains in hospital as a staff nurse without securing a position as ward sister must now work for twelve years before she attains to the remuneration of a ward maid and for twenty years before her remuneration, then at its maximum, becomes equal to that of a ward orderly. This statement takes account of the average additional earnings of a ward maid and orderly for Sunday duty and the higher maintenance allowance paid to them during absence on sick or annual leave. During all these years the nurse has to put up with the inconvenience of regular turns of night duty without extra pay, and in some hospitals at present has to work longer hours than the maids and orderlies—I am, etc.,

London SE 13

H STANLEY BANKS

Calculation of the Colour Index

SIR—The publication by Dr R Elsdon-Dew of yet another way of calculating the colour index (May 24, p 723) would seem to justify one more plea for discarding a conception which has outlived its usefulness.

For the estimation of the colour index the haemoglobin value is usually given in per cent instead of in its absolute figure as is usual for every other blood constituent. The former way is particularly undesirable, as the values refer to a single standard of alleged normality (100%) irrespective of normal variations in haemoglobin content and of differences between age groups and sexes. Continuing the use of the colour index would also mean perpetuating the misconception of "hyperchromic" anaemias. Although it has been recognized long ago that an increased colour index is invariably a function of an increased cell volume (e.g., Naegeli, O., *Blutkrankheiten und Blutdiagnostik*, Berlin, 1931, p 108), such an index is commonly misinterpreted to mean a pathologically high haemoglobin concentration. Such fallacies will soon die out when blood findings are reported in terms of red blood corpuscles (per c mm) haemoglobin (g/100 ml), mean corpuscular volume (cv) and mean corpuscular haemoglobin concentration (%), a nomogram for finding the latter values and that for mean corpuscular haemoglobin (γ) is given in M W Wintrobe's *Clinical Hematology*, Philadelphia, 1946, where also the subject of this letter is discussed at length.

As a matter of archaeological rather than practical interest, the Norwegian physician S Laache, who introduced the conception of the colour index (*Die Anämie*, Christiania, 1883, p 110), later believed it to depend on differences in degree rather than in quality of anaemic conditions (letter to M Regnault, quoted in the latter's *Anémie Pernicieuse et Cancer Latent de l'Estomac*, These de Lyon, 1904/5, No 117)—an unusual case of an author denying for a wrong reason the value of his own discovery—I am, etc.,

London E 2

HERBERT LEVY

Another Name

SIR—I am no psychiatrist and cannot therefore venture an opinion on the necessity for the latest proposed addition to the medical dictionary, but as one who still prides himself on the preservation of a smattering of the classics may I deplore Dr D Cappon's choice (May 31, p 784) of a possible term? I fail to see any parallel between "anosognosia"—a legitimately derived Greek word meaning "no disease-appreciation"—and "abmengnosia" a most illegitimate Graeco Roman hybrid which seems to mean, if anything, "away from the cultivated-mind-knowledge"—a possible symptom of existentialism.

This Shakespearian attitude to the classics does more credit to Dr Cappon's intentions than to his achievement. Averse as I am from the multiplication of nomenclature, I hesitate to coin a new term myself and would prefer anyway to await the efforts of more experienced classical scholars. Perhaps Dr J N Fell would oblige—I am, etc.,

London SW 6

M C T REILLY

POINTS FROM LETTERS

Returning Fee

Dr EGAN R BROOKS (near Stockport) writes: I deplore the decision made by Dr P B Corbett (May 24, p 741) that a returning fee should be paid for each day over the booked date of a confinement. One must remember whatever the method of calculation the resultant date is but the centre of a fortnight or any day of which labour may ensue and many cases will be found to terminate a few days earlier or later (R W Johnstone). Appreciation of this fundamental fact, a practitioner thus tacitly accepts contract to make himself available for the labour whatever the ensuing date.

Corrosive Drugs

Dr C M HEANLEY (Salisbury Rhodesia) writes: The recent articles (March 22 p 367, and May 10 p 640) in the *BMJ* on ferrous sulphate poisoning raise the question whether gastric ulcer can be produced by the custom of putting up corrosive drugs in tablet form. I think I have heard of haematemesis and melaena being caused by aspirin taken in solid form.

Bewilderment

Dr G C PETHER (Colchester) writes: Is it not time that an absurd situation such as is here described should be made impossible? A workman develops dermatitis while engaged in a process which may or may not be the cause of his trouble. He is treated by the factory doctor until the condition is nearly cured. He is then sent by the employers' insurance society to see consultant A. This gentleman is given no information about previous treatment, little information about the man's work, may gather little about his domestic hazards and does not notice his bad teeth. Somewhat later, when the condition has cleared up entirely, the workman is sent by his own solicitors acting for the trade union to consultant B. This gentleman is equally informed, or misinformed, of the relevant facts. In the name of all that is wonderful how can useful opinions be obtained in this way? The victim an uneducated man, is bewildered and made resentful by these absurdities. He has every reason to feel like this.

The Revolution in Anaesthesia

Dr G DUNDEDALE (Nanyuki, Kenya) writes: What a frightful picture of modern anaesthesia is given by Dr John Halton (April 19 p 543). Apparently nowadays we try to paralyse as many of the systems as possible with powerful synthetic drugs, and plug in as many more to counteract the ill effects of those already used. Having pushed the patient under with an intravenous barbiturate we carry on with a complicated apparatus delivering a variety of gaseous mixtures, and if we are incapable of providing adequate muscular relaxation we resort to a synthetic substitute for South American arrow poison, which paralyses the diaphragm in addition to every other muscle, so that the patient must then have forcible respiration through a bag and some other powerful stimulant to overcome the muscular paralysis. And there must be no anoxia! And 'after all this though the patient "can cough on the table, and will often speak" though "attached firmly to that particular form of anaesthetic apparatus favoured by the anaesthetist," he must be nursed in a steam tent and an adequate fluid intake assured—by the intravenous route if necessary. After reading this I sincerely hope that if I have to have a major operation, which God forbid, I may still find someone of my own generation who can give a decent inhalation anaesthetic such as I learnt from Sir Francis Shipway. There are, of course, operations where the ordinary inhalation anaesthetic is inapplicable and for which special methods must be applied.

Certificates

Dr H D FORBES FRASER (Crowthorne Berks) writes: Mr X laid up his car in 1940 and his tyres were commandeered. In 1947 he applied for a permit to purchase new tyres explaining that he had mislaid the receipt for the old ones which was also a promissory note for the permit to purchase. This problem puzzled the clerks in the Regional Petroleum Office. A totally inapplicable form was supplied. This form was taken to the appropriate office, and returned as being inapplicable. This situation stumped the clerk in the Divisional Petroleum Office. However after a great deal of explanation, and wishing to be helpful he advised Mr G to get a medical certificate. I wrote for him a certificate that in my opinion Mr G is entitled to replacement of his tyres and also a covering letter to the effect that I was willing to certify—what should I certify?—that he is alive or dead? ill or well? that I do or do not know the national importance of his business? What has it to do with a doctor anyway? Surely an affidavit about the lost form sworn before a commissioner of oaths would be a more appropriate procedure. I have received no guidance but Mr G has his permit on grounds of disability.

Obituary

A F BERNARD SHAW, MD FRCPI

Prof A F Bernard Shaw died on June 3 at Newcastle-upon-Tyne. He had been professor of pathology in the Egyptian University of Cairo and since 1938 in the University of Durham. He was also pathologist to the Royal Victoria Infirmary, Newcastle-upon-Tyne, and had been an adviser in pathology to the Emergency Medical Service.

Arthur Frederick Bernard Shaw was born on Aug 17, 1888, at Carrigmachattan, Co Dublin. Educated at Christ's College Blackheath, and at Trinity College, Dublin, he graduated in 1909, being senior moderator in natural science and winning the medal of the Dublin University Biological Association. After qualifying MB, BCh, and BAO in 1911 and acting for a short period as demonstrator of pathology, he was elected to a Rockefeller Fellowship. This enabled him to visit the Johns Hopkins University at Baltimore for postgraduate study. Proceeding MD in 1913, he became a Fellow of the Royal College of Physicians in Ireland in 1922, after a period as senior assistant medical officer of health at Cardiff. His appointment there was interrupted by the 1914-18 war, when he served as a medical officer in Gallipoli, Sinai and Palestine, and as pathologist to the 69th General Hospital with the Egyptian Expeditionary Force. In 1919 he was appointed lecturer in pathology at the University of Durham College of Medicine, and assistant pathologist at the Royal Victoria Infirmary and in 1926 he became honorary pathologist to the Princess Mary Maternity Hospital, Newcastle-upon-Tyne. For his services to Egyptian medicine as professor of pathology at the University in Cairo from 1933 to 1938 he was made a Commander of the Order of the Nile. He was a member of the Pathological Society of Great Britain and Ireland and was responsible for many papers on pathology and particularly on haematology, which appeared in this *Journal* and in other medical journals.

He had been a member of the British Medical Association for many years and was vice-president of the section of pathology and bacteriology at the annual meeting in 1933. He was also president of the Egyptian Branch in 1938.

J C S writes: We are yet too near to Shaw's death and too much in the shadow of his illness to measure his greatness. But greatness it was, both of character and of mind, and the nobility of the one and the depth of the other will be known only to those whom he taught or with whom he was intimate, for he was a reserved and modest man given much to quiet meditation. His interest in his subject was influenced greatly by his early training in classics and biology, by his passion for truth and logic, and by his abundant scholarship. His was indeed the most cultured mind of any man I have ever known. Shaw's achievements can be measured by knowing something of the man. He had a stern but noble countenance covering a modesty which was at times embarrassing. Deeper still lay a generosity of heart and warmth of feeling which were revealed in a smile of great charm and in acts of exquisite courtesy. He loathed self-seeking and insincerity and was suspicious of Anglo-Saxon compromise. In aesthetics he was relatively insensitive to the visual arts, but vividly sensitive to the form and function of words. There is little wonder that his lectures were unforgettable. They were precise, sincere and eloquent with the right and unusual word always coming to his aid. He saw his pathology as part of man's whole struggle with his environment, but would at times laughingly confess that many of its evidences came near to metaphysics. Devoted to the scientific method and concerned about the function of the university in the modern world, he was intolerant of the compromises which would link commercial and professional interests to a university department, and was anxious to rid the teaching hospital of those burdens and arrangements which prevented it from doing its proper work. It appeared to him logical that a teaching hospital with the functions of conserving knowledge of advancing knowledge and of setting the highest standards of practice should be arranged, administered, and staffed entirely for those purposes and he saw the solution of this only by making these institutions university.

departments in the true sense of the term. He could argue these things with fervour but would cease from arguing at the first sight of fixed prejudice or blind ignorance.

Shaw's work in pathology covered three periods with a Rockefeller Fellowship year at Johns Hopkins in America interposed. The first was as a lecturer in Newcastle, where he came in 1919 from an early training in Trinity College Dublin and an experience in pathology during the war. His second period was as professor of pathology at Cairo, and the last again at Newcastle, where he held the chair until his death. In his earlier period at a time when he was impatiently busy with research, he worked under a burden of routine and teaching and in physical circumstances so detrimental that they are hard to look back upon. In spite of the interruptions of illness he completed work which was widely noticed, on the influence of the vasomotor action on the leucocytic count of peripheral blood on the diurnal tides of the leucocytes in man and on constitutional abnormalities of the leucocyte. In addition he added to our knowledge of the pathology of rheumatic fever, and of Riedl's thyroiditis in articles which are still standard references. In Cairo he had scope for the first time to create a department nearer to his desire. This he did in a way which was a testimony to his powers of organization and his originality, and he left it a monument to his efficiency and sense of justice, for which the Egyptian Government honoured him. In Egypt he made a notable contribution to the pathogenesis of pulmonary schistosomiasis and to the pathology of the spleen, but he was quickly absorbed in reviving the study of paleopathology with new techniques. Here also he found an outlet for his lifelong interest in anthropology and the history of civilizations. Some of his most memorable lectures were those in which he used his study and experience of the Egyptian civilization to illustrate his views on pathology and the course of civilized life. Shaw returned to Newcastle as professor of pathology in 1938. The war was quickly on us but in spite of difficulties he was able to infuse activity into builders and architects to commence a building which would become an institute of pathology within the grounds of the Royal Victoria Infirmary, where pathological anatomy, experimental pathology, biochemistry, and bacteriology would have their place. This was another fruitful period of his life in spite of the inclemencies of war and interruptions of illness. His teaching and his influence then reached their full maturity. Shaw was a lovable man. Uncompromising in his conception of good and evil, of truth and untruth, he may have appeared obstinate at times, but the tragedies of the modern world saddened him and he saw no way out except by combining reason with science and with that experience of things which we call culture. He lived as near to his own high conception of life as any man could. How strict and distinctive that conception was is known to his friends. By that he will be judged and remembered.

D. J. MACKINTOSH, CB, MVO, MB, FRSED

Dr Donald James Mackintosh for forty-five years medical superintendent of the Western Infirmary, Glasgow, died on June 12. He was appointed consultant superintendent and succeeded by Dr Loudon MacQueen as medical superintendent on Jan. 1, 1937.

Dr Mackintosh, who was born in the parish of Shotts, was educated first in his father's school and later in Madras College, St Andrews. A student of Glasgow University, he qualified M.B., C.M. in 1884. He was house-surgeon at the Glasgow Eye Infirmary and later one of the resident medical officers at the City of Glasgow Fever Hospital. He was the senior resident there until he was appointed medical superintendent of the Victoria Infirmary at its opening in 1890. Two years later he became medical superintendent of the Western Infirmary and began then to build up his great reputation as an authority on hospital administration and construction. Thus, at the request of the South African Government, he went out to the Cape to advise on the construction of a large new hospital. He was also one of the advisers consulted during the reconstruction of the Royal Infirmary and the Royal Hospital for Sick Children at Glasgow.

Dr Mackintosh was largely responsible for the organization and equipment of the Scottish National Red Cross Hospital

which served at Kroonstadt during the war. Later, when the Territorial Force was instituted, he was appointed colonel of the 3rd Scottish General Hospital, with the colonel. On the retirement of the late Sir G. Mackintosh, he was appointed A.D.M.S. of the Lowland Division in 1914, he was supervising the administration of all military, war, and Territorial general hospitals in the Glasgow area. Col. Mackintosh's services in connection with the volunteers of the Territorials, and ambulance work, his appointment as Officer in charge of the 1st Transport Company, Royal Army Medical Corps. He was a member of the Council and Executive of the Scottish Branch of the British Red Cross Society, chairman of the Council of St. Andrew's Ambulance Association, and chairman of the medical and equipments committee of the Scottish National Red Cross Hospital.

Dr Mackintosh had been a member of the British Medical Association for almost sixty years. He served as a member of Council in 1908 and again in 1911, after being a representative at the Annual Representative Meetings in 1907 and 1908. In 1915 he was president of the Glasgow and West Scotland Branch, and in 1920 he was appointed to the Scottish Consultative Council. At one time he was vice-president of the British Hospitals Association, honorary secretary of the Association for the Registration of Nurses in Scotland, and a member of the council of the College of Nursing.

Dr Mackintosh's varied career brought him many honours and distinctions. For his work during the 1914-18 war he was made C.B. He was also a member of the Victorian Order, an honorary associate of the Order of St. John of Jerusalem in England, and a Knight of Grace of that Order. In 1912 his own university conferred on him the honorary degree of LL.D. Early in 1929 the Secretary of State for Scotland made him a member of the Central Liaison Committee for Voluntary Hospitals in Scotland. Later in the same year he was appointed a Deputy Lieutenant for the City of Glasgow.

Dr GWILYM LLEWELYN PIERCE, of Abercynon, Glam., died on May 14 at the age of 56. The elder son of the late Dr. Hugh Davies-Jones, who gave his children an old family name, Dr. Pierce was born at Llangollen and came to live at Mountain Ash when his father succeeded to the practice of his brother the late Dr. D. Davies-Jones, in 1903. Educated at Dinglewood School, Colwyn Bay, he qualified at Edinburgh in 1914, and served in the R.A.M.C. in the 1914-18 war until he was invalided. He then joined his father in practice for a short time, but took service in the Merchant Navy, in which he remained until 1919, when he returned to Mountain Ash. On his father's death in 1921, he set up practice at Penrhynceiber, leaving his younger brother, Dr. Howell Pierce, in the family practice. In 1932 he again broke new ground and established himself in practice at Abercynon, where he remained until his death. From the outset of his career Dr. Pierce identified himself closely with all aspects of public life, and was formerly High Constable of Miskin Higher. In the field of first aid he was a tireless worker, carrying on in the tradition of his family, his uncle having first introduced the movement into the Aberdare Valley. At the time of his death he was Commissioner of the Order of St. John for the district, and was soon to have been the recipient of further honours. He was a Freemason and a member of St. Paul's Cathedral Lodge. He is survived by his wife and three children, the elder daughter a medical student at Edinburgh.

J. G. J. writes: Gwilym Pierce was a great B.M.A. man. He was treasurer of the North Glamorgan and Brecknock Division and had been its chairman; he was also vice-chairman of the Local Medical War Committee. But perhaps more important than these and other offices which he had held was the great enthusiasm and energy he brought to Association affairs. Gwilym, as he was affectionately known, was always present whether at Divisional Executive, Branch Council, or Glamorgan Panel Committee meetings and always his contributions to the discussions were penetrating, realistic, and honest. We have lost a grand colleague, but his work for the Division will endure as an inspiration to those who remain. Gwilym Pierce was a family doctor, and it was as such that he achieved his greatest success. The esteem in which he was held by his patients, and indeed by the whole community, was most revealing, and at Mountain Ash on May 17 great crowds bore witness to the unique position which he held in the affections of the people.

Medico-Legal

Refus

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HOSPITALS LIABILITY FOR A PATIENT'S PROPERTY

[FROM OUR MEDICO-LEGAL CORRESPONDENT]

Hospitals take charge every day of the personal belongings of many hundreds of admitted patients and it is surprising that the question of their responsibility for the safe keeping of this property so rarely comes before the courts. A lady was admitted as a patient to the St Pancras Hospital, which is maintained by the London County Council as part of their statutory duty. The hospital authorities took charge of some jewellery and a cigarette case which she brought with her and stored them with hundreds of other articles in envelopes stacked on the floor of a room which an expert burglar could enter without difficulty. The patient's sister wrote asking for confirmation of the contents of the patient's handbag, mentioning a diamond ring and clip and asking where these were deposited. The letter was not answered, apparently on the ground that the hospital did not give receipts for property taken. The patient's property was stolen, probably by a burglar. The patient sued the LCC for the return of her property or its value and damages for its detention, alternatively for damages for conversion, negligence or breach of duty.

Mr Justice Henn Collins said¹ that the degree of care expected of the Council's employees depended on whether they were 'gratuitous bailees' or received something for taking care of the property. They had a statutory duty to receive the patient, and it was a necessary precondition on their part to take possession of all the property she brought. They were in a position to recover all the expenses to which they were put, including the expense of keeping her property and entering it in a book. If a bailee was compensated for his pains he was bound to take at least such care as men of common prudence would take. Some measure of the degree of care required in this case had been provided by witnesses from the hospital who said that if they had realized that the articles had been so valuable they would have put them in the safe. The judge thought the hospital authorities were wrong to assume, as seemed to have been their practice, that the articles which they received were all trumpery. They admitted persons of the higher as well as the lower income groups, and there was no presumption that patients' property was not of value. If the authorities chose to treat it as worthless or as offering little temptation to thieves they took a risk on themselves. Much of the property which fell into their hands was obviously of little value, but a degree of care which was reasonable in the custody of articles which offered little temptation was not reasonable in that of articles which might offer more temptation. They had been warned that the property contained diamonds, and there seemed to have been some failure in the administration which prevented notice that the articles must be considered valuable from reaching those concerned. The LCC were therefore liable. In awarding damages his lordship held that they must include purchase tax, for this must be paid if an article were bought retail. The tax was a real addition to the price which had to be paid to replace the lost articles. He thought the proper value of the ring was £700 and of the clip £900, to which must be added the agreed price of £40 for the gold cigarette case—a total of £1,640, for which he gave judgment.

Comment

This decision suggests some interesting questions. Presumably if the patient had entered a voluntary hospital and paid nothing for her maintenance, the hospital would have been a gratuitous bailee and have been liable only for the results of gross carelessness. Payment for a bed in a voluntary hospital would presumably make the hospital a bailee for value, would payment of a contribution assessed by the almoner do the same? And what will be the position under the National Health Service?

Medical Notes in Parliament

PENICILLIN BILL

The Second Reading of the Penicillin Bill, which has already passed the House of Lords, was moved in the House of Commons on June 9. Mr ANEURIN BEVAN said that while penicillin was in short supply its purchase and distribution had been controlled by Defence Regulations. As soon as it had become obvious there was enough of this substance for general use the Government had to decide whether control should be continued. The view of the Government was that if control were continued it should be by a Bill passed by the House of Commons. Persons who had special knowledge about this substance were unanimous that there would be great danger to the public health if it were unrestricted in sale and consumption. They knew that if it were consumed over a long period in small quantities it would establish in the organism a resistance to its beneficial effects. It was highly undesirable that this valuable substance should be the plaything of quacks, sold as penicillin lipstick, penicillin rouge, and penicillin powder. It would be appalling if as a consequence of misuse, the population might receive no advantage from it because it would have developed resistance in those who took it. The decision therefore was that a short Bill would empower the Ministry of Health to control the sale and distribution of penicillin. The Bill was concerned only with the sale of the drug to the individual consumer. The Government did not wish to impose controls on the sale of penicillin in bulk or for export. It was not afraid of any shortage of supply. The Bill laid down that penicillin could be given only on the certificate of a qualified medical practitioner or veterinary surgeon.

"Great Expectations"

The Bill also took power to deal with other drugs where control might later be found to be necessary and to which the same definition applied. One called streptomycin had caused Mr Bevan considerable trouble. Great expectations had been carelessly aroused about it, but the Ministry of Health knew that in some instances this drug had caused definite harm. In other instances although a healing effect had been claimed that had not been established. Other investigations of an analogous kind were going on which, if they proved successful, would transform the whole field of medicine, but the Government was anxious that when these were perfected it would possess power to prevent their thoughtless consumption and commercial exploitation in a manner injurious to the public. Therefore the Bill took power to control those substances by Regulation after the Ministry had received the advice of the Medical Research Council about them. When the Bill went into committee he would move amendments dealing with some of the criticisms which had been made in the House of Lords.

Sir JOHN MELLOR commented on the fact that the control of the Ministry of Supply over penicillin on the ground of scarcity had been maintained after the scarcity passed away. He described the Bill as a pretty tall order. To control a therapeutic substance which could not be described as a poison or a dangerous drug was a novel step. While some measure of control should be retained Parliament should be careful to see it did not go beyond what was necessary and was not retained longer than was necessary. He asked whether the Medical Research Council had been consulted on the provisions of the Bill. He gathered that medical opinion had not yet crystallized in this matter. It was impossible at present to know how far it was necessary to control the use of penicillin and for that reason he would move in committee to limit the operation of the Bill to five years. In a recent debate Col. Stoddart-Scott who was a qualified medical practitioner, said that penicillin toothpaste and ointment ought to be free of control.

Mr BAIRD said the whole of the dental profession thought that would be completely wrong and would cause disaster.

Dr HADEN GUEST said penicillin, when used in the wrong way became a very dangerous drug because what was called 'penicillin resistance' could be built up. That situation had already arisen in Japan in regard to certain diseases, and the people concerned—in this case Service men—were no longer helped by penicillin when they fell victim to disease. He assured Sir John Mellor that representatives of the medical profession in the Services agreed the control of penicillin must be rigid or it would lose its effect and cease to be a remedy.

"Freedom to Doctor Oneself"

Mr Linstead welcomed the Bill but said there was a considerable onus on the Minister to prove his case. Freedom

¹ *Martin v. LCC* (1947) 1 All E.R. 783

At this point the debate stood adjourned, although an agreement had been made to take the Second Reading that night.

The Bill was then read a second time and sent to a committee of the whole House.

Mr AELWYN BEVAN said in 1939 there were 104 day nurseries in Eneland and Wales. In 1944 the number increased to 1 550 with places for 71 000 children. In 1947 these figures fell to 900 nurseries with places for 44 000 children but in the meantime 370 nursery schools had been provided for 19 000 children. These figures showed a higher proportion of women in industry and of nursery facilities than in time of war.

Government regarded the day nurseries as a better solution than day camps. It was panicked into recruiting a consequence it caused neglect of 150,000 children in the infant class and about 250 wartime nurseries so they were making some headway the need was proved. They gave towards the cost of nursery schools increase the proportion. He was in regard to creche facilities legislative power at present, and no places for young children. He was possible to provide crèches the mother could look in during the take it home with her straight away.

TUBERCULOUS DISEASES DIPLOMA—Agnes P Downie, M.D.,
A Gaubhar G R Hales H B Kelly R B Leech S P N
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DEATHS IN THE SERVICES

Lieut Colonel M. M. LOVSEY died at his home in Bradninch, Devon, on May 8 at the age of 74. He was the fifth son of the late Luke Lovsey of Hampstead Norris, Berks and was educated at Cheltenham College and Charing Cross Hospital. He qualified in 1896 and was commissioned in the R.A.M.C. in 1898, returning in 1922. He then went into general practice at Bradninch, returning from that in 1937. He served with distinction during the first world war, being twice mentioned in dispatches and awarded the D.S.O. and the Greek Meritorious Medal. During the second world war he served continuously on medical boards and in the Home Guard. He took a great interest in local government and was for a long period on the Wokingham Rural District Council.

Surgeon Rear-Admiral H. M. WHELAN, formerly officer commanding the Royal Naval Hospital, Plymouth died on May 27, at the age of 57 after a long illness. Hamlet Mark Whelan was a son of the late Fleet Surgeon J. H. Whelan, educated at University College, Cardiff and the London Hospital, he qualified in 1912. He joined the naval medical service the same year and served in the cruisers *Essex* and *Adventure* and during the 1914-18 war at the R.N. Hospital Chatham. Subsequently he was in charge of the R.N. Hospital at the Cape of Good Hope, which appointment he retained until 1943, when he became Surgeon Captain (surgical division) of the R.N. Hospital Plymouth. In 1944 he was promoted rear admiral and became Principal Medical Officer Western Approaches. He was appointed an honorary surgeon to the King in 1946.

In this column of the *Journal* of June 7 (p. 830) Sir Henry L. Tidy, K.C.B. should read Sir Henry L. Tidy, K.B.E.

EPIDEMIOLOGICAL NOTES

Smallpox

Contacts remain under surveillance at Barnsley C.B., Bilston U.D. and Wakefield C.B. The last patients were removed on June 4 and the cropping period for a new generation has been entered, but no further cases have been reported at the time of going to press.

At Barry U.D., Glamorgan, a woman aged 28 was removed as a case of suspected smallpox on June 13 and the usual precautions were taken. The diagnosis is still in doubt.

The diagnosis in the initial Wakefield case has now been confirmed by the recovery of variola virus on egg culture.

The last case was removed from Sheffield on May 21, and there are good reasons for believing that the outbreak there has terminated.

The period of surveillance of contacts at Coseley expired on June 16 without further incident. The outlook here is hopeful.

Discussion of Table

In *England and Wales* infectious diseases were less prevalent. There were falls in the incidence of measles 516, whooping-cough 222 and scarlet fever 96.

The largest decreases in the notifications of measles were Essex 240, Worcestershire 152, Lancashire 142, and Kent 75, the largest increases were Glamorganshire 164, Isle of Ely 83, Hertfordshire 63, and Somerset 53. Small decreases in the incidence of whooping-cough were recorded in most areas, and the largest declines were Kent 48 and Essex 32. In contrast to the general trend large rises in the number of notifications occurred in Yorkshire West Riding 75 and Middlesex 45. There were no changes of any size in the local returns of scarlet fever. The only variations of note in the returns of diphtheria were a decrease in Lancashire 17 and an increase in Durham 17.

The notifications of smallpox were 6 higher than in the preceding week, giving the largest weekly total for recent years. The 14 cases were distributed in three areas, Yorkshire West Riding, Barnsley C.B. 11, Sheffield C.B. 1, and Staffordshire Coseley U.D. 2.

In *Scotland* decreases were recorded in the notifications of whooping-cough 42 and acute primary pneumonia 15, the only increase being that for measles 36. The notifications of cerebrospinal fever in Glasgow rose from 15 to 29.

In *Eire* the incidence of measles increased by 28 while a fall was recorded for whooping-cough 12 and diphtheria 13. The rise in cases of measles was mainly contributed by Dublin C.B. with an increase of 22.

In *Northern Ireland* the only change of any size in the trends of infectious diseases was an increase of 13 in the notifications of measles.

Week Ending June 7

Notifications of infectious diseases in *England and Wales* during the week included scarlet fever 730, whooping-cough 2050, diphtheria 196, measles 1353, pneumonia 467, cerebrospinal fever 63, acute poliomyelitis 22, dysentery 53, smallpox 7, paratyphoid 16, typhoid 2.

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended May 31.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year for (a) *England and Wales* (London included) (b) *London* (administrative county) (c) *Scotland* (d) *Eire* (e) *Northern Ireland*.

Figures of Births and Deaths and of Deaths recorded under each infectious disease for (a) The 126 great towns in *England and Wales* (including *London*) (b) *London* (administrative county) (c) The 16 principal towns in *Scotland* (d) The 13 principal towns in *Eire* (e) The 10 principal towns in *Northern Ireland*.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1947					1946 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever Deaths	73	3	46	6	4	54	8	33	—	—
Diphtheria Deaths	194	14	55	15	5	304	4	86	38	8
Dysentery Deaths	46	4	19	—	—	16	15	46	—	—
Encephalitis lethargica acute Deaths	3	—	—	—	—	—	—	—	—	1
Erysipelas Deaths	—	—	25	10	—	—	—	40	10	3
Infective enteritis or diarrhoea under 2 years Deaths	64	3	23	33	2	34	1	11	27	3
Measles* Deaths	12 314	545	177	110	34	3 931	967	640	78	5
Ophthalmia neonatorum Deaths	56	6	12	—	—	64	4	23	—	—
Paratyphoid fever Deaths	7	—	1(A)	—	—	—	—	—	—	—
Pneumonia influenzal Deaths (from influenza)†	512	30	3	5	10	596	43	3	5	1
Pneumonia primary Deaths	—	—	171	20	6	—	32	228	32	—
Polio-encephalitis acute Deaths	3	—	—	—	—	1	—	—	—	—
Poliomyelitis acute Deaths	18	2	4	4	—	9	1	1	5	—
Puerperal fever Deaths	—	2	18	—	—	—	1	20	—	—
Puerperal pyrexia‡ Deaths	116	7	14	2	1	135	8	10	3	—
Relapsing fever Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever Deaths	886	75	147	22	42	1 070	88	176	31	3
Smallpox Deaths	14	—	—	—	—	2	—	—	—	—
Typhoid fever Deaths	1	—	6	2	1	5	—	4	4	—
Typhus fever Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough* Deaths	1 657	240	154	38	20	2 055	193	92	30	1
Deaths (0-1 year) Infant mortality rate (per 1 000 live births)	39.5	47	74	26	15	32.1	46	63	25	1
Deaths (excluding still births) Annual death rate (per 1 000 persons living)	4 476	696	582	175	111	4 336	678	615	194	12
Live births Annual rate per 1 000 persons living	8 561	1329	1131	522	320	8 438	1273	1009	444	28
Stillbirths Rate per 1 000 total births (including stillborn)	273	32	29	—	—	264	33	29	—	—

* Measles and whooping-cough are not notifiable in *Scotland* and the return are therefore an approximation only.

† Includes primary form for *England and Wales* (*London* (administrative county) and *Northern Ireland*).

‡ Includes puerperal fever for *England and Wales* and *Eire*.

Medical News

West London Hospital Medical School

The youngest of the undergraduate medical schools, that of the West London Hospital at Hammer-smith, will close shortly, and places will have to be found elsewhere for students who had intended to do their clinical training there. From a small beginning in 1937 with a few women students who were unable to obtain their clinical training at the schools where they had pursued a pre clinical course, it gradually expanded to take 80 to 90 students, still mostly women, from UCH, King's College Hospital, and Oxford and Cambridge. No men have been admitted since 1941. The status of undergraduate teaching school within London University has been sought, but was finally turned down in March of this year, the chief reasons being that facilities for pre clinical training are not available and to provide them would require considerable rebuilding, and additional staffing and expenditure. This decision is in accordance with the Report of the Goodenough Committee, which recommended the expansion of other medical schools and the ultimate closure of the West London. The future of this successful endeavour to provide opportunities for more women to qualify as doctors may lie within the British Postgraduate Federation, and it is envisaged that the school should become a centre for the training of specialists in medicine and surgery.

New Research Unit

The Medical Research Council is setting up a new research unit on the physiology of vision. Prof. H. Hartridge is to be the Director.

Confinements under NHS (Scotland) Act

Criticism has appeared in the Press and elsewhere that under the National Health Service Act women confined in their own homes would be unable to have a doctor present, and that if complications arose the patient would have no choice of doctor. It has also been suggested that women would be expected to go to maternity hospitals during confinement to obtain the benefits of the new scheme. These points were raised at the annual meeting of the Central Council of Scottish Women's Rural Institutes and were the subject of a letter addressed by the Council to the Secretary of State for Scotland. The Secretary of State's reply points out that the criticisms are without foundation. A woman may choose what ever doctor she wishes to attend her at home, and he will also be responsible for antenatal medical examination, treatment, and supervision. Furthermore, if a woman wishes to be confined at home, she may be.

New Journal of Nutrition

The first part of a new quarterly, the *British Journal of Nutrition* of the Nutrition Society, will appear shortly. It will incorporate the *Proceedings of the Nutrition Society* and publish original work on all branches of nutrition. Papers for publication should be sent to Dr. S. K. Kon (British Journal of Nutrition), National Institute for Research in Dairying, Shinfield, Nr. Reading, Berks. The editorial board will consist of D. P. Cuthbertson, J. N. Davidson, R. C. Garry, G. Graham, J. Hammond, E. M. M. Hume, S. K. Kon (chairman), I. Leitch, W. C. Miller, F. Yates, B. S. Platt, and J. A. B. Smith. Subscription rates for non members of the Nutrition Society are £3 per volume of four quarterly parts, separate parts will cost £1 each. Subscriptions and inquiries should be addressed to the Cambridge University Press, 200, Euston Road, London, NW 1.

Royal College of Midwives

The King has commanded that the College of Midwives, founded in 1881 and incorporated in 1886, shall be entitled the Royal College of Midwives.

Reduction of Local Authority Staffs

The Government's White Paper, the "Economic Survey for 1947," pointed out the necessity of expanding the nation's labour force and assumed a reduction in the numbers employed in national and local government. A circular from the Ministry of Health to local authorities invites them to reduce the numbers of their employees as much as possible.

Relief of Widows and Orphans

The annual general meeting of the Society for Relief of Widows and Orphans of Medical Men was held on May 21 with the president, Dr. R. A. Young, in the chair. The court of directors for the ensuing year was elected. The resignation of Dr. Blackett as secretary of the society was received, and in appreciation of his services as secretary for a period of 42 years Dr. Blackett was elected a vice president. The accounts for the year ending Dec 31, 1946, were presented. The total amount distributed in grants during 1946 to 52 widows was £3,912 10s., and, in addition, a Christmas present of £20 was made to each widow, making the total amount distributed £4,952 10s. It was reported that the membership of the society was 281, of which 160 were life members and 121

ordinary members. Particulars of the society may be obtained on application to the secretary, 11, Chandos Street, London, W 1.

First Woman President

The Pharmaceutical Society has elected as its president Mrs. J. K. Irvine, M.B.E., who is at present Superintendent of the Ministry of Health's South Eastern Pricing Office. She is the first woman president to be elected in the 106 years of the Society's history.

Convalescent Diabetics

Special convalescent facilities are now available for diabetic patients at the British Red Cross Convalescent Home, Burley on the Hill, Oakham, Rutlandshire (for men and boys), and at St. Mary's Convalescent Home, Birehington on Sea, Kent (for women and children). These homes educate diabetics to look after themselves and include training in giving injections, doing urine tests, and cooking. Further particulars may be obtained from the Almoner, Convalescent Homes, Diabetic Association, 9, Manchester Square, London, W 1 (Tel. Welbeck 6001).

Hospital Service Plan

The Hospital Service Plan, introduced five years ago by King Edward's Hospital Fund for London, has been extended to include an additional £1 is per week, cover for tonsillectomy previously excluded, and a choice of three different schemes.

Zodiac

The Aberdeen University Medical Society has just issued the first number of its journal published under the title of *Zodiac*. It is intended that this new publication shall appear twice yearly, in September and March.

Chartered Society of Physiotherapy

The Society of Physiotherapists, which was started fifteen years ago, has now been wound up, and as a result of discussion with the Chartered Society of Physiotherapy the latter society has agreed to accept bio physical assistants on the Society of Physiotherapists' sponsorship for enrolment on the CSP Register.

Medico Legal Dinner

The Medico Legal Society on June 12 held its first dinner since the outbreak of the recent war. Sir Frank Newson, of the Home Office, proposing the toast of 'Medicine and Law,' paid a tribute to Sir Norwood East and the medical profession for their services to the Home Office and announced that his Department was preparing a Criminal Justice Bill that would enable courts to take full account of an offender's mental condition. Lord Schuster responded, wondering whether the Bill would be too elaborate for those who would have to operate it. Sir Maurice Cassidy, pleading that he was 'the apotheosis of the dumb doctor,' spoke of the trouble caused by doctors and lawyers. Lord Moran proposed the toast of the Medico Legal Society, and admitted the way lawyers tore a patient apart to get at the essentials just as doctors dissected the body. Sir Norwood East, the President, responded. He recalled that the Society was 46 years old and continued to increase in numbers, while vigilantly maintaining its high standards. He reviewed some of its recent activities and concluded by referring to the device on the Society's journal—a woman symbolising Truth being drawn from a well by the hand of Medicine on one side and of Law on the other.

DDT Grit

A man and his wife, their two children aged 6 and 9, and a brother-in-law, were admitted to the Manchester Royal Infirmary at 6 p.m. on Sunday, June 15. They were suffering from diarrhoea and vomiting as a result of taking DDT mixed with grass. The man had helped his wife to make the grass as was his custom. Instead of stirring 2 tablespoonfuls of flour into 1 p. of grass he stirred in 2 tablespoonfuls of what was said to be pure DDT. This was kept in a similar type of tin to the flour. The grass was eaten about 3 p.m. by the five people, and the brother-in-law said a metallic taste at the time. Two hours later all five were sick with diarrhoea and vomiting, varying in severity according to the quantity consumed. The father who was fond of his own food consumed more than the others was the most affected. On arrival at the hospital they all complained of diarrhoea and sickness, the hands and feet. The only one of the five about whom no complaint was felt was the father. There was a good deal of diarrhoea, and the stomach tube on account of coughing. After one hour of coughing he was unconscious for a few moments. The mother, child, and the brother-in-law, all recovered rapidly and were able to return home later in the evening since they lived near the hospital. The father and one child were still complaining of diarrhoea, nausea and were detained for the night. Both had fully recovered by Monday morning. If this was pure DDT then the grass presumably contained about 10 p.p.m. Assuming that half of the grass was wasted by being left in the pan or on the plate and that two individuals may have consumed the equivalent of 1 p.p.m. of DDT more in the case of the father.

COMING EVENTS

Malaria Control

The annual malaria control courses for planters miners and others is to be resumed and this year will be held at the London School of Hygiene and Tropical Medicine, Keppel Street W.C., from June 23 to 27 inclusive. The lectures and demonstrations will be given from 10 a.m. to 1 p.m. each day. Arrangements will be made to give lectures on other subjects such as housing sanitation, etc. in the afternoons. The course is free. Applications to attend should be sent as early as possible to the organizing secretary, Royal Institute of Tropical Hygiene, Keppel Street, Gower Street, London W.C.1.

Nutrition and Bread

The Sanderson Wells Lecture will be delivered by Sir Jack Drummond D.Sc., F.R.S., at the Middlesex Hospital, W., on Tuesday, June 24 at 4.30 p.m. His subject is "The Nutritional Value of Bread." The lecture is open to all members of the medical profession.

Paddington Medical Society

The annual general meeting of the Paddington Medical Society will be held at St Mary's Hospital Paddington, W., on Tuesday, June 24 at 8.45 p.m., when the president, Dr L. Zeitline, will deliver an address on 'Humour in Medicine.' All medical practitioners are invited to attend.

Hygiene Congress

A Congress of School and University Hygiene will be held in Paris on June 25-29, under the auspices of the Ministries of Education and Public Health. Subjects to be discussed include the schooling of mental defectives, school meals, schools for visually defective children and corrective exercises. Doctors from abroad interested in school hygiene are invited to participate. Inquiries should be addressed to the secretary general of the congress, Dr P. Delteil, 46, Rue de Naples, Paris (8^e).

Faculty of Homoeopathy

A meeting of the Faculty of Homoeopathy will be held at London Homoeopathic Hospital on Wednesday, June 25, at 5 p.m. when Dr John Paterson will read a paper on 'Homoeopathic Philosophy Brought Up to Date.'

Medico Legal Society

A meeting of the Medico Legal Society will be held at 26 Portland Place, W., on Thursday, June 26, at 8.15 p.m., when the president will read a paper on 'Psychiatry and Degrees of Murder.'

Faculty of Radiologists

The annual meeting of the Faculty of Radiologists (45, Lincoln's Inn Fields, London, W.C.) will be held at Birmingham on Friday and Saturday, June 27 and 28.

Society for Endocrinology

A meeting of the Society for Endocrinology will be held at Guy's Hospital S.E. on Saturday, June 28, at 10 a.m., when a symposium on 'The Assay of Urinary Steroids' will be presented.

Lewis's Library and Bookshop

Messrs H. K. Lewis and Co., Ltd. (136, Gower Street, London, W.C.) have asked us to bring to the notice of our readers the fact that they have arranged a staff outing for Saturday, June 28, and that, in consequence, their premises will be closed on that day.

Association of Clinical Pathologists

The 38th scientific meeting of the Association of Clinical Pathologists will be held at the Sir William Dunn School of Pathology, Cambridge on Friday and Saturday, June 27 and 28. The programme is as follows: June 27 9.30 a.m., Dr K. S. Thompson, 'Chronic Thrombosis of the Hepatic Ostia' 9.45 a.m., Dr M. Bodian, 'Pulmonary Haemosiderosis' 10.10 a.m. Drs G. T. Cook and B. P. Marmion 'Gastro enteritis of Unknown Aetiology Outbreaks at Leicester and Oxford, 1944-7,' followed by a discussion to be opened by Dr R. Cruickshank 11.35 a.m. Dr H. Sisk (Prague) 'Lesser Known Histological Methods for Routine Use in the Laboratory' 12 noon, Dr R. M. Haines 'The Eye in Tuberculous Sclerosis' 12.15 p.m. Drs J. S. Mitchell and A. M. Barrett, Symposium on 'The Radiosensitivity of Tumours' 2 p.m. demonstrations 4.45 p.m. Dr J. E. McCartney 'The Use of the Electron Microscope in Bacteriology' 5.15 p.m., Presidential Address 'A Retrospect of British Pathology' June 28 9.30 a.m. Dr M. Hynes, 'The Leucocytic Drift' 9.55 a.m. Dr J. Ungar, 'The Antigenic Properties of Pertussis Vaccines' 10.15 a.m. Dr S. Seviat 'Saline Haemolysin Test for Streptococci' 10.30 a.m. Dr F. Vanicek (Pilsen), Report on 'Some Attempts to Simplify Diagnostic Methods in Clinical Bacteriology' 11.30 a.m. Dr A. Renshaw, 'Blood Protein Variations in Rheumatic Diseases, with Remarks on Technique' 11.50 a.m. Dr J. V. Wilson, 'Blood

Viscosity as an Index of Activity in Chronic Rheumatism' 12.10 p.m., Drs E. J. King and R. J. Garner, observations on 'The Colorimetric Determination of Glucose' 12.35 p.m., Dr C. E. Dukes 'Unsolved Problems in Genito urinary Tuberculosis' 2.30 p.m., Prof. H. R. Dean will conduct a party round the college and Dr R. Williamson will show some early medical books. Various demonstrations will be given from 2 p.m. on June 27 to 12 noon on June 28.

DIARY OF SOCIETIES AND LECTURES

ROYAL SOCIETY OF MEDICINE

Section of Urology—Thursday, June 26, 8 p.m. Clinico pathological Meeting.

Sections of Laryngology and Otolaryngology—Friday, June 27 Combined Summer Meeting at Brighton Meeting in the Nurses Lecture Room Royal Sussex County Hospital 10 a.m., Paper by Miss Winifred Hall and Mr John McGibbon 'The Association of Otitis Media with Acute Non specific Gastro enteritis of Infants' 2 p.m. Papers by Mr V. E. Negus 'Certain Anatomical and Physiological Considerations in Paralysis of the Larynx' Mr W. E. Archer 'The Treatment of Subacute Maxillary Sinusitis especially in Children' Film by Dr Hollinger of 'Bronchial Neoplasms' will be shown by Mr G. H. Bateman.

Sections of Laryngology and Otolaryngology—Saturday, June 28 Summer meeting at Brighton continued 10 a.m. Clinical meeting in Grant Ward, Royal Sussex County Hospital Discussion 11.45 a.m. Film and Demonstration Miss M. R. Dix and Mr C. S. Hallpike 'Pure tone audiometry in young children' A new technique.

POSTGRADUATE DIARY

EDINBURGH POSTGRADUATE BOARD FOR MEDICINE—At West Medical Lecture Theatre, Edinburgh Royal Infirmary, Tuesday, June 24 5 p.m. Dr T. N. MacGregor 'Sex Hormones in Theory and Practice.'

LONDON SCHOOL OF DERMATOLOGY 5 Lisle Street Leicester Square W.C.—Tuesday, June 24, 5 p.m., Dr W. J. O'Donovan 'Occupational Dermatitis' Wednesday, June 25, 5 p.m. Dr C. W. McKenny 'Technique of X-ray Treatment (Part II).'

A clinico pathological demonstration will be held in the Meyerstein Lecture Theatre of the Westminster Hospital School of Medicine, Horseferry Road, S.W. on Monday July 7, at 5 p.m. when two cases of aplastic anaemia will be shown.

APPOINTMENTS

Miss Laura Margaret Dorothea Mill, M.B., Ch.B., has been appointed a Medical Commissioner of the General Board of Control for Scotland in place of Dr Kate Fraser who retired recently. Dr Mill has been in the service of the General Board of Control as a Deputy Commissioner since 1936.

Mr Daniel Limont, consulting surgeon at the Gilbert Bain Hospital, Lerwick, has been appointed an honorary member of the Association Française de Chirurgie.

Dr H. B. Lee, D.S.O., M.C., has been appointed a Nominated Member of the Executive Council of the Island of St. Helena.

HEWITT S. M.B. B.S. D.P.H. Deputy County Medical Officer for Herefordshire.

LONDON COUNTY COUNCIL.—The following appointments are announced at the hospitals etc. indicated in parentheses: Medical Superintendent A. Mitchell M.D. (St. John's) Deputy Medical Superintendents R. G. Thomas F.R.C.S. Ed. (Queen Mary's Hospital for Children Carshalton) J. Sharkey M.D. (Northern) R. D. Green M.D. (Paddington) F. R. Leonard F.R.C.S. (St. Leonard's) M. Twohey M.D. (New End) Senior Resident Surgeons I. A. Alexander M.B. Ch.B. (Hackney) E. C. Chitty F.R.C.S. Ed. (St. Stephen's) Pathologist A. Beck L.R.C.P.S. Ed. (Group Laboratory North western) Assistant Pathologists A. F. Mohun M.B. B.S. (Archway Group Laboratory) S. C. Dobson B.M. B.Ch. (St. Mary Abbeys Group Laboratory) Junior Assistant Pathologist R. Martlew M.B. B.Chir. (Lambeth Group Laboratory) Radiodiagnostician V. G. Peckar M.B. B.S. (Lambeth and St. Charles) Assistant Radiodiagnostician G. M. Ross M.B. Ch.B. (Hammersmith) Junior Assistant Radiodiagnostician J. M. Corral M.B. Ch.B. (Hammersmith) Assistant Medical Officers School Health Service G. K. Lim M.B. B.S. A. L. Throver M.B. B.S. Edith J. R. Parfitt M.D.

BIRTHS, MARRIAGES, AND DEATHS

The charge for an insertion under this head is 10s. 6d. for 18 words or less. Extra words 3s. 6d. for each six or less. Payment should be forwarded with the notice, authenticated by the name and permanent address of the sender and should reach the Advertisement Manager not later than first post Monday morning.

BIRTHS

CAPPER—On June 3 1947 to Margaret (née Hutchinson) wife of J. I. Capper M.B. of Merthyr Tydfil a son.
ROSS—On May 24 1947 to Mary (née Long) wife of Kenneth Aird Ross M.B. Ch.B. 74 Clare Court Judd Street W.C.1 a son.
TAYLOR—On May 24 1947 to Dinah (née Lidsier) wife of Kenneth H. Taylor F.R.C.S. a son.

MARRIAGE

POLLITT—ATTWOOD—On April 30 1947 at Castle Church Stafford Peter G. H. T. Pollitt M.B. Ch.B. to Gwendoline Attwood.

Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions, which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Electronarcosis

Q—Could you give me information or references concerning electronarcosis in the treatment of psychotics?

A—Electronarcosis is a modification of electric convulsive therapy. The machine used is different in that it has a device by which a continuous current can be run through the brain, since changes in the patient's resistance are compensated for by raising or lowering the voltage automatically. It is described in articles by Frostig *et al* (*Arch Neur Psychiat* 1944, 51, 232), and Tietz *et al* (*J Nerv Ment Dis* 1946, 103, 2, 144). The treatment was started at hospitals in the neighbourhood of Los Angeles. The technique in man is to give the patient a current of about 180 milliamperes for half a minute and thereafter to decrease it gradually to about 65, gradually raising it again to 100 or 120 milliamperes. The total treatment lasts seven minutes. The current is much less than that given in electric shock (400 to 1,200 milliamperes), and animal experiments have shown that no irreversible changes occur in the brain. During treatment the patient remains in a tonic state for the first half-minute, when respiration is inhibited and thereafter, by gradual reduction of the current, falls into a quiet narcotic state in which the muscles are hypertonic with flexion at the elbows and extension of the knees. The treatment is given three times a week for a month. A second course lasting a month can be given after a week's rest where recovery is not complete.

It is claimed that the treatment is successful in cases of schizophrenia where ECT is relatively unsuccessful, and that the results are equal to those of insulin coma therapy. Only 47 cases, however, have been published to the writer's knowledge but more work is expected. In 1946-7 treatment by electronarcosis has been started at the West London Hospital, St James's Hospital, Portsmouth, Guy's Hospital, and Sutton Emergency Hospital.

Pink Disease

Q—Would you suggest a method to quiet a very irritable child suffering from pink disease? It has the typical rash all over its body. Chloral hydrate and phenobarbitone 1½ gr (32 mg) have had no effect. The parents are getting no sleep and are becoming desperate.

A—In the first place remove the parents' despair by explaining why the child is miserable. They will be encouraged by this. Tell them that the child is suffering from an intolerable burning, itching sensation which is most exquisite in the fingers, toes, tongue, and perianal area, that the disease will run its course in three to six months, that the child's recovery will depend on the constant care and nursing which they themselves give it and which they can give far better than any hospital. Give them heart by saying that when the child recovers the credit will be entirely theirs. If the mother is losing too much sleep (which is not probable, because the sleep requirements of mothers fall to very little when their own children are ill) get the granny or a neighbour to come in and help her from time to time. Clothe the child with linen or silk next to the skin. Do not give hot drinks. Feed the child on ice cream if necessary. Walk the floor with the child, and wheel it out of doors in a pram as much as possible. Use cooling lotions and frequent cool baths. Explain that it is satisfactory if the child sleeps only in short periods of twenty or thirty minutes, that will suffice. When you have done all these things consider the use of sedatives, but use them wisely. A child ill with pink disease may get bronchopneumonia if drugged too much. Every other day or so give enough barbiturate to make the child sleep for about two hours. Certainly 1½ gr of phenobarbitone will not suffice. Try a bigger dose. Finally, do not admit the child to hospital.

Trigeminal Neuralgia

Q—A woman aged 65, who was surgically relieved of an intractable tic douloureux ten years ago now has a recurrence on the other side. As she will not contemplate surgery again can you inform me of any recent advances in medical treatment?

A—There are no recent advances in the medicinal treatment of trigeminal neuralgia. For the purely temporary relief of a paroxysm of pain there is, of course, the inhalation of 5 to 10 drops of trichlorethylene from a handkerchief. This has to be done cautiously as it may produce syncope. Surgical treatment offers the only permanent cure, and the newer techniques are certainly an improvement on the old. The physician might well feel justified in pressing surgical treatment in such a case. Alcoholic injection of the nerve may be regarded as a rather inadequate compromise.

Sexual Frigidity

Q—A happily married woman aged 36 with two children complains of complete absence of libido. She is physically normal and healthy and there is no apparent psychological cause. A prolonged course of chorionic gonadotrophin has not improved the condition. Is there any safe aphrodisiac I can give her and would it be suitable for use in cases of male impotence?

A—Although a psychological cause for the frigidity is no apparent, a physical cause is not likely for if there was an endocrine upset there would be other evidence of its presence. The question does not state whether the frigidity has always been present or whether it is a recent development. Among the possible factors to be looked for are fear of pregnancy and an unsatisfactory method of contraception. Drugs reputed to have an aphrodisiac action are rarely of any value and the same is true of hormones except where there is gonad deficiency. In such a case oestrogens for the female and testosterone for the male, are preferable to gonadotrophin.

Cholecystography after Cholecystitis

Q—Is cholecystography contraindicated within two to three weeks after an acute attack of cholecystitis on account of possible damage to the liver?

A—As a rule cholecystitis is a local infection, the liver is not much affected unless there is accompanying cholangitis. Therefore there should be no risk of damaging the liver by taking a cholecystogram three weeks after an acute attack of cholecystitis.

Undulant Fever

Q—I have a patient with undulant fever of whom two pathological investigations have been made. The first pathologist found a titre of 1/125 for *Br. melitensis* *Br. abortus* and the second (ten days later) found titres of 1/500 for *Br. abortus* and 1/150 for *Br. melitensis*. In view of these conflicting reports how can I cure the fever?

A—Would the questioner have been in any way in a better position to cure this patient if the two reports had agreed? The treatment of undulant fever due to either species of *Br.* is notoriously unsatisfactory. They are usually highly resistant to penicillin, even streptomycin has given disappointing results in spite of *in vitro* susceptibility to this drug. A course of one of the sulphonamides is the only appropriate form of chemotherapy, this often appears to shorten the duration of the disease. If the infection was acquired in this country it is almost certainly due to *Br. abortus* and the findings in the second report quoted are typical—a high titre for *Br. abortus* organism and a lower for the other, owing to their close antigenic relation.

Treatment of Catarrh

Q—Is there any hypodermic treatment for catarrh unrecognized, for catarrh?

A—Presumably hypodermic treatment means systemic treatment by injection. There is no medical treatment of catarrh administered either orally or by the hypodermic route. As for unrecognized catarrh...

general treatment of cataract, these are as numerous as the practitioners who administer them. They have no scientific basis. The least confused would appear to be some method of antient treatment based on the injection of lens matter. A fairly prevalent method is the use of sodium iodate drops. There is no reason to believe that this is any less futile than the other methods.

Keloid Formation and Skin grafting

Q—*A girl aged 13 who is having skin grafts has proved to be a keloidal subject. The donor sites have formed such poor tissue that it is doubtful whether further grafts can be taken. Have skin grafts been successfully taken from one person to another?*

A—The patient whose donor site has become keloidal presents a problem well known to all plastic surgeons. As a rule donor sites of split skin grafts can be used several times, but where keloidal tissue has formed—and this may occur even where the thinnest skin grafts are removed—great difficulty may be experienced in obtaining enough skin. Usually with the passage of time the keloids subside. Carefully graduated doses of x rays are useful. Skin grafts from another person do not help, for though they occasionally take for a short period, they usually disappear. Cross grafting of skin is not satisfactory except in the case of identical twins.

Urticaria

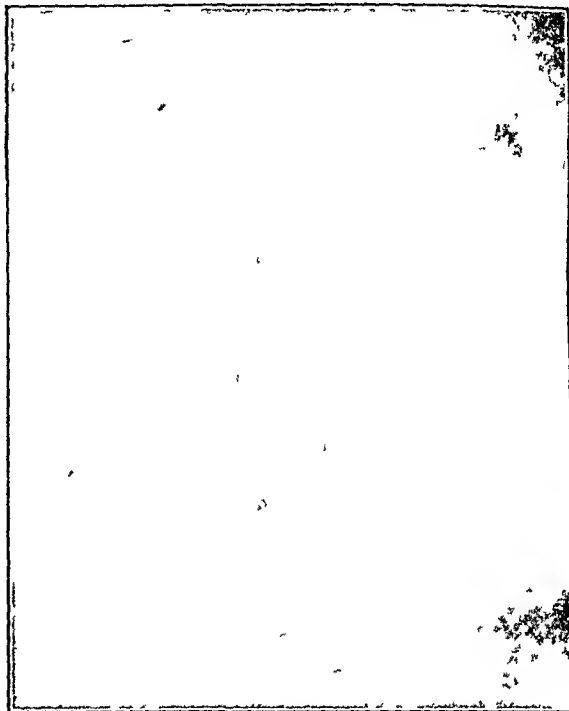
Q—*A female aged 58 had urticaria three years ago lasting nearly two years. Skin tests failed to show sensitivity to any food. Recently another attack started. Can she be desensitized? What treatment would you recommend?*

A—Search should be made for a focus of infection. Failing this, stilboestrol is well worth trying. In the allergic type, foods and drugs are the commonest causes. The most likely foods are egg, milk, wheat, fruits, and fish. As skin tests are unreliable in urticaria, food sensitivity can be tested only by trial dieting, excluding from the diet the food or foods suspected for a few weeks and then restoring them and noting the effect. If a specific allergic cause is found, elimination rather than desensitization is the treatment of choice. Non specific treatments are by vitamin K and autohaemotherapy. 'Benadryl' in doses of 50 to 150 mg gives symptomatic relief in about 80% of cases but its tendency to cause drowsiness necessitates the first few doses at least being taken at home, preferably in the evening.

NOTES AND COMMENTS

Cystine Stones—Dr W. M. CHESNEY (Birmingham) writes. In the answer to the question on cystine stones (May 31, p. 794) it is stated that there is no known method by which they can be dissolved after they have formed. The following brief account of the complete disappearance of a massive collection of bilateral cystine calculi may be of interest. X-ray of the urinary tract of a woman aged 25 in October, 1934, revealed a massive collection of bilateral renal calculi. She was then seen by two distinguished urologists who diagnosed cystine stones and prescribed a low protein diet and alkalization of the urine. They also with some hesitation decided that an attempt should be made to remove the stones from one kidney. From the x-ray film the right kidney appeared the more operable and in March 1935, one of them removed during a tedious operation about twenty stones from that kidney, reluctantly leaving a considerable number behind. X-ray four months later (July, 1935) showed a mould stone shadow in the left kidney pelvis and multiple stone shadows in the right kidney. Subsequently a skragraph was taken every year up to 1939 (inclusive) and again in January 1941, and in October, 1944. The films showed a progressive diminution of the calculi up to 1939, when the right side was reported by the radiologist as practically clear and the original large mass on the left had become a very small shadow. On the films of 1941 and 1944 there was no shadow present to suggest a urinary stone. I am in possession of all the x-ray films except the first (October, 1934) which was unfortunately lost at the time of the operation. Dr Harold Black, of Birmingham, was the radiologist throughout and the sentences in inverted commas are extracts from his reports. Reproduced is the film of July 1935 (four months after operation). The stone shadows on films of later date are so small as to be indiscernible on reduced photographic reproduction of the films. The patient adhered more or less to a low protein diet until the onset of the late war when she practically abandoned it. Where a choice in diet is still available she generally selects the articles of lower protein content. At first she took a pot cit and sod

bicarb mixture and frequently tested her urine for alkalinity. For several years now she has taken sod bicarb only, usually two level teaspoonfuls daily, her urine being tested for alkalinity occasionally.



Presumably the prolonged alkalization of the urine was the chief operative factor in the dissolution of the calculi. It should be added that she became pregnant (first pregnancy) in 1938, refused early evacuation of the uterus (advised as a result of renal function tests), had a normal pregnancy, and gave birth to a healthy female child in 1939.

Discussion on Homosexuality Correction—Dr H. MANNHEIM (London, WC2) writes. My attention has been drawn to a report on the joint meeting of the Medico Legal Society and the Section of Psychiatry of the Royal Society of Medicine published in your issue of May 17, 1947 on p. 691, where I am quoted as having stated that homosexuality came under ecclesiastical law 'from Henry VIII until 1763'. I am afraid the words which I have put in quotation marks are a misquotation. What I have actually said was that homosexual activities had been punishable in this country only as an ecclesiastical crime up to the time of Henry VIII (1533). I did not mention the year 1763 at all.

INCOME TAX

All inquiries will receive an authoritative reply but only a selection can be published.

Postgraduate Study

I T has expended £1,000 on a three months' visit to the U.S.A. for the purpose of postgraduate study. Can he claim a deduction for such expenses—e.g. as incurred for "Scientific Research"?

•• No. Such expenses the purpose of which is to add to professional knowledge and skill and to improve earning capacity are regarded as an outlay of capital and not as an "income" expense. The recent legislation with regard to scientific research extends only to expenditure incurred by a 'trader,' and is inapplicable to a member of a profession.

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RECENT ADVANCES IN THE PHYSIOLOGY OF VISION—PART II*

BY

H HARTRIDGE, MD, ScD, FRs

Professor of Physiology, St Bartholomew's Hospital Medical College

When Young's three-colour theory was first put forward by its celebrated proposer it dealt adequately with all the facts of colour vision which were known at that time. It stated that all colours, including white, can be matched by suitable mixtures of three spectral primary colours—red, green, and blue. As methods of investigation improved and the scope of the inquiry widened, deficiencies in the theory began to disclose themselves. Thus Sir John Parsons (1924a) wrote "Difficulty is experienced when an attempt is made to explain the phenomenon of peripheral vision, or of induction, by the theory." Recognition of this difficulty did not cause the abandonment of the theory, because it still had much to recommend it, it was easily understood, it provided a useful classification of the various types of colour-blindness, it offered a feasible explanation of many visual phenomena, and it was an incentive to further research. By degrees, however, its position has deteriorated with the acquisition of further knowledge, in which connexion special reference should be made to Granit's work (1943, 1945), in which he applied the micro-electrode technique to the retinae of many mammals. He did not find that there were three types of colour receptor, as would have been expected on the basis of Young's theory—namely, red, green, and blue—but as many as seven in the frog and four in the cat. These researches, which I reviewed last year (Hartridge, 1946a), were a serious setback to Young's theory, which had held the field for more than a century.

Section I Retinal Micro-stimulation

When Granit's researches on animals were published I began to look for a method which would be applicable to an intact man. In the case of an animal the cornea, lens, and vitreous may be removed, and the electrode placed direct on the individual fibres of the optic nerve as they pass across the surface of the retina to leave the eyeball at the optic papilla. In the case of man, except under unusual conditions—where the eyeball has been seriously injured as the result of an accident, or where it is to be removed for medical reasons—Granit's method cannot be applied, and therefore a different principle has to be used. The plan I finally adopted (Hartridge, 1947) was to apply to chosen parts of the retina pencils of white or coloured light which were so narrow that they stimulated small groups of receptors, or even, under good conditions, single receptors. These tenuous beams of light were produced by a lens system of special design which resembled a microscope used the reverse way round. Whereas the latter magnifies, the micro-stimulator lens system diminishes the images of small sources of white, or of monochromatic, lights until they become mere pin-points. Their geometrical images subtend at the eye an angle of 8 seconds of arc, and they form on the retina geometrical images whose diameters are equal to one-fifth of a cone unit.

* The first part was published in the *British Medical Journal* April 27, 1946 p 637.

Before using the instrument care was taken to correct as perfectly as possible defects present in the lens system of the observer's eyes. As a rule only one eye was used at a time. This instrument gave satisfactory results and was employed for studying a number of different problems. Three concern us here: (a) to determine whether there is a constant fixation-point in the fovea for light of any given colour and brightness, or whether different fixation-points are used at different times, (b) to determine whether lights of different colour use the same or different fixation-points, and (c) to ascertain which colours, if any, are to be seen when a tiny ray of white light is caused to explore the surface of the retina.

(a) The position of the fixation-point for green rays (5200 ÅU), was determined in relation to a small scotoma for red rays which existed near the fovea, in my left eye (Hartridge, 1946b). The precise position of the fixation point was measured a number of times, on three different evenings and was found to alter hardly at all in position. The greatest difference between the three mean values was found to be less than one quarter cone unit.

(b) When rays of other colours were similarly tested it was found that each colour had a definite fixation point of its own. In all, seven different points were located—namely for red, orange, yellow, green, blue-green, greenish blue, and blue. The red and the orange fixation points were to the left and below the green ones, the yellow, the green, and the blue-green points were all close to one another, while the greenish blue and the blue points were to the right and below the green ones in the visual field. These positions were confirmed by another method, so far as red, green, and blue were concerned, which involved the estimation of eye movements required in order to fix in turn first one of these coloured points, and then another.

(c) With regard to the third type of experiment it was found that a beam of white light remained white in appearance wherever it was situated on the retina, unless there was also present a conditioning coloured light in the visual field. When this was the case colour changes were found to occur. Thus when the conditioning coloured light was red the white light looked white in certain positions but red and orange in others. Examined in this way the white light was seen on different occasions to have the following subjective colours: red, orange, green, blue-green, greenish blue or blue. Yellow was also seen under advantageous conditions making seven colours in all.

Thus by means of two different methods—the fixation method and the subjective colour method—evidence was found for the presence in the human fovea of several different kinds of receptor. Now, such methods may give fallacious results unless great caution is exercised by the observer in their performance and interpretation. In consequence it would have been unwise to place reliance on them unless they had been confirmed by the other method which are described in the following sections.

Section II Colour Mixture Experiments

With the apparatus available to Thomas Young and his contemporaries it seemed possible to match exactly the monochromatic yellow light of the spectrum by a suit-

able mixture of spectral red and spectral green lights. As spectroscopic apparatus improved, so as to produce purer spectra and to permit more exact comparisons to be made, it was found that a precise match was not obtained, because the monochromatic yellow was always more saturated—that is, contained less white light—than the yellow produced by mixing red and green. Thus for equality to be obtained either white or, better, blue light was mixed with the pure yellow. In the case of the blue-green colours it was red light which was added for the same purpose. In the case of the red or the violet near the ends of the spectrum, it was green light which was required. Now, adding a colour to one side of a match is equivalent to subtracting it from the opposite side. The colour equations therefore took this form

- (a) Extreme red = red + blue – green
- (b) Yellow = red + green – blue
- (c) Blue-green = green + blue – red
- (d) Extreme violet = red + blue – green

These negative amounts of red, green, and blue were accounted for in various ways. Thus Wright (1946a) states 'All it means is that no physical radiation is capable of stimulating one of the receptor systems without causing activity in the other systems.' This may be restated 'A red light stimulates the red receptors, but also to some extent the green ones and the blue ones, and similarly for lights of other colours.' Gothlin (1943) held a different opinion, and thought that cerebral inhibition accounted for these negative values. At present there is no confirmatory evidence for either of these views.

Whatever the cause of the negative values may be there is no doubt that subtracting a given colour is equivalent to the addition of its complementary. Thus the subtraction of red is equivalent to the addition of blue-green, the subtraction of blue equals the addition of yellow, and the subtraction of green equals the addition of both extreme red and extreme violet.

The four equations given above therefore become

- (a) Extreme red = red + blue + extreme red + extreme violet
- (b) Yellow = red + green + yellow
- (c) Blue-green = green + blue + blue-green
- (d) Extreme violet = red + blue + extreme red + extreme violet

On the left-hand side are all the colours of the spectrum, of which red, yellow, blue-green, and violet have been taken as examples. On the right-hand side are the spectral components required to match them. The latter comprise the following colours: extreme red, red, yellow, green, blue-green, blue, and extreme violet, seven colours in all.

Section III Colour-blindness

It used to be thought that there were four kinds of defective colour-vision—red-blindness, green-blindness, blue-blindness, and total colour-blindness—and that the first three were due to the failure of one type of receptor, while the last was caused by a complete breakdown of all three types.

Such a classification fitted in with the three colour theory and lent it very strong support. Soon, as the result of research further varieties of colour deficiency came to light. In addition to the red-blind (protanopic) there were also the red-deficient (protanomalous), in addition to the green-blind (deutanopic) there were the green-deficient (deutanomalous) and so on. Then it was found that there were various grades of failure of vision for the red rays: in some cases it was the red near the end of the spectrum only that was involved, in other cases it was the whole of the red; in still other cases the red and the orange were affected together, and so on. In order to account adequately for all these different grades the red sensation

had to be supposed to consist of several separate parts, each one of which could become deficient by itself or in conjunction with other parts. In the case of green blindness also, changes of mechanism had to be introduced, and the original idea of a partial or a complete deficiency had to be replaced by a different plan altogether proposed by Pitt (1944)—namely, a partial, or a complete, linking of the red receptors with the green ones. So with blue blindness it is no longer regarded as a defect of the blue receptors, as was once the case, but as being due to absorption of blue rays either by some yellow pigment in the crystalline lens or in the retina (Parsons, 1924b). Thus the original simple arrangement, which appeared to support the three-colour theory so strongly, has gone, for not one of the types of colour-blindness is believed to-day to be caused by the absence of a single sensation mediated by a particular type of receptor. Thus Young's original theory can no longer look to colour-blindness for support, as it once could. In order to come into line with the facts of colour-blindness as we now know them, the red receptor has to be regarded, as Wright (1946b) has pointed out, as being a composite affair, consisting of several different types of receptor—some for red rays, some for orange rays, some perhaps for yellow rays—interconnected in some way in order to mediate the red sensation. Hence Young's theory has been forced to adopt polychromatism in order to account for colour-blindness.

Section IV The Inconstancy of the Receptor Curves

In the early days of the colour theories it was usual to deal with sensations. Accordingly, Young's theory supposed that to each primary colour there was a corresponding sensation. Thus red light, incident on an active retina caused under suitable conditions a red sensation to be perceived, and so on for green and blue. Nowadays, in keeping with the times, we prefer to think in terms of the photo-receptors present in the retina, and by carefully planned experiments we try to determine their sensitivity to different parts of the spectrum, this is plotted against wave-length, thus producing what is called a 'response curve'. If the response curves derived by the different methods resembled one another exactly it would be very encouraging to Young's theory. But such is a long way from being the case, so far as present evidence is concerned. The red receptor is particularly unfortunate in this respect, for when deduced from the colour mixture equations it has a smooth curve, rising to a single crest at about 5,800 Å U (Fig 1). When, on the other hand, it was deduced by Willmer and Wright (1945) from the colour mixture curves for the human fovea, when viewing objects at small visual angles, it was found to have two crests—one at about 5,600 Å U and the other at about 6,000 Å U (Fig 2). Further, in persons with green deficiency the crests of the red response curves differ in position, and in subjects with defective green vision they also vary (Figs 3 and 4). When the troughs of the red response curves are similarly considered it is found that they also differ in position in the spectrum according to their derivation. Thus the curve obtained from colour mixture measurements has a trough at 5,000 Å U (Fig 1). That for reduced foveal colour vision has one at 4,600 Å U (Fig 2), while green-blind persons (deuteranopes) have a red response curve that has a trough at 4,400 Å U (Fig 3).

The green response curve is not so variable in shape as the red, but in this case also some differences occur which are hard to explain. The blue response curve has a crest which varies from about 4,500 to 4,800 Å U, but this may be caused by individual peculiarities in macular pigmentation.

Section V Hue Discrimination

When a person with normal colour-vision looks at a spectrum there are parts where there is a rapid change of hue, and other parts in between where the change is slow. Thus it is particularly slow at the extreme red and violet ends of the spectrum and particularly rapid in the yellow. A thorough examination of the spectrum shows that there are four places where discrimination is good, which separate five places where it is poor (Fig 5). Now the three-colour theory can account for only two of the good points and for only three of the poor ones (Fig 6). This is so because good discrimination depends on the overlapping of the sensations, so that one—for example, the red—is diminishing at the same time that its neighbour, the green, is increasing, with change of position in the spectrum. Since

How, then, can a curve be accounted for, consisting of four U's, such as persons with normal vision are found experimentally to possess? It would seem evident that their colour-vision must be mediated by not less than five types of receptor. Some further evidence on this point will be given in the next section.

Section VI Vision of Objects Subtending Small Angles at the Eye

There are several conditions which cause a subject with normal colour-vision to become temporarily colour-deficient or even colour-blind. Three of these conditions will be discussed here—namely, (1) a reduction of visual angle, (2) a reduction of illumination, and (3) the use of peripheral vision. Under all these conditions, with suitable adjustment, colour-vision gradually becomes defective,

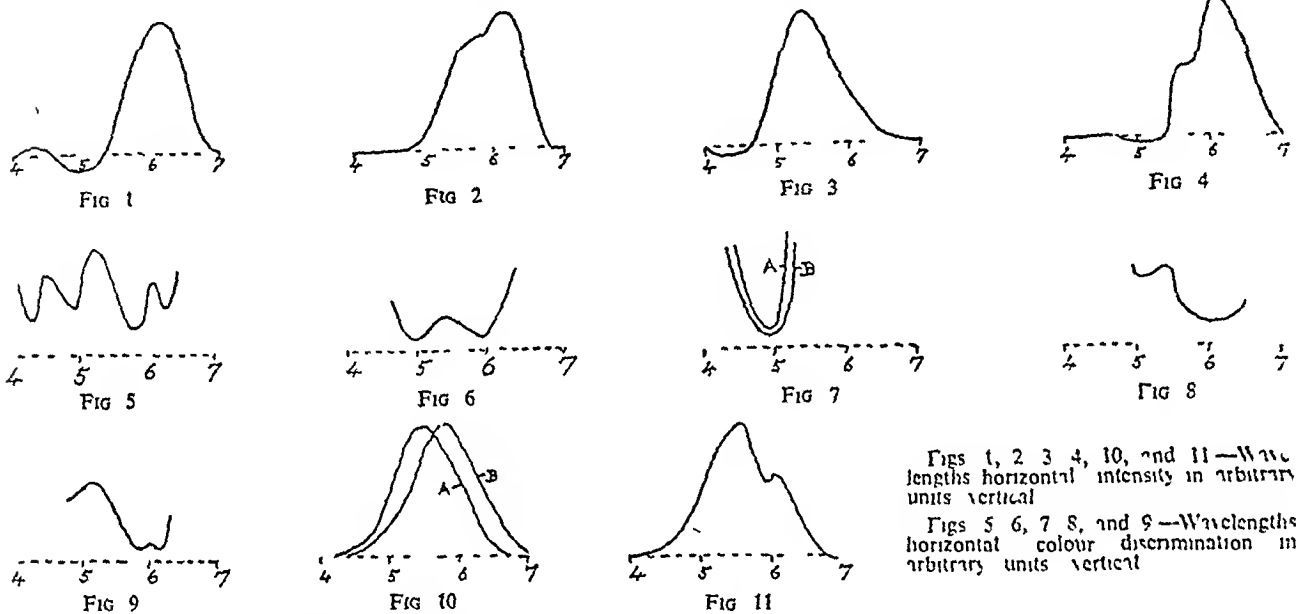


Fig 1—Red response curve for a subject with normal colour vision. Fig 2—Red response curve for reduced foveal colour vision. Fig 3—Red response curve for a green blind (deuteranopic) subject. Fig 4—Red response curve for a green defective (deuteranomalous) subject. Fig 5—Hue discrimination curve for a subject with normal colour vision. Fig 6—Normal hue discrimination curve calculated by Helmholtz, from Young's theory. Fig 7—Hue discrimination curves A for a red blind (protanopic) subject, B for a green blind (deuteranopic) subject. Figs 8 and 9—Hue discrimination curves for reduced foveal colour vision. Fig 10—Luminosity curves A, for a red blind (protanopic) subject, B, for a green blind (deuteranopic) subject. Fig 11—Luminosity curve for reduced foveal colour vision.

there are two such places of overlap, one between the red and green and the other between the green and blue, two regions of good hue discrimination can be accounted for. This was found by calculation, both by Helmholtz and by Judd (Fig 6). These ideas are substantiated by an examination of the hue-discrimination curves either of red-blind or of green-blind subjects, for in both cases the curves are U-shaped (Fig 7), the centre of the trough occurring at the point of the spectrum where the response curves are undergoing the greatest relative change for a given alteration of wave-length. On the contrary, at parts of the spectrum where there is only one response curve present, there is no hue discrimination at all, and the curve in consequence shoots up to very high values. It does this on both sides of the trough, thus causing the curve to have a U shape. Now according to Young's theory of the three fundamental receptor processes, if one type is missing only two remain, thus both red-blind and green-blind persons are called "dichromats". Dichromatism is consequently always associated with a U-shaped hue discrimination curve. Subjects with trichromatic vision would therefore be expected to have a double U-shaped curve, as both Helmholtz and Judd (1932) calculated to be the case

until finally a state of total colour-blindness is attained. In all three cases there appears to be a clearly marked intermediate stage between full colour-vision and complete colour-blindness, at which the subject is partially colour-defective. For this intermediate type of vision I have suggested the name "reduced colour-vision". From what has been stated above it may be inferred that there are three types of this type 1, that produced by a reduction of visual angle, type 2, that produced by a reduction of light intensity, and type 3, that produced by the employment of the periphery of the retina. The first two types appear to have much in common, in fact, it may be found that they are identical in their properties. The third type is entirely different from the other two (see Section VII).

Type 1—When coloured objects which subtend very small angles at the eye are looked at their colours become altered. Blue is replaced by dark grey or black, and yellow by pale grey or white. Other colours are also seen to change. Thus green loses its yellow tint and is replaced by blue-green, crimson is replaced by orange, and purple and mauve alter to shades of brown. Four colours seem to undergo hardly any change at this stage—red, orange, blue-green and greenish blue. White undergoes no perceptible change at all. According to Williams (1944) and to Thomson and Wright (1947) this change is

colour vision is due to a temporary defect in the blue receptors as if the retina had become locally blue blind. If this were the case then on the three colour theory two sensations would be left in action—namely, the red and the green. Therefore white since it stimulates both sensations should look yellow and so the colours seen by the eye should be red, yellow green, and various hues made by their mixture. But the colours seen are red, orange, white, blue green, and greenish blue so that the explanation offered by Willmer and by Thomson and Wright seems to be at variance with the facts. A further piece of evidence against the acceptance of their explanation is the fact that a decrease in the brightness of the spectrum occurs both in the yellow and in the blue when normal colour vision is replaced by reduced colour vision, as is shown by the change in the shape of the luminosity curve obtained by Wright (1943) (see Figs 10 and 11). Now, a decrease in the blue would be expected on their hypothesis, but not a decrease in the yellow as well, so that in this respect also their hypothesis does not seem to fit the observed facts. But there is a further difficulty in accepting their conclusion—namely that if reduced colour vision is equivalent to tritanopia caused by the temporary insensitiveness of the blue receptors then according to Young's theory a form of dichromatism should remain and thus the hue discrimination curve should be of the simple U type as shown in Fig 7. Thomson and Wright (1947) did not obtain such a curve, however, but curves with a more complex form as shown in Figs 8 and 9. This indicates the presence of a more elaborate type of vision than that provided by two receptors only. In my view reduced foveal vision is mediated by at least four receptors—red, orange blue green and greenish blue, then the addition of yellow and blue in order to reconstitute full colour vision should involve six types of receptor at least. Such a supposition is completely at variance with the trichromatic theory.

Type 2—The reduced colour-vision which is found under conditions of feeble illumination was investigated by Abney and Festing (1892). They found that at an illumination of 0.0025 f.c. the spectrum appeared to begin at 6,250 Å in the orange and reached its full intensity at 6,000 Å. From there the colour became progressively paler, with change of wave length, until all colour was lost at about 5,800 Å in the yellow. The spectrum remained colourless to 5,650 Å, where a blue green tint slowly developed to reach its maximum at 5,200 Å. This darkened and ceased to have a noticeable colour at about 5,000 Å in the blue green part of the spectrum. Thus the red and blue ends of the spectrum had been replaced by dark grey or black, and yellow had been replaced by pale grey or white as is found to be the case with the reduced colour vision (type 1) caused by a reduction of visual angle. I have found that for every light intensity from 3,000 to 0.01 f.c. there is a corresponding visual angle at which full colour vision is replaced by reduced colour-vision.

Type 3 will be considered in the following section.

Section VII The Colour-vision of the Periphery of the Human Retina

If coloured test objects be examined first by the fovea centralis and then by a more peripheral part of the retina it will be found that certain of them undergo changes of colour or brightness. The colour-changes are summarized in the Table, together with those for reduced foveal colour-vision produced by a decrease in visual angle which were considered in the previous section.

Table showing Colours Seen by Peripheral and by Reduced Foveal Vision

Colour	Periphery	Reduced Visual Angle
Red	Dark yellow brown	Red
Orange	Yellow brown	Orange
Yellow	Yellow	Pale grey
Green	Yellowish grey	Pale blue green
Blue green	Grey	Blue green
Violet	Dark blue	Black
Purple	Dark blue grey	Dark red brown
Mauve	Dark yellow brown	Red brown
Crimson	Yellow brown	Orange
White	White	White

These changes may be contrasted as follows with a reduction of visual angle the yellow and the blue drop out, leaving red-orange and blue-green, with peripheral vision, on the contrary, it is the red orange and the blue green which drop out and yellow and blue which remain. Thus they appear to be the antithesis of one another. During both changes it should be noticed that white continues to be seen as white, indicating in my opinion, that in both cases the colours which fall out are complementary pairs, leaving complementary pairs behind. Thus if the retina contained three pairs of complementary receptors—red and its complementary blue green, orange and its complementary greenish-blue, and yellow and its complementary blue—and if these dropped out in pairs it would fit in with several of the observed facts. This does not exclude the possibility that, in addition to the complementary pairs just mentioned, there are other receptors which function in normal vision.

Section VIII The Rival Theories

Only when the colour properties of peripheral vision remained apparently unaccounted for by Young's theory was there the possibility that one day the problem would be satisfactorily cleared up. But now that this theory is out of line with modern work on foveal vision, hue discrimination, micro stimulation, micro electrode results, and even colour-mixture and colour-blindness, the confidence of even its strongest supporters is shaken, and they give consideration to other theories of colour-vision.

Colour-mixture and micro stimulation both suggest seven receptors, hue discrimination, more than five, reduced foveal vision, six or more. So that some form of polychromatic theory would seem to be indicated. If that proves to be the case a question that will arise is this: Why has vision been thought to be trichromatic for so long—in fact, until the recent introduction of more critical methods of research? One possible explanation may be founded on Granit's observations on frogs, for he discovered three main groups of receptors—a red group with crests at 6,000 and 5,800 Å, a green group with crests at 5,400, 5,200, and 5,000 Å, and a blue group with crests at 4,600 and 4,400 Å. Now, it is possible that these act in group formation not because their nerve fibres are interconnected to form three main sensations but because of the overlapping of their response curves. Thus one touch-spot may behave as a single unit neither because it contains only one touch-sense organ nor because the nerve fibres of all the touch-sense organs present are interconnected, but because a force applied to the skin almost always stimulates them at the same time.

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Wiltshire has now adopted a scheme for part time nursing similar to that working successfully in Gloucestershire, and it is hoped to recruit volunteers particularly from outlying districts by the provision of adequate transport to and from work.

ON COMPLETE REMOVAL OF THE PROSTATE

A PRELIMINARY COMMUNICATION

BY

H S SOUTTAR, CBE, MCh, FRCS

It will be generally agreed that the extravesical approach to the prostate introduced by Millan presents considerable advantages over the older transvesical methods. It enables one to observe every step of the operation in a way which was formerly impossible, bleeding is readily controlled, and the post-operative period is short and easy. Some recent experiences have, however, suggested to me that the operation for prostatic obstruction performed by this route is still capable of substantial development, and although some considerable time must elapse before this can be established it seemed worth while to place these experiences on record.

History of a Case

In operating a short time ago upon a man of 75 with obstruction of some standing I was surprised to find that instead of enucleating an adenoma as I intended I was enucleating the entire prostate, which had become detached from the triangular ligament. Moreover, on drawing the prostate away from the triangular ligament a tube of urethra emerged from that structure as a substantial muscular cylinder four centimetres in length. The only course was to divide this tube close to the prostate which was then easily excised from the neck of the bladder after division of the ejaculatory ducts. The urethra was sutured to the neck of the bladder, and the latter was then sutured firmly to the triangular ligament, completely obliterating the prostatic cavity. To my great relief the operation was a complete success, the patient a rather feeble old man, passing water normally on the sixth day.

Anatomy of the Prostate

On discussing the case with Prof. Wood Jones he told me that the free urethral tube is a fact of normal anatomy, although it was quite new to me, and I know of no reference to it in any textbook. What was abnormal in my patient was the ease with which the prostate became detached. I have since carried out a number of dissections which fully confirm this view. The normal anatomy is as follows:

The prostate is attached to the back of the pubes by two dense

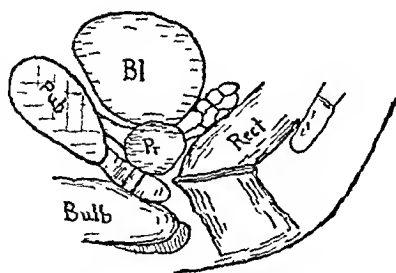


FIG 1—Normal anatomy

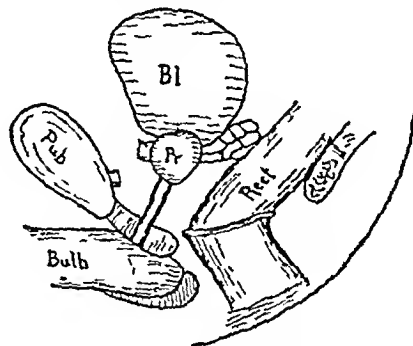


FIG 2—Ligaments divided, prostate retracted

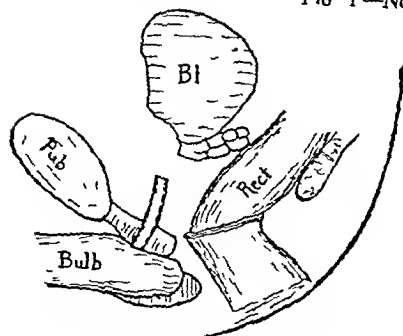


FIG 3—Urethra divided, prostate excised

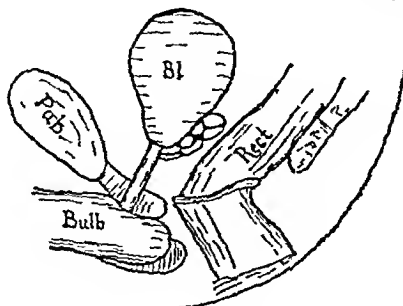


FIG 4—Urethra sutured to bladder

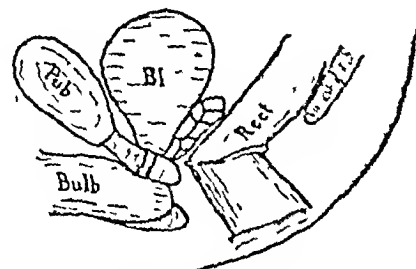


FIG 5—Bladder sutured to urogenital diaphragm

bands of great strength—the pubo-prostatic ligaments. Each of these forms a rounded tendon three or four millimetres in diameter, separated by a deep recess, the cave of Retzius, into which emerges the dorsal vein of the penis. On dividing these ligaments the prostate is easily shelled out from its bed, which is formed in front by the levator prostatae muscles and further back by the dense fascia of Denonvilliers, which separates the prostate from the rectum. As the prostate is drawn upwards the membranous urethra emerges from the compressor muscles of the triangular ligament as a muscular tube three to four centimetres in length. It is true that a venous plexus is opened up, as this surrounds the prostate, but it does not appear to be of great moment and bleeding from it is easily controlled.

The existence of this urethral tube is obviously of great importance, for it enables us to provide a complete epithelial lining after removal of the prostatic urethra, and would seem to avoid any risk of stricture. It is of course a fragile tube and requires careful handling, but it is substantial enough to allow of accurate suture into the neck of the bladder. It is convenient to proceed as follows:

Operative Procedure

A No 12 rubber bougie is passed into the urethra as far as the prostate or into the bladder. The prostate is exposed by a suprapubic incision and drawn upwards so that the pubo-prostatic ligaments are clearly seen. These ligaments are now divided, the bougie providing a guide to protect the urethra, when on drawing the prostate upwards the urethra will emerge from the triangular ligament carrying the bougie. The prostate can now be shelled out from its bed without difficulty, the bougie is withdrawn from it, but remains in the urethra which is divided at the apex of the prostate. The prostate is turned forward and detached from the bladder after dividing the ejaculatory ducts. The bougie supporting the urethra is passed into the bladder and out through a puncture in its wall. The urethra is sutured with fine catgut to the neck of the bladder, which is now securely sutured to the triangular ligament, obliterating the prostatic cavity. The

bougie is withdrawn through the bladder so far that it remains as a support for the new junction between the bladder and the urethra. The bladder is drained by a suitable suprapubic tube into which the end of the

bougie may conveniently be fixed. The bougie may be removed in four days and the suprapubic tube as soon as it is certain that the patient can pass water.

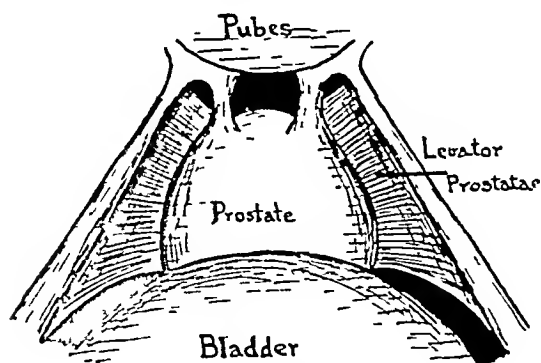


FIG 6—Normal anatomy

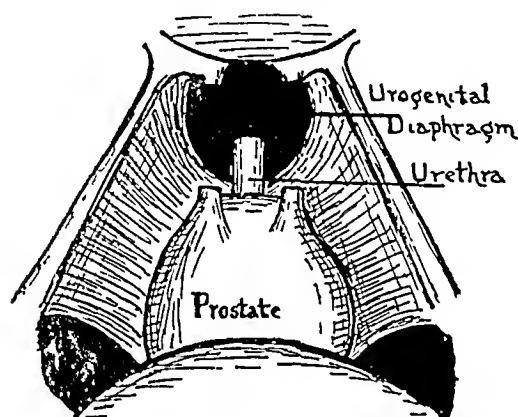


FIG 7—Ligaments divided, prostate retracted

Comment

The operation described is of course only a development of the brilliant operation devised by Millan, but it may be a development with considerable possibilities. If further experience confirms its practicability it would seem to present certain definite advantages. The prostate is removed as a whole and the technique of its removal is little affected by its precise pathology. Indeed, it might well be applicable to early carcinoma. The cavity left is completely obliterated and later haemorrhage is unlikely. A complete urethra is provided from the outset and the risk of a stricture is minimized. So far the operation has been carried out in only a few cases, and obviously a wide experience will be required before its value can be assessed. But it would seem to be based on sound anatomical principles and sufficient success has already been achieved to convince me that it is worthy of an extended trial.

The following recommendations on visual standards for candidates for the teaching profession have been made by the Faculty of Ophthalmologists at the request of the Ministry of Education: (1) Visual acuity with correcting glasses should not be less than 6/12 in the better eye. (2) At the age of 18 no refractive error should debar a candidate from training, but all cases in which the vision in either eye is less than 6/9 uncorrected must be referred for an ophthalmic surgeon's report and prognosis. (3) On reference to an ophthalmic surgeon information is required on the following points: (a) The nature and extent of the defect. (b) whether it can be corrected by glasses satisfactorily for the project in view. (c) whether it is progressive. (d) whether the existence of the defect is likely to interfere with the candidate's efficiency as a teacher.

A NEW EUPHORANT FOR DEPRESSIVE MENTAL STATES

BY

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The Syndrome of Thalamic Dysfunction

The syndrome of thalamic dysfunction, or neurotic depression, is the commonest of psychiatric conditions encountered in general practice, and often one of the most intractable and difficult to treat effectively. The commonest forms of the condition are the chronic neurotic depressions, anxiety states, reactive and hysterical depressions and obsessional disorders. The milder forms of depressions of later life, in which the dysphoria is unaccompanied by hallucinosis, delusions, and other gross psychotic symptoms, may also be included in this group of conditions.

The essential feature common to all of these disorders is a condition of the nervous system in which the perception-threshold for unpleasant affects and sensory impressions is markedly lowered, while that for pleasant affect and sensation is correspondingly raised—the anhedonic or dysphoric syndrome. The resulting dysphoria or mental pain may present itself in one or two forms, or a combination of both. In the manifest type it takes the form of conscious depression or unpleasant mental tension. In the sensorial or conversion type it presents itself as a persistent and disagreeable bodily sensation either localized or diffuse, common examples of which are pressure-headache, generalized pains, hyperalgesia, gastric pains without organic basis, vertigo, and feelings of abnormal tiredness and weakness.

Although it is generally taught at the present day that these conditions are entirely psychogenic in origin, there would appear to be strong evidence that the basis of the condition is primarily a disturbance of the thalamic hypothalamic mechanisms, possibly a metabolic disorder. Suggestive facts are the absence in a large proportion of such cases of any evidence of mental conflict, and the concomitant symptoms of disturbed body-metabolism and autonomic imbalance, such as vasomotor disturbances, central nervous instability as shown by muscular tremors, hyperalgesia, and other sensory disorders, vegetative disturbances, and metabolic anomalies as demonstrated by biochemical tests.

The commonest symptoms of thalamic dysfunction in order of frequency are depression, irritability and emotional instability, with anxiety and sense of unpleasant mental tension, in the affective sphere, in the sensory sphere, pains and paraesthesias of various kinds, such as pressure headache, various vague pains and aches of infinite variety which may be referred to any part of the body, gastralgia, low backache, and dysuria or other symptoms referred to the urogenital tract, in the sphere of thought, inability to concentrate, obsessional thoughts, phobias, and transient periods of confusion ("black-outs"), in the motor system, tremors, sensations of weakness and loss of energy, with abnormal tiredness, and in the vegetative systems, insomnia, anorexia, gastrointestinal disturbances, vertigo, sexual dysfunctions, and vasomotor symptoms such as flushing, palpitations, effort syndrome, and syncopal attacks without apparent organic basis.

The thalamic dysfunction state may be regarded as a response of the organism to stresses of various kinds. It is one of the commonest causes of chronic ill-health and

loss of efficiency, and one of the most unsatisfactory of conditions to treat. Its victims form a large proportion of the "chronics" who regularly attend hospital out-patient clinics, and there is probably no patient who is more dreaded by the overworked practitioner than the chronic neurotic-depressive.

Treatment of the thalamic dysfunction syndrome is often unsatisfactory because there is no specific drug therapy known at present for the condition. Psychotherapeutic methods are lengthy, tedious, and often unsatisfactory, since in a large proportion of such cases the causal factors (unsatisfactory home life, faulty conditioning in childhood, etc.) cannot be removed, while not uncommonly it is found that the neurotic behaviour-patterns persist even when the precipitating stresses have been removed. Psychotherapeutic methods usually require specialized training in the physician, and an effective symptomatic therapy aimed at keeping the patient fit and in full working efficiency during the period of analytic or other treatment is at present lacking, since the commonly employed remedies, such as cortical sedatives and stimulants, offer at best only partial relief on account of their lack of specific effect on the thalamic centres, while endocrine preparations, vitamins, and measures to improve the general health have, generally speaking, proved largely unsuccessful.

Principles of Treatment by Euphorogenic Drugs

The most important therapeutic advances in psychiatry, as in general medicine, have been the discovery of specific pharmacological or physical agents for the various disease conditions. Similarly, the logical answer to the thalamic dysfunction states would be a drug possessing a specific reversing effect on the thalamic disturbance—in other words, a powerful euphorogenic drug which would be therapeutically effective and at the same time free from the objectionable properties usually associated with narcotic compounds.

The ideal euphoriant for clinical use should possess the following properties. It must induce a high degree of euphoria, must be stable and fully active by the oral route, be reasonably rapid-acting, and have a prolonged action. It must be of low toxicity, non-cumulative, and free from after-effects and undesirable effects on the higher cortical functions, such as impairment of concentration, judgment, and memory. Most important of all, it must not have the property of inducing the condition of addiction or physical dependence when administered for long periods.

The last-mentioned point is of especial importance, since there is a common and widespread belief that all euphoriant drugs are necessarily habit-forming, whereas this is in fact not the case. The true addiction syndrome (physical craving, tolerance, abstinence syndrome, and personality deterioration) is peculiar to the drugs of the ecgonine (or cocaine) and phenanthrene (or morphine) groups, whereas mescaline and cannabis indica, the two most powerful euphorants known, do not induce a comparable addiction. The addiction-forming property would therefore appear to depend on chemical constitution rather than degree of euphorogenicity, since the two compounds just mentioned are chemically unrelated to the cocaine and morphine drugs. Theoretically, therefore, the addiction problem should not offer an insuperable obstacle to such a form of therapy, provided the compound employed is not one of the ecgonine or phenanthrene class.

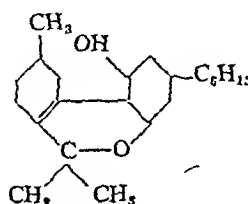
Up to the present time no drug which fulfils these requirements has been known to medicine. During the last century attempts were made to utilize the euphorogenic properties of cannabis in the treatment of depressive states, but these were found to be unsatisfactory for various reasons: chief of these were the difficulty of obtaining

reliable and stable preparations of this drug, its uncertain action, and its peculiar and undesirable side-effects, of which actual intensification of the dysphoria is one of the commonest. The discovery of the new synthetic cannabis-like derivatives of the dibenzopyran class within the last few years, however, has placed in our hands an entirely new type of euphoriant drug with properties which render it an extremely promising therapeutic agent in psychiatry.

The Synthetic Tetrahydrocannabinols

These compounds have been produced as the result of the work carried out by Adams and his colleagues in America and of Todd and his colleagues and the Roche Research Department in this country.

Several compounds of this type are known, and one of the most active pharmacologically is the synthetic hexyl analogue called in America synhexyl, pyrahexyl, or parahexyl. Chemically it is 1-hydroxy-3-*n*-hexyl-6-6-9-trimethyl-7-8-9-10-tetrahydro-6-dibenzopyran, and has the following structural formula:



It is synthesized by condensation of ethyl-5-methylcyclohexanone-carboxylate-2 with 3-5-dihydro-*n*-hexylbenzene, followed by treatment of the condensation product with methyl magnesium iodide. It is a pale-yellow, translucent, very viscous, odourless resin, soluble in organic solvents but insoluble in water, alkalis, and acids. The synthetic lower homologue in which *n*-amyl replaces the *n*-hexyl radicle is pharmacologically less active. Its laevorotatory form is several times as active as the dextrorotatory form.

Pharmacology of Synhexyl in Man

The pharmacological properties of synhexyl are in many respects similar to those of cannabis, but there are several important qualitative differences in the human subject. The following data were obtained as the result of a series of experiments which I carried out on myself, a group of normal subjects, and a group of 50 depressive patients. My findings confirm that the drug is a powerful euphoriant with a specific action on the higher centres, particularly the thalamic system and its cortical connexions. Synhexyl is rather more potent weight for weight than natural cannabis, the effective dosage being from 5-15 mg in normal subjects to 60-90 mg in depressive patients. In narcotic drug addicts doses of 60-240 mg three times daily may be given without ill effects (Himmelsbach). On account of its resinous nature the drug is most active when administered by the oral route, and the preparation I used was in the form of a powder made by absorbing the drug on silicic acid and contained in gelatin capsules or as compressed tablets after absorption on kieselguhr.

The general effects in normal man are as follows. There is first a latent period of 1½ to 3 hours before any effect is felt, this being about twice the latent period for the same dose of cannabis extract. The onset of the synhexyl effect is characteristically abrupt, with a sudden and peculiar sensation of lightness and mild intoxication accompanied by acceleration of the pulse and feelings of slight palpitation and oppression in the head and chest. Transient feelings of anxiety and vertigo may occur at the onset, but these usually pass off in the course of a few minutes to half an hour. The euphoric effect quickly

follows and consists of a pleasant feeling of happiness and exhilaration with a marked sense of physical well-being and self-confidence; there is a sense of relief from tension and anxiety, and the threshold for unpleasant affect is markedly raised, while that for pleasant feeling-tone is correspondingly lowered. There is increased enjoyment of normally pleasant impressions, and zest for life and working capacity may be actually increased in the early stages of the intoxication. Later this effect gives way to a sense of dreamy apathy and contentment, which with the larger dosages may reach the stage of ecstasy. There is often increased speed of the stream of thought, with a marked increase in the power of fantasy and vividness of visual imagery. With the larger dosages there may in the early stages be a tendency to flight of ideas and pressure of activity. In the sensory sphere there is little or no true analgesic effect of the opiate type. With the higher doses there may be some degree of blunting of sensation, but the senses of taste and hearing may actually become more acute. A generalized sensation of pleasant warmth diffused throughout the body is characteristic.

Hallucinatory phenomena and distortion of the tempero-spatial perception sense of cannabis-mescaline type are not found, although elementary visual sensations in the form of photopsias and simple coloured patterns may occur when the eyes are closed or the subject is in darkness. A peculiar visual illusion is sometimes seen in which the colours and outlines of objects appear abnormally vivid and a soft golden radiance seems to be diffused over the whole room. With larger doses visual illusions of cannabis type may be experienced in which simple patterns appear to acquire complex and fantastic forms, the whole effect being extremely pleasing to the subject. On the motor side there may be slight restlessness in the early stages, similar to what is found with moderate doses of benzadrine. Hyperreflexia is common but ataxia and motor incoordination are seen only with the largest doses. Kata-tonia and rigidity as seen with mescaline are never found.

The vegetative effects are very slight, consisting of moderate tachycardia in the early stages, slight mydriasis, and dryness of the mouth. Appetite is usually increased, there is no respiratory or peristaltic depression, and sleep following the intoxication is normal and dreamless. Slight drowsiness may occur in the later stages, but "hangover" effects are seen only after very large doses.

Characteristic of the synhexyl effect is intermittency, the symptoms, as with cannabis and mescaline intoxication, occur in rhythmic waves with intervening periods of apparent normality. The average duration of the effects is from 8 to 10 hours from the time of onset of the symptoms.

With excessively large doses, the toxic effects are frightening rather than actually dangerous, resembling those of acute cannabis poisoning. The onset occurs with a sudden feeling of acute apprehension and collapse, with rapid bounding pulse, mydriasis and dryness of the mouth and throat, hyperreflexia, clonic twitchings, mental confusion, headache, and vertigo. Euphoria is absent, the emotional reaction being one of acute anxiety and apprehension. These symptoms usually pass off completely in 12 to 24 hours. The biochemical changes produced by the drug are slight, consisting of increased blood concentration and haemoglobin value, and mild hypoglycaemia. There may be slight diuresis and rise of temperature, other changes include a slight rise in blood pressure, cerebral hyperaemia, and increase in the venous pressures.

Absorption of the drug apparently takes place through the lacteal vessels of the small intestine, since it is a resinous substance and cannot therefore be absorbed direct through the stomach wall, as is the case with alkaloids and other water-soluble substances. This would account

for the long latent period between ingestion and onset of symptoms of intoxication, which is normally of the order of two to three hours. The drug is partly destroyed by oxidation in the liver, but a certain proportion is excreted unchanged in the urine, in which respect it resembles natural cannabis and mescaline.

Effects on the Intellectual Functions

Studies which I made on myself and a group of normal subjects show that with ordinary therapeutic doses there is little or no deleterious effect on the intellectual performance. Seven of my depressive patients were studied by means of psychometric tests selected from the revised Terman-Merrill scale. The results suggest that memory work calling for the use of reasoning powers and logical integration of facts suffers slightly after taking the drug, but that the more mechanical memory is unimpaired and may actually show a slight improvement. In normal subjects engaged in work of an intellectual nature there appears to be little or no falling off of intellectual capacity, the only inconvenience experienced from the drug being the slight distractibility and pressure of ideas, and the tendency to day-dreaming and wandering of the stream of thought in the later stages.

Therapeutic Trials in Depressive Patients

Therapeutic trials were made with the drug in a series of 50 patients showing the thalamic dysfunction syndrome, including cases of both the dysoxic (depressive-psychotic) and the neurotic-depressive types. The dosages employed varied from 15 to 90 mg, the drug being administered in all cases immediately on rising in the morning before a meal was taken. Suggestion and other psychological factors which might have vitiated the results were eliminated by substituting, without the patient's knowledge on certain days, inert control tablets of exactly similar appearance to those containing the synhexyl.

The general effects were found to be qualitatively similar to those in the normal subject, except that a considerably higher average dose was required to produce improvement of the depressive symptoms. It was found that the dysphoria itself was ameliorated to a much greater degree than the other symptoms (obsessional thoughts, pains, paraes-thesias, etc.), these features, although themselves little affected, were rendered less distressing and obtrusive to the patient by the action of the drug.

Of the 50 cases tested 36 showed a definite improvement in affective reaction, while 14 were unaffected or made worse. Twenty-seven of the series were neurotic depressives, 20 of whom showed improvement, of these 27, 12 were typical chronic mental hospital cases, of whom 9 benefited from the drug. Of these 12, 9 had previously been treated with electro-anoxia with no improvement, and 3 had been subjected to prefrontal leucotomy with no response. The remaining 23 patients were cases of dysoxic depression, of whom all but 4 were chronic institutionalized patients with mild symptoms of dysphoric type. Four of the 23 had previously received electro-anoxia with temporary improvement only, of these four two responded favourably to the drug.

Of the whole series 16 patients showed associated organic diseases, as follows: gross bony deformity, 2; pulmonary tuberculosis, 2; cardiovascular disease, 5; senile changes, 4; malignant disease, 1; organic nervous disease, 1; thyrotoxicosis, 1. No untoward side effect from the synhexyl was noted in any of these cases. Untoward effects were noted in 5 of the neurotic depressive cases, these included tachycardia, slight dizziness, loss of concentration, drowsiness, and mild degrees of impairment of the intellectual performance.

The criteria for a positive response were taken as the 'following amelioration of mood, as shown subjectively by the patients' own statements and objectively by clinical evidence of diminution of retardation, anxiety, and inward preoccupation, increased zest for and interest in work and occupation, and increased psychotherapeutic rapport. The effect of the drug on obsessional and depressive ideas and pains and paraesthesias of central origin was also noted. The nursing staff were carefully instructed to note during the tests any changes in the general behaviour and demeanour of the patients while receiving the drug. The results with synhexyl were then compared with the response to inert control tablets.

Of the dysoxic patients those in the chronic stationary phase of their disease made the best response. Three dysoxics in the acute depressive phase either showed no response or were actually made worse when synhexyl was given in doses of 60-90 mg.

Of the neurotic group, the quiet apathetic type with depression and general asthenia appeared to do best, this type required the smallest dosage to effect improvement—15 mg. The tense and over-anxious type also showed a good response but tended to require a rather higher dosage—30-60 mg. The anxiety cases with multiple pains and paraesthesias were found to improve considerably as regards the dysphoria, but the drug seemed to have little effect on the actual sensory features. Six of the neurotic cases were severe examples of the obsessive-ruminative type, only one of whom failed to improve with the drug.

Neurotic depressive cases showing a negative response included psychopathic personality with dysphoric features (two cases) and acute hysterical grief reaction with pseudo-hallucinosis (one case).

Illustrative Cases

Case 1—A woman aged 60, with a history of recurrent attacks of depression over the last three years. On examination she was tense, agitated, acutely apprehensive, restless and excitable at times, and expressed self-depreciatory ideas of being wicked and worthless. Orientation and memory were unaffected and insight and judgment were moderately good, but she co-operated poorly in examination owing to her constant preoccupation with delusions of unworthiness. Physical findings were negative. She received electric convulsion treatment with no real improvement, remaining in the agitated state described above. After receiving 30 to 45 mg of synhexyl daily she showed marked improvement, she said she felt brighter, and the agitation and tension were definitely diminished. Although the ideas of unworthiness persisted in mild degree these were much less obtrusive and distressing. No untoward symptoms were noted, and response to control tablets was negative.

Case 2—A man aged 65. The history was very incomplete, but it appeared that he was originally admitted in 1938, following the sudden onset of an acute depressive-confusional state with paranoid and possibly hallucinatory features. On examination he was depressed, apathetic, hypochondriacal and full of ideas of visceral dysfunction, totally lacking in initiative, but well behaved and clean in habits. There were no signs of hallucinosis or paranoid features, but he showed a mild degree of personality deterioration, being at times facile rambling, and irrelevant in conversation. Physical investigations were negative. He responded fairly well to 30 mg of synhexyl daily, becoming brighter, less querulous and preoccupied with his aches and pains, and stated that he felt more cheerful and energetic. The symptoms of cortical deterioration and institutionalization were however, unchanged. No side effects were apparent during the period of medication.

Case 3—A woman aged 67 with a history of recurrent depressive attacks since 1936, and two previous admissions to hospital for acute depression. Examination showed her to be depressed, solitary and lacking in interest and initiative. She complained of obstinate insomnia, and required constant nocturnal sedation. She displayed no evidence of delusions and

hallucinations, but tended to be mildly retarded and sat about aimlessly all day in the ward. Physical examination revealed a slow growing breast carcinoma, for which operation had been considered inadvisable. She had previously received ECT with little or no improvement. She received synhexyl in a dosage of 15 mg daily with considerable subjective and objective improvement. She felt brighter, more alert and cheerful, and showed increased initiative and spontaneous activity. Side-effects were absent, and administration of control tablets failed to reproduce the synhexyl effect.

Case 4—A woman aged 45. She had a history of the onset, three months previously, of acute depression with agitation, ideas of bodily disease, and delusions of sin and unworthiness apparently precipitated by an unhappy home environment. When she was first seen the acute phase of the illness had subsided and she talked rationally, showing considerable insight. She complained of mild depression, fatigability, and insomnia with a variety of vague stomach pains and soreness and pains in her throat. She insisted that she had "swollen and painful glands" in her neck, but examination showed only a small palpable cervical gland on the right side, the throat and tonsils being normal. She also complained of feelings of "being all trembly inside." Delusions of unworthiness were not in evidence. She was a small, pale, anxious-looking woman, but no signs of organic disease were present. She was described by the nursing staff as depressed, solitary, and apathetic in habits. The administration of 45 mg of synhexyl produced an immediate effect, she stated that she felt subjectively brighter and more cheerful, showed increased interest, and her hypochondriacal ideas receded into the background. Vasomotor side-effects were absent, control tests giving a negative result.

Case 5—A woman aged 52, with thalamic dysfunction of conversion hysteria type. She had a history of depression for 18 months following evacuation during the flying-bomb raids and an accident to her son. She had also had a previous depressive attack 28 years ago. On examination she was depressed, tense, emotional, and anxious. Her main complaints were of insomnia, inability to face up to her household duties and a persistent neuralgic pain located under the left breast. Physical findings were completely negative. A few weeks previously she received seven applications of ECT with slight improvement but speedy relapse. The response to 30 mg of synhexyl was immediate, she lost her anxiety and depression said she felt much brighter, and the thoracic pain became much less insistent and distressing although not completely abolished. Control tablets and bromide in full dosage failed to reproduce these effects. No side-effects from the synhexyl were complained of during the period of administration.

Case 6—A woman aged 32 with thalamic dysfunction of anxiety type. She had a history of anxiety symptoms 18 months previously and partial remission but recurrence four months before admission, at which time she had gone to live with and look after her invalid mother. On examination she was a superior and intelligent type of woman outwardly cheerful in manner, but actually tense, anxious, and mildly depressed. She complained of insomnia, intermittent panic sensations with palpitation, and acute feelings of inner tension and "shivering sensations," and loss of concentration. Physical findings were negative, and no signs suggestive of thyroid hyperfunction were evident. The symptoms failed to respond to bromide therapy and psychotherapy. She responded well to synhexyl in doses of 30 mg daily, the anxiety attacks and dysphoria being completely abolished. She stated that she felt much brighter, more confident, and was no longer apprehensive of the anxiety attacks. Her symptoms recurred on changing over to control tablets or discontinuing the synhexyl.

Of these six cases, selected at random from my series, the first four were dysoxic (psychotic-depressive) cases and the last two examples of simple thalamic dysfunction (neurotic depression). The four dysoxic cases were all patients who had passed through the acute phase of their illness and who presented as the principal symptom a residual dysphoria of chronic and intractable type. Of these four, one (Case 2) showed some degree of personality deterioration. The two neurotic cases were of recent onset and in the early stages of their illness. Of the six

cases, three (Cases 1, 3, 5) had previously failed to respond satisfactorily to ECT. It will be evident from this series that synhexyl is as effective in the milder forms of dysoulia as in the purely neurotic-depressive states.

As regards the mechanism of improvement, it should be pointed out that synhexyl does not effect a permanent 'cure' in the same way as electro-anoxia does in typical dysoulia depressions. The effect lasts only during the period of administration of the drug, it is therefore a substitution therapy, like insulin treatment in diabetes or liver extract in pernicious anaemia. The action would seem to be a combination of stimulation and depression, resulting in a general raising of the anhedonic threshold. The principal site of action of the drug is almost certainly the thalamic centres and their cortical connexions, as is the case with morphine and other powerful central analgesic drugs.

The beneficial effects of synhexyl do not appear to be adversely affected by chronicity, concomitant organic disease or the presence of an organic brain lesion, whether pathologically or surgically induced. There is evidence, however, that drugs of this class are ineffective in the acute dysoulia depressions, and cannot be regarded as substitutes for anoxic therapy in this form of metabolic brain disease.

General Conclusions

The results of these preliminary trials would suggest that we have in this class of compounds a promising therapeutic agent for the treatment of the chronic and intractable depressive states. Synhexyl, the most active of this class, has the advantages of low toxicity, minimum of side-effects, ease of administration, and chemical stability. Its use is not contraindicated by the presence of coexisting organic disease, and it is suitable for out-patient practice. Its use does not interfere with other therapeutic measures, such as occupational therapy and psychotherapy. It is free from the risks and disadvantages of the more drastic forms of treatment, and might replace those methods for the milder depressions of later life where for any reason the more drastic procedures are contraindicated.

Its main drawbacks at present are its insoluble nature, slow and uncertain action, and comparatively weak analgesic effect, so that it is relatively ineffective in the severer forms of sensory thalamic dysfunction syndrome. Experiments are at present in progress with the object of producing a water-soluble form with a higher degree of analgesic activity.

Summary

The syndrome of thalamic dysfunction and the principles of its treatment with euphoric drugs are described.

The properties and pharmacology of synhexyl, a new drug of the synthetic tetrahydrocannabinol class, are examined.

The results of therapeutic trials with the drug in a series of 50 depressive patients are given.

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TYPE I TRIPLE CARDIAC RHYTHM IN NORMAL HEARTS

A STUDY OF 1,360 NAVAL RECRUITS AND PERSONNEL

BY

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Triple cardiac rhythm is defined by Evans (1943) as "the cadence produced when three sounds recur in successive cardiac cycles". He then classifies such rhythm into types I, II, and III, which correspond respectively to the proto-diastolic, presystolic, and systolic forms of 'gallop' rhythm of Potain (1856-1900). The term "gallop" is not used in Evans's classification because it is usually only when tachycardia is also present that a cadence somewhat inadequately described as resembling the gallop or canter of a horse is found to be present.

Type I triple rhythm results from the presence of a third heart sound occurring shortly after the normal second. Thayer (1908, 1909) called attention to the fact that the third heart sound, described by Gibson (1907), Hirschfelder (1907), and Einthoven (1907), and mentioned even earlier by Obrastzow (1905), could often be heard in healthy people; he found it in 65% of 231 consecutive individuals below the age of 40. Subsequently Gallavardin (1912) said that he heard it occasionally in young individuals. Bridgman (1915) reported it in 13 out of 16 normal boys aged 12 to 15 and found it in phonocardiograms of all Obrastzow and Gubergitz (1919) heard the sound in 90 to 93% of normal men. Steinberg (1925) in 95% of boys between the ages of 4 and 14, and Melik-Gulnasarian (1932) in 57% of his cases, especially in young men between 20 and 25 years of age. Bramwell (1943) encountered it in 18.8% of 835 recruits referred to him by medical boards of the Ministry of Labour and National Service. Among the 228 individuals in this group below 20 years of age it was present in 43%. None of these recruits had a cardiac lesion.

The purpose of the present purely clinical investigation is to emphasize the frequency of type I triple rhythm in healthy males and to study its features. That its common incidence is not appreciated enough nor its features sufficiently well known is evident from the number of times it gives rise to a diagnosis of mitral stenosis—especially when accompanied, as it may well be, by a mitral systolic murmur and perhaps a split second sound in the pulmonary area. A history of rheumatic fever in such an individual is then accepted as the final link in the diagnosis. As Evans (1943) remarks, "A general acceptance of the fact that this form of triple rhythm is so common in young subjects is overdue." That it is far from rare in the not-so-young requires emphasis also.

Method and Material

The subjects of this survey consisted at first of 1,000 consecutive healthy male adults between 17 and 30 years of age inclusive who underwent routine examination by me for a variety of purposes. Later 360 men above the age of 30 were examined. All these individuals were considered healthy on the grounds that they presented no symptom or physical signs of any disease whatsoever, nor did they give any history of any cardiovascular disease. Some of the older men showed palpable thickening of the radial arteries commensurate with their age, but any who had blood pressures above 160 systolic or 90 diastolic were excluded.

The following routine was adopted in the examination of the heart in every one of these subjects: examination (i) in the erect position, (ii) in the recumbent position, (iii) lying on the left side (left lateral position), and (iv) in the left lateral position after sitting up quickly from the recumbent position six times. Before proceeding to stage three—that is, with the subject on his back—the pulse rate and blood pressure were recorded. In the few cases in which time permitted the performance of exercise tolerance tests, or in which these were compulsory, as in Fleet Air Arm candidates, the information so obtained gave the impression of bearing no significant relation to the occurrence of triple rhythm.

Only those examples of type I triple rhythm were recorded which were evident with the subject erect or lying down, since the examination of the heart does not usually go beyond this stage unless the doctor has some reason to proceed further before eliminating the possibility of a cardiac lesion.

Incidence of a Third Heart Sound

Table I shows the frequency with which a third sound was recorded among 1,360 Naval recruits and personnel.

TABLE I—Incidence of a Third Heart Sound Among 1360 Healthy Males

Age	17-20 incl	21-30	31-40	41-50	51-60	61-67	Total
No. examined	745	255	174	103	70	13	1360
No. with third sound	399	89	44	16	4	0	552
%	53.6	34.9	25.3	15.5	5.7	0	40.6

As already described, the examination of the 1,000 aged 17 to 30 inclusive was completed before that of the older group was begun. Now, although I had been impressed by the frequency of a third sound before beginning the present investigation, it was found that by listening intently for it in case after case the sensitivity of the ear was increased to a remarkable degree; this may be seen from a study of Table II, which gives the incidence of the sound among the last 400 of the 1,000 males under 31 years of age.

TABLE II—The Third Sound in the Last 400 Males Below 31 Years of Age

Age	17-20	21-30	Total
No. examined	325	75	400
No. with third sound	231	37	268
%	71.08	49.3	67.0

It is considered that this figure of 67% forms a more accurate estimate of the incidence of the third sound among males of this age group than that obtained from Table I ($399 \div 59 = 488$ or 48.8%).

Some Features of the Third Heart Sound

Characteristics—These have been aptly described by various authors as "short and dull, a sort of thud" (Potain, 1856-1900), "dull shock rather than sound" (Thayer 1908, 1909). Potain further likened it to the recoil of a drum or the rebound of a hammer on an anvil. As a rule the third sound is of less intensity than either of the other two. However, Wolferth and Margolies (1933) remarked that occasionally it might be the loudest of the three, and this was found to be not unusual among the younger members of the present series. Frequently in the present series the third sound was palpable at the apex beat, sometimes it was visible also. In no case could it be more easily felt than heard even when a pronounced protodiastolic gallop rhythm was present. "Gallop" rhythm is usually described as being more easily felt than heard, but

it is possible that this is generally true only of the pre-systolic variety which results from the presence of a fourth sound.

Site of Maximum Intensity—The third sound is usually described as being heard best at or near the apex beat. Evans (1943), on the other hand, lays stress on the fact that in normal individuals he found it most audible in the fourth intercostal space, half-way between the nipple line and the left border of the sternum, in other words, a little internal to the mitral area. In every case in which I identified a third heart sound it was loudest at the site of the apex beat. When faint it was present at the apex beat only, when more prominent it could be heard with diminishing intensity for a distance of about 2 in (5 cm) outside the nipple area—in rarer cases even as far out as the anterior axillary line. As a rule it was heard furthest from the apex beat internally, along the left sternal border or along a line passing from the apex beat towards the pulmonary area; occasionally it was faintly audible in the pulmonary area itself. In a rather nervous young man of 23 it could be heard as high as the left sterno-clavicular joint, as far out as the mid-axilla, and as far to the right as the right sternal border. In another youth, aged 19, it was audible in the mid-axilla and beyond the right sternal border. In both, however, it was maximal at the apex beat.

Influence of Age upon the Third Sound—Previous writers have remarked upon the decreasing incidence of this sound with advancing age (Thayer, 1908, 1909; Evans, 1943, 1945), and this is clearly illustrated among the present subjects. Evans (1945) states definitely that it is never found in a healthy heart after the age of 40. However, the figures in Table I do not bear this out. Certainly in the sixth decade the sound is unusual, while beyond this age it is possible that it never occurs in the absence of disease. Thayer (1909) suggested that this increasing rarity of the sound with age might be explained by the comparative thinness and elasticity of the chest wall in the young and the absence of intervening lung. After the age of 40, and especially after 50, all the heart sounds become increasingly difficult to hear and their characters alter. They become shorter, more distant, and less resonant, often the first sound can scarcely be heard at all. It is not surprising, therefore, that the third sound, which is usually of much less intensity than either of the other two in healthy people, should be so difficult to hear in older subjects.

Influence of Posture—In only two of the 1,360 subjects could a third sound be heard at stage (i) of the examination—that is, with the individual erect. The ages of these two were 17 and 19, and both were of poor physique; in each case the sound was much louder with the subject recumbent. In some cases, examined after rising from recumbency, a third sound continued, but only so long as the pulse rate produced by the act of rising was maintained. Evans (1943) made similar observations on 125 normal hearts presenting a third sound, though in his series the sound persisted in the erect position in 13. However, all the patients examined by Evans had been sufficiently problematical to require reference to him for further opinion and were therefore, in a sense, selected.

Influence of Respiration—In the majority of the present series I found the third sound most audible in normal expirations, with forced expiration it often disappeared. Sometimes, usually among the older members of the series, it was most easily heard at about mid-inspiration. Unless very prominent it was absent at the height of normal inspiration, and in almost every case it disappeared on forced inspiration.

Influence of the Pulse Rate—The lowest pulse rate among those with a third heart sound was 48, the highest

132, the average 80. The last compared with an average of 76 in those without the sound. Bramwell (1943) also noticed no significant difference between the pulse rate of those with and those without the sound. Thayer (1909) considered the former to have a somewhat slower rate than the latter. He also gained the impression that the sound was more pronounced in subjects who had just lain down than in those who had been longer recumbent. I frequently noticed that a third heart sound would disappear as the examination of the recumbent patient continued. More often, however, a third sound would appear for the first time after the subject had been lying down for a minute or two. Again, the production of tachycardia by means of exercise, while generally increasing the intensity of the sound, would in some cases decrease it—occasionally causing the sound to disappear. All this suggests that in each individual there is an optimum pulse rate, varying from case to case, at which the sound is best heard. Probably the force of the heartbeats is just as important a factor in the production of the sound.

Influence of Blood Pressure—The average systolic blood pressure among those presenting a third sound was 135 and the average diastolic 70, among those without the sound it was 130 and 70 respectively. Hence the presence or absence of a third sound appears to be independent of the blood pressure.

Means of Intensifying the Third Sound—Thayer (1909) described various methods by which the third sound could be intensified. Raising the arms or legs, pressure on the abdomen, turning the subject on to the left side, and the production of tachycardia were suggestions he made. I found it possible to carry out only the last two as a routine in my cases, and there was no doubt that in the vast majority the sound was exaggerated in the left lateral position. The effects of tachycardia have been noted above.

The Significance of Type I Triple Rhythm

It is evident that an audible third sound at the apex beat, with the subject recumbent, is a common finding in health below middle age. It is not surprising, therefore, that it should happen to be present sometimes in a heart that is diseased, and its occurrence in such circumstances can surely be of no help to the clinician either in making a diagnosis or in forming a prognosis. On the other hand, it appears that a third sound, clearly and constantly heard in the erect position, is a rarity in a healthy heart and calls for the most careful investigation and consideration before being dismissed as of no significance. It may be that it usually is of some significance, and the louder the sound the more likely it is to be so. Even in the recumbent position a very loud third sound—that is, one as loud as or louder than either of the other two—appears to be unusual in men over 40, though not so uncommon in the young.

This influence of position as a means of distinction between a third sound in a healthy heart and in one that is diseased has already been remarked upon by Evans (1943). He also considered that in the presence of cardiac disease a third sound was maximal in the mitral area itself or external to it, whereas in the normal heart it was maximal internal to the mitral area. Since the third sound in the subjects reported in the present paper was invariably maximal at the apex beat I cannot agree that its presence in the mitral area has any significance.

White (1928) stated that "gallop" rhythm, in which term he included protodiastolic gallop resulting from a third sound, was always a sign of considerable gravity in civil life, and that during the 1914–18 war, when soldiers with effort syndrome were gathered together, a combination of pronounced tachycardia and a loud third heart sound

occasioned a minimization of the importance of gallop rhythm widely at variance with the appreciation of its significance in civilian practice. In the most recent edition of his book on heart disease (White, 1944) he asserts that protodiastolic "gallop" is more serious than presystolic. Now, among the present series of healthy males it was observed that what was usually required for a so-called protodiastolic gallop to be heard was an individual with both a third sound and a pulse rate of over 100. Furthermore, such a rhythm could be produced in many other subjects with a third sound by simply inducing a tachycardia by exercise. There was no reason to suppose that any of these people were sufferers from effort syndrome or that they might be so in the future. In other words, it appears that a protodiastolic "gallop" is not always a sign of gravity. On the contrary, it is heard quite frequently in normal hearts, especially among the young. When present in the recumbent position alone in a patient with heart disease it is probable that what is of significance is not the "gallop" rhythm but the tachycardia which produces it.

In certain of these men a type I "gallop" was present with a pulse rate of 90, in one it was heard with a rate of only 84. No doubt this production of a so-called "gallop" cadence with the slower pulse rate occurs when there is a longer interval than usual between the second and third sounds.

The Distinction between Type I Triple Rhythm and a Split Second Sound

It will be seen that no use is made of the term "reduplication," or, more correctly, "duplication." A heart sound is never duplicated. Either it is split into its normal components or an extra sound is present. The application of the term "reduplication" to both these phenomena, as usually happens, leads only to confusion.

Distinctions between a split second sound and an audible third sound are as follows: (i) the former is nearly always most obvious in the pulmonary area, while the latter has been found to be always maximal in the lower part of the praecordium—in my experience at the apex beat itself, whether the heart be normal or abnormal; (ii) splitting of the second sound is maximal on full expiration and, as I have found, on full inspiration, at both of which times, but especially the latter, a third sound is usually absent; but, what is most important, the cadence produced by a third heart sound is so characteristic that it should be impossible for anyone familiar with it to mistake the typical "lup-dupty" rhythm for a splitting of the second. Subjects in whom an audible third sound extends sufficiently high or a split sound sufficiently low show the two phenomena occurring in the same situation, the third sound clearly following the second component of the split sound. The cadence thus produced may be described as "lup-brupty."

Finally it is hoped that the time may not be far off when the standard textbooks devote more space to this and other forms of triple rhythm so that students may know what to expect and what not to expect from a normal heart.

Summary

The frequency of type I triple rhythm due to a third heart sound among 1,360 healthy Naval recruits and personnel is emphasized. The characteristics of the third sound, the site of maximum intensity, and the influence upon it of age, posture, respiration, and pulse rate are noted.

The usual insignificance of this form of triple rhythm, as judged from these findings, is noted.

Comparison is briefly made between this form of triple rhythm and a split second sound.

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SEVERE ERYTHEMA MULTIFORME

BY

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Numerous papers describing cases of severe erythema multiforme have appeared in American and Continental dermatological literature. There is, however, a scarcity of reports in British journals, the most recent being that of Low and Davies in 1938. The comparative frequency of the syndrome is considered justification for the following case reports. In the early stages the disease may present itself as a sudden pyrexial illness associated with stomatitis which simulates diphtheria, Vincent's angina, glandular fever, or one of the exanthemata. Therefore a knowledge of the condition is of value to clinicians who are not pure dermatologists.

According to Beaudonnet (1894) the first description of the condition is said to have been by Alibert and Bazin in 1822. It has been rediscovered on several occasions, and each discoverer has coined a new name. Thus Fiessinger and Rendu (1917) called it "ectodermose erosive pluriorificielle," Stevens and Johnson (1922) "a new eruptive fever with stomatitis and ophthalmia," and Baader (1925) "dermatostomatitis." Lever (1944) surveyed the literature very fully and concluded that, on the evidence presented, the cases described under the above three names were all the same condition—erythema multiforme. He also suggested that some of the published cases of acute pemphigus and some instances of human foot-and-mouth disease in which laboratory confirmation of the diagnosis was not obtained were also examples of severe erythema multiforme.

I have seen and treated nine cases of severe erythema multiforme in the last four years—one in a child, seven in young adults, and one in a woman of 55. It is therefore not a great rarity. The following cases are described as illustrative of the disease.

Case 1

A single woman aged 25 was seen on Sept. 3, 1946, complaining of severe pruritus ani and vulvae of one month's duration. She had no past history of skin or allergic disease

and her only previous illnesses had been nephritis when 6, and anaemia, which had responded to iron therapy, when 21.

On examination the skin around the anus and vulva was sodden and excoriated, but no underlying cause was found. She was treated with a kaolin lotion containing 1% phenol and a dose of 100 r of superficial x rays to the affected areas. Phenobarbitone was given, 1/2 gr (32 mg) in the morning and 1 gr (65 mg) at night. The symptoms improved on this regime, and when she was seen again on Sept 17 the phenobarbitone was discontinued and another dose of x rays given. On Sept 23 the pruritus vulvae became more intense and the vagina became sore, causing discomfort on micturition. The following day ulcers appeared in the mouth and on the lips, she became feverish and felt ill with headache, backache, and malaise. Towards the end of the day a generalized eruption appeared on the trunk and limbs. On Sept 25 her temperature rose to 104° F (40° C), the eruption became worse, and a bilateral conjunctivitis started. She was therefore admitted to hospital.

On admission her temperature was 102° F (38.9° C), pulse 88, respirations 20. Her eyelids were stuck together by a glutinous mucopurulent exudate, her face was swollen and unrecognizable, the whole of the inside of her mouth was covered with a grey sodden pseudo membrane, and her lips were swollen and crusted. A diffuse eruption consisting of purplish red papules 0.5 to 1 cm in diameter was present on the trunk, but on the limbs it was frankly bullous. The bullae arose in the centre of papules, and none appeared on normal skin. Both palms and soles showed erythematous macules, with a few flaccid bullae on the tips of fingers and toes. The face and scalp were not involved. Nikolsky's sign was not present. There was a profuse vaginal discharge and the vulva and vagina showed shallow ulceration. The anus appeared normal. There was no enlargement of lymphatic glands, liver, or spleen, and no abnormality was found in the cardiovascular, respiratory, and nervous systems.

During the next four days her fever continued and a number of the bullous lesions became secondarily infected. Micturition was impossible without the help of warm vaginal douches. On the fifth day after admission her temperature returned to normal, her general condition improved, and the necrotic mucous membrane in the mouth began to separate. A few fresh bullae were still appearing on her legs, but most of the papular eruption on the trunk had faded and the conjunctivitis showed improvement. During the next week all the lesions improved rapidly, the ulceration of the lips being the most troublesome and the slowest to heal. She could now pass water without difficulty. On Nov 15, 21 days after admission, her mouth and lips were normal and all that remained of the skin eruption was faint erythematous staining and slight desquamation. The conjunctivitis had recovered completely and she had no recurrence of the pruritus ani and vulvae.

On Oct 26 the leucocytes numbered 11,000 per c mm (polymorphonuclears, 72%, lymphocytes, 22%, monocytes, 2%, eosinophils, 4%). Blood culture was sterile. Culture from vaginal discharge gave a growth of *β* haemolytic streptococcus and diphtheroids. Culture from the mouth gave a growth of *β* haemolytic streptococcus and *Staphylococcus albus* (coagulase-positive). On Oct 29 the leucocytes numbered 10,200. On Nov 5 the haemoglobin was 72%, and the erythrocytes 3,640,000 per c mm. A skiagram of the chest revealed no abnormality. The Mantoux test was 1/10,000 negative, 1/1,000 positive. Treatment consisted of local symptomatic measures and after the result of the bacteriological examination 1,200,000 units of penicillin were given intramuscularly from Oct 28 to Nov 2.

Case 2

A boy aged 9 was admitted to an isolation hospital on Oct 14, 1946. For a month prior to admission he had been run down and "nervy." Four days before admission his eyes became inflamed and swollen, and on the same day he bit his lower lip. The lesion on the lip became sore, and ulceration spread to the inside of his mouth. Two days later a few pink spots appeared on his upper chest, his eyes became more inflamed, and blisters were seen inside his mouth. His previous history contained no relevant facts.

On admission his temperature was 100° F (37.8° C) and both eyes were closed by swelling and sticky mucopurulent

discharge. The conjunctivae were deeply injected. A purulent discharge ran from his nostrils, which were crusted. His lips were swollen and crusted; the inside of the mouth was covered with a pseudo-membranous exudate, and a mixture of saliva and blood drooled from his lips. Slight enlargement of the cervical glands was present. There was a blotchy erythema on the face; discrete red macules covered the palms and soles, and a purplish maculo-papular eruption was present over the trunk and limbs. A few of the papules on the limbs showed a small central vesicle but no bullae were seen. No abnormality was found in the heart, lungs or abdomen. His condition remained unchanged for two days, but then his temperature fell and his general condition began to improve though at that time a urethral discharge was noticed for the first time. During the next week all the lesions healed except the mouth which showed shallow ulceration for a few days longer. He was discharged cured 26 days after admission.

On Oct 16 the leucocytes numbered 10,000 per c mm, the differential count being within normal limits. Culture from eyes, nose and mouth showed mixed staphylococci and streptococci and was negative for *C. diphtheriae* and Vincent's organisms. Culture of the necrotic mucous membrane from the mouth gave a growth of *Aspergillus niger*.

Treatment consisted of penicillin drops to the eyes, penicillin spray to the mouth and 40,000 units of penicillin intramuscularly four hourly from Oct 14 to 20. In addition he was given 40,000 units of antidiphtheritic serum on admission and 10 g of sulphamezathine in the first 24 hours.

Case 3

An able seaman aged 22 was admitted to a Naval hospital on March 28 1942. He complained of soreness of the eyes, ulceration of the mouth, and a rash on the arms and legs which had been present for two days. There was no history of drug-taking or of previous skin disease.

Examination on admission revealed severe purulent bilateral conjunctivitis, a grey sodden pseudo-membranous stomatitis involving the inside of the cheeks and the soft palate, and swelling and cracking of the lips. An eruption consisting of pink papules 1 cm in diameter surmounted by small central bullae was symmetrically distributed on the limbs but did not involve the trunk or face. The spleen was just palpable, this was the only other abnormality found. His temperature was 99° to 100° F (37.2 to 37.8° C) for a week, and at the end of this time all the lesions were clearing up. By April 22, 24 days after admission he had fully recovered.

The leucocyte count on admission was 6,200 per c mm, with a normal differential count. Culture showed no constant pathogenic organism, Vincent's organisms were not found. Treatment was symptomatic only.

Case 4

An ordinary seaman aged 21 was admitted to a Naval hospital on March 22 1943, with a history of two days soreness of the mouth and eyes, cough, backache and headache. There was no history of previous attacks or of drug taking.

On admission he had a temperature of 103.3° F (39.6° C). Acute mucopurulent conjunctivitis affected both eyes. The whole of the cheeks were covered with a greyish sloughing mucosa although there was no ulceration or bleeding. Three days after admission he developed a urethral discharge with excoriation of the glans penis around the meatus. On that day also he developed an eruption of large pink papules on the buttocks, thighs, and over the elbows. A few of these papules later developed central bullae. His condition remained much the same for the first week and then began to improve. He had completely recovered on April 20, four weeks after admission.

Culture from the conjunctivae showed no organisms. A throat swab produced a pure growth of *Staph. aureus* but no Vincent's organisms. The urine showed no abnormality. The leucocytes on admission were 23,500 but had fallen a week later to 11,600. The blood Wassermann and Kahn reactions were negative. A total of 29 g of sulphathiazole and 24 g of sulphapyridine was given from March 22 to 31 but without any appreciable benefit. Other treatment consisted of lotion and mouth washes only.

Case 5

A lieutenant, R.N.V.R., aged 32 was admitted to a Naval hospital on Oct 24, 1943. Four days previously he had had a slight cold in the nose and the inside of his mouth had become sore. This condition had rapidly progressed, and on admission he had gross stomatitis with desquamation of the epithelium over the palate and grey sloughing mucosa over the tonsils. The day after admission he developed a temperature of 101° F (38.3° C) and a leucocyte count was 13,800 per c mm. Sulphamezathine was given, but was discontinued after he had had 13 g, as a red papular eruption appeared on the arms and buttocks. This at first was considered to be a sign of intolerance, but was afterwards recognized as erythema multiforme.

On Oct 27 an acute conjunctivitis developed and his temperature rose to 103° F (39.4° C). The inside of his mouth was covered with sloughing epithelium and the lips were crusted, fissured, and bleeding. His temperature remained swinging between 99° and 103° F (37.2 and 39.4° C), and on Nov 2 he developed a urethral discharge, excoriation of the glans penis, and a pyoderma of the scrotum. The skin eruption was still very evident, and consisted of purplish-red papules, tender to the touch and hot, and confined to the buttocks and extensor surfaces of the arms and forearms. No bullae were seen. Two weeks after admission his temperature settled and all the lesions were by now healing. He was completely well five weeks after the onset. He gave a history of a similar attack in December, 1942, which had lasted two months.

The leucocytes rose to 15,200 at the peak of his illness. The differential count showed 74% polymorphs. The urine was normal, and sterile on culture. A swab from his conjunctiva produced no growth. A swab from the mouth on several occasions gave a growth of *Str. viridans*. There were no Vincent's organisms. Blood culture was negative. Apart from the small dose of sulphamezathine, treatment consisted of local symptomatic measures.

Case 6

A woman aged 55 was seen on Dec 3, 1946, complaining of the sudden onset two days previously of soreness of the mouth, throat, anus, and vagina, and a skin eruption affecting the neck, trunk, and limbs. Although feeling rather tired for a month previously she had been in good health, and had had no similar eruptions in the past. She admitted taking aspirin occasionally.

On examination she had a temperature of 102° F (38.9° C). An acute stomatitis with swelling and cracking of the lips was present. She also had rhinitis with excoriation of the nares, ulceration affecting the vulva and anus, and a profuse purplish maculo-papular eruption on the trunk, limbs, palms, and soles. A few papules had central vesicles. The conjunctivae were not affected. Her condition remained unchanged for seven days and then suddenly improved. Her skin desquamated severely during the recovery phase but she was normal 21 days after the onset.

The Course of Severe Erythema Multiforme

Severe erythema multiforme is an affection of children and young adults. The onset of the disease is acute, with a temperature up to 104° F (40° C), headaches, chill, malaise, and backache. Mucous membrane lesions are the first to appear, and the mouth is usually the earliest orifice to be affected. The primary lesion in the mouth is a flaccid bulla, but it is usually the later picture of extensive stomatitis, with pseudo-membrane which leaves bleeding erosions when it is removed, that is seen. Swelling of the face and the formation of haemorrhagic crusts on the lips add to the patient's misery. Tracheo-bronchial involvement, with the complications of oedema of the larynx and broncho-pneumonia, has been described, but was not seen in this series of cases. Bilateral conjunctivitis occurs in the majority of cases, and is often associated with a rhinitis causing crusting of the nares and epistaxis. Involvement of the genitalia is common and takes the form of balanitis with ulceration of the glans penis, urethritis, and in women ulceration of the vulva and vagina.

Within two to three days of the onset a skin eruption appears. A few cases in which the disease has been confined to the mucosae with absence of cutaneous lesions have been described, but in all the above patients a skin eruption occurred. The eruption usually begins on the extremities, and affects particularly the palms and soles, but at the height of the disease it may be generalized. The eruption is composed at first of macules and papules, but in the severe cases the lesions become bullous. Classical target and erythema iris lesions were uncommon in this series of cases. The disease remains at its height for a week and then the lesions begin to improve and the temperature falls. The conjunctivitis and the skin eruption disappear first and the ulceration of the mouth is usually the last to heal. The total duration of illness is three to six weeks. Unlike the common type of erythema multiforme, relapse is unusual, and according to Lever (1944) if subsequent attacks do occur they are milder. Despite the acute and alarming symptoms the mortality of the disease is low, only four fatal cases having been described in the literature. Complete recovery is recorded in the present cases, but this is by no means the rule, as many American authors have described ocular changes which have led to partial or total loss of vision.

The varieties of ocular inflammation have been well described by Bailey (1931) and Duke-Elder (1938). Duke-Elder describes three degrees of severity—the catarrhal, the purulent, and the pseudo-membranous. The pseudo-membranous conjunctivitis may heal without scarring, but can persist for years, causing conjunctival shrinkage, adhesions between the bulbar and palpebral conjunctivae and corneal opacities. In this stage it is indistinguishable from pemphigus vulgaris affecting the conjunctiva.

Differential Diagnosis

In the early stages of the illness many diseases may be simulated, including Vincent's angina, glandular fever, diphtheria, agranulocytosis, and the common upper respiratory infections. When the skin eruption has made its appearance the field is narrowed and only four conditions have to be considered in the differential diagnosis: drug eruptions, pemphigus vulgaris, dermatitis herpetiformis, and foot-and-mouth disease.

Bullous eruptions may be produced by several drugs, but they rarely affect the mucous membranes and do not usually present this clinical picture, although Moss and Long (1942) described two cases clinically identical with the present ones said to be caused by phenobarbitone. Raffetto and Nichols (1942) and Greenberg and Messer (1943) have also described a similar condition due to sulphadiazine. However, evidence that the drugs were the causal agents is scanty and they may well have been coincidental.

Pemphigus vulgaris is a disease of the elderly, its course is never as acute as erythema multiforme, and dramatic improvement at the end of a week is most unlikely. The eruption of dermatitis herpetiformis may simulate erythema multiforme, but general symptoms are slight, the conjunctivae are not affected, and its course is a chronic one. Human foot-and-mouth disease is a very rare condition, and although descriptions resemble those of erythema multiforme in that conjunctivitis, rhinitis, and balanitis may be present the skin lesions are confined to the area around the nails of the hands and feet. Laboratory proof of the presence of the virus is now possible by the Waldmann and Pape method.

Aetiology and Treatment

The investigations in the present series of cases have given no assistance in the search for the aetiology of severe erythema multiforme. Leucocyte counts were within nor-

mal limits or slightly raised. Differential counts showed no significant abnormality. Blood cultures were sterile. Bacteriological investigation of the secretions from the mouth and conjunctiva gave growths of only the common pyogenic organisms, and these varied from patient to patient and even from site to site in the same patient. *Aspergillus niger* was cultured in Case 2, but this is considered to be non-pathogenic. Only one of the patients had taken a drug—namely, phenobarbitone—before the illness started. Therefore drugs can be excluded as the main cause.

Most patients complained of feeling off-colour for some weeks before the onset, but no evidence of underlying sepsis or other infection was found. In its predilection for children and young adults, its self-limited course unaffected by therapy, and its benign outcome, the condition bears a resemblance to another disease of obscure origin—glandular fever.

After seeing this series of cases one has the impression of dealing with a definite entity and not just a variety of the erythema multiforme as described by Hebra, and it is not surprising that it has so often been described as a new disease. This is in accordance with French opinions, and the same view is also held by several American authors. However, until there is a more definite lead it is useless to speculate on the probable causal agent.

Treatment—The disease is self-limiting and treatment has little effect on it. Rapid recovery of the patients after a week's illness has led to claims being made by Weisberg and Rosen (1946) for the beneficial effect of nicotinamide and by Robinson (1945) for the effect of penicillin. However, although it appears to be reasonable to give penicillin for the control of secondary infection there is little evidence that treatment shortens the duration of the illness, which usually improves spontaneously at the end of a week.

Summary

A series of cases of severe erythema multiforme has been described.

The course of the disease, its differential diagnosis, and its treatment have been discussed.

Investigations have failed to throw light on the aetiology of the illness, but it is considered to be a definite entity.

I should like to thank the medical superintendent of the Derby Isolation Hospital for permission to publish the report of Case 2 and the Medical Director-General of the Navy for permission to publish Cases 3, 4, and 5.

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A circular from the Department of Health for Scotland points out that though the majority of old people like to live in their own homes local authorities should help those who are unable to do so. Authorities have the power to provide domestic help in the home if necessary, and to build residential homes for the elderly who are unable to live independently. Not more than about 30 to 40 people should be accommodated in one home and such institutions should be brightly decorated and comfortable.

Medical Memoranda

Intravenous Atropine for Peptic Ulcer

I present here a case of ulcer of the lesser curvature of the stomach in which a crater the size of a cherry diminished to one tenth of its original dimensions after four weeks treatment and ceased to be visible radiologically after six and a half weeks.

An ex Serviceman aged 41 was discharged from the Army because of hyperthyroidism. In July, 1946, for two weeks he had pains in the epigastrium after meals. In October and November, 1946, the pain returned and was more severe. He was admitted to hospital on Nov. 18. The thyroid gland was slightly enlarged and a little hard on palpation. The basal metabolic rate was +11%, and there were no cardiac or ocular signs. A fractional test meal showed fasting hypersecretion with acidity 30/20 and 55/45.

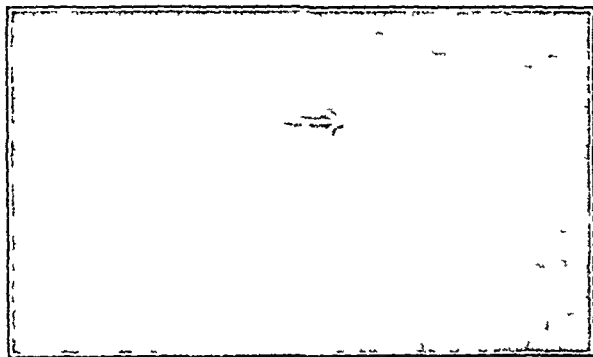


FIG 1

the highest acidity after the introduction of 100 ml of 5% alcohol was 60/45 and 65/55. Stool examination for occult bleeding (benzidine test) was positive. A barium meal showed the presence of a niche the size of a cherry on the lesser curvature with regional gastric spasm opposite (see Fig. 1).

Under treatment the gastric complaints disappeared completely in 10 to 14 days. On the ninth day the benzidine test became negative. On Dec. 16 the ulcer niche on the lesser curvature diminished to one tenth of its original size and on Jan. 4, 1947 (after six and a half weeks), it ceased to be visible (Fig. 2). The highest acidity shown by fractional test meal before leaving the hospital was 50/40.

The treatment consisted of (1) slightly restricted mixed diet, (2) 1 oz (28 ml) of cod liver oil before breakfast, (3) 1 dr (4 g) magnesium trisilicate three times daily after meals, (4) radiant heat

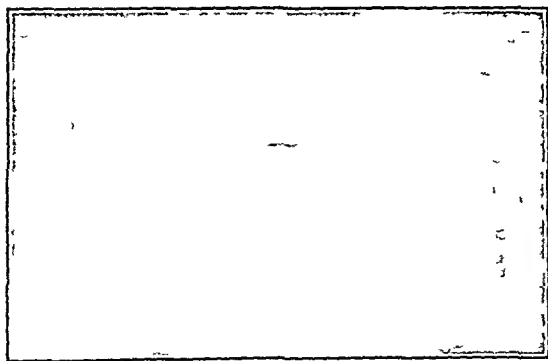


FIG 2—Ulcer niche on the lesser curvature invisible

twice daily for 20 minutes on the upper abdomen. (5) daily intravenous injections of 1/60 gr (1 mg) atropine sulphate plus 10 ml of 10% calcium gluconate. After twenty-eight daily intravenous injections of atropine and calcium they were continued every third day, so that in all the patient received 35 injections.

COMMENT

The diet in this case was not very strict and the alkalization was not very massive. From my clinical experience it appears that cod liver oil before breakfast favours rapid healing of a peptic ulcer but I ascribe a great part of the therapeutic success to the intravenous injections of atropine. For many years the subcutaneous injections of 1/60 gr (1 mg) of atropine formed an integral part of my treatment. However I met resistant cases in which diet, alkalis, bismuth, cod liver oil, and subcutaneous atropine could not bring about a remission and operation could not be performed for various reasons. I then tried atropine 1/60 gr in 10 ml sodium bromide or calcium gluconate (10%) intravenously. The results surpassed my expectations. I admit that it is difficult to imagine, if one does not see for oneself, how different is the therapeutic effect of atropine injected subcutaneously and intravenously. The case described is an exact replica of cases published by me in *La Presse Medicale* in 1937. In my view intravenous injections of atropine sulphate in sodium bromide or calcium gluconate should form an integral part of the conservative treatment of peptic ulcer.

ANASTASE LANDAU M.D.,

Consulting Physician
Paderewski Polish Hospital Edinburgh

REFERENCE

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True Knot of the Cord giving rise to Foetal Distress

True knots of the cord are fairly commonly seen at delivery but are usually without effect on the foetus. The following case is of interest in that tightening of the knot in labour gave rise to an unexplained foetal distress in the first stage of labour.

CASE HISTORY

A primigravida at term was admitted to hospital on Jan. 18, 1947 as a case of foetal distress in the first stage of labour, with the cervical os dilated to admit only one finger. The patient had had a show at 3 p.m. the previous day, which was followed shortly afterwards by feeble and irregularly timed contractions. The vertex was presenting engaged in the left occipito anterior position, the foetal heart rate was 136, and the maternal pulse 64. Vaginal examination showed the head in the mid cavity, and the cervix not dilated. No liquor amni was draining. Labour continued throughout the night, with increasing uterine contractions, and at 9.15 a.m. on the 19th thick greenish brown stained liquor was passed. The foetal heart was found to be beating irregularly at 146, but subsequently fluctuated between 90 and 150. The cervix was dilated to the size of only one finger and no prolapse of the cord was palpable. Admission to hospital was requested, and this was arranged.

The progress of labour was confirmed, but no cause could be found for the apparent foetal distress. The foetal heart was observed for a while while beating irregularly in rhythm, it remained fairly constant at about 146 beats a minute, and was not unduly influenced by pains. Morphine 1/4 gr (16 mg) was ordered and the labour allowed to continue without interference. The foetal heart rate varied between 120 and 148, but became more regular in rhythm during the afternoon although thick meconium stained liquor continued to be passed at intervals. At 4.45 p.m. the cervix was dilated to four fingers and at 6 p.m. was fully dilated. Delivery of a mature infant weighing 5 lb 7 oz (2.47 kg) followed shortly afterwards. The cord was not encircling the neck, which fact probably saved the baby's life.

The baby at birth was limp blue-asphyxiated and covered with meconium stained liquor. The pharynx was cleared, and the infant responded slowly to efforts at resuscitation but ultimately became of a good colour. After delivery a true knot (tightly tied) was discovered about half way along the cord, which was 20 in (50 cm) in length. The placenta was normal. The neonatal period passed uneventfully, the baby subsequently being discharged fit and well.

I am indebted to the medical superintendent for permission to publish this case.

JOHN PRICE,

Obstetrical Medical Officer
Lambeth Hospital

PHYSIOLOGICAL INFERTILITY

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[illegible]

We are bound to add that the book has two other great defects. The first is that as in so many American works, the author bases his conclusions on the maximum number of cases however incompletely recorded whereas the intimate study of twenty well documented instances would often yield information of far greater value. The second fault is that the author appears to be ignorant of important British work on his subject. A book on kidney disease which knows neither Ellis on the Natural History nor Wilson on the 'Vicious Circle' is, to the British reader out of date before it is published. The expert who will read with discrimination seeking only histological fact and bibliographical information cannot afford to ignore this book. May it never fall into the hands of the beginner.

ROBERT PLATT

CHARMS THAT SOOTHE

Music in Medicine By Sidney Licht, M.D. (Pp 132 \$3.00)
Massachusetts New England Conservatory of Music, Boston 15

The importance of the arts in the treatment of disease has been the subject of several expositions in recent years. This book deals fully with the use of music in medicine. The following chapter headings indicate its scope: History of Music in Medicine, Philosophy and Psychology of Music, Music as Occupational Therapy, Psychiatry and Music, Background Music, Mealtime Music and Music in Bed.

The book contains some striking quotations and useful references but also much irrelevant material. However there are some amusing passages. Discussing music in operating theatres and dentists' chairs Dr Licht writes: 'There are times during an operation when delicate maneuvers become trying and the wrong music or increased volume might lead to exasperation.'

For many people drilling is a frightful experience. Some dentists have advocated the playing of music at a loud level during this procedure and of the treatment of arteriosclerotic psychosis. Oldtime favourites played softly for several periods daily is indicated. Obviously where specific musical numbers are requested, they should be played while

Alcoholics like to join in group singing, especially if the group is made up exclusively of fellow inebriates. He recommends too that 'live musicians should be used as often as possible.' Whether such observations are worth the export of three dollars to the hard currency area is a matter of opinion.

D V HUBBLE

Having no lexicographers ready to take on the task we in this country depend on the United States for comprehensive medical dictionaries. Our debt to American colleagues is great and must be acknowledged. Gould, Dorland, and Stedman, and their colleagues and successors have earned the gratitude of the whole English speaking profession. The latest of the long series is a reprint of the eighteenth edition of the *American Pocket Medical Dictionary* still bearing the name of Dr W A NEWMAN DORLAND as editor, it is published by W B Saunders Company at 10s and is also obtainable with thumb index for 12s 6d. In this edition the terminology has so far as possible been made to conform to that of the *Standard Nomenclature of Diseases and Operations* published by the American Medical Association. There are 1062 pages, printed for the most part in single column giving the pronunciation and brief definitions of all the principal terms used in medicine, surgery, dentistry, veterinary medicine, nursing and kindred sciences.

With the February number *Mother and Child* appears in a new and enlarged format. A leading article comments on a recent circular from the Ministry of Health concerning the weekly allowance for younger children as follows: 'In Circular 221/46 of the Ministry of Health there are stated a number of reasons why, in the opinion of the Minister, local authorities should take into account the payment of these family allowances and the recent increase in the rate of old age pensions when assessing needs in their various assisted services schemes. It has been said by a legal authority that in cases where many alternative defences are pleaded there is frequently no defence worth pleading at all. It occurs to us on a study of this circular that the Minister is in the same position. After saying it would probably be a breach of the law for local authorities to disregard family allowances the circular continues at very considerable length to state many possible reasons for disregarding such allowances. If in fact to disregard their effect is illegal why not say so? Can it be that the Minister has qualms of conscience with regard to this?' The price of the journal (which appears monthly) is 1s.

BOOKS RECEIVED

[Review is not precluded by notice here of books recently received]

Nutritional Disorders of the Nervous System By J D Spillane, M.D., M.R.C.P. (Pp 280 20s) Edinburgh E and S Livingstone 1947

Includes accounts of vitamin B deficiency disorders, subacute combined degeneration of the cord, and nutritional neuropathy in wartime.

The Childbearing Years By C Scott Russell, M.A. F.R.C.S. Ed., M.R.C.O.G. (Pp 88 7s 6d) Oxford Blackwell 1947

A book on sexual physiology, child bearing, sterility and contraception for the lay reader, with many illustrations.

The Practice of Mental Nursing By Mary Houlston, R.G.N., R.M.N., R.F.N. (Pp 164 7s 6d) Edinburgh E and S Livingstone 1947

An introduction to mental nursing for junior student nurses.

The Psychology of the Unwanted Child By Agatha H Bowley, Ph.D. (Pp 112 6s) Edinburgh E and S Livingstone 1947

Includes a study of children in substitute homes, causes and effects of emotional rejection, and therapeutic methods.

A Handbook on Diseases of Children By Bruce Williamson M.D. F.R.C.P. 5th ed. (Pp 408 15s 6d) Edinburgh E and S Livingstone 1947

This edition includes new material on penicillin.

Libido and Delusion By Louis S London M.D. 2nd ed. (Pp 259 \$3.50) Washington, D.C. Mental Therapy Publications 1947

Discusses various theories of the libido, with reference to a number of cases, the pathogenesis of delusions and analysis of schizophrenics.

Suicide and the Meaning of Life By Margarethe von Andus (Pp 219 8s 6d) London William Hodge 1947

An investigation into the meaning certain individuals attach to their lives elucidated by personal questioning.

Le Déséquilibre Psychique By Dr J Borel (Pp 378 360 francs) Paris Presses Universitaires de France 1947

An account of mental imbalance, psychoses and delinquency, with clinical details.

Clinical Examination of the Nervous System By G H Monrad Krohn, M.D. F.R.C.P. 8th ed. (Pp 380 16s) London H K Lewis 1947

The chapter on angiography with perabrodil has been enlarged and illustrations have been added.

Veneral Disease By L Martindale, C.B.E., M.D. F.R.C.O.G. (Pp 31 2s) London The Association for Moral and Social Hygiene 1947

A simple history and description of venereal diseases with emphasis on their prevention by an appeal to morality.

Physicians Handbook By John Warkentin Ph.D., M.D. and Jack D Lange, M.S., M.D. 4th ed. (Pp 282 \$1.50) Chicago, Illinois University Medical Publishers 1946

A summary of diagnostic procedures.

Rh Its Relation to Congenital Hemolytic Disease and to Intra group Transfusion Reactions By Edith L Potter, M.D., Ph.D. (Pp 344 £1 10s 6d) London H K Lewis 1947

An account of the rhesus factor for medical practitioners with photographs and bibliography.

The 1946 Year Book of Dermatology and Syphilology Ed by M B Sulzberger M.D., and R L Baer, M.D. (Pp 638 21s) London H K Lewis 1947

The new material discusses BAL, penicillin in slow release vehicles, antihistamine agents and vitamin D for lupus vulgaris.

The 1946 Year Book of Industrial and Orthopedic Surgery Ed by Charles F Painter M.D. (Pp 429 21s) London H K Lewis 1947

Summarizes recent advances.

BRITISH MEDICAL JOURNAL

LONDON

SATURDAY JUNE 28 1947

A M A CENTENARY MEETING

The centenary meeting of the American Medical Association at Atlantic City, New Jersey, from June 9 to June 13 will remain in the memory of those doctors fortunate enough to attend it as one of the most noteworthy events in their lives. The size of the meeting may be gauged by the number of medical men and women who registered—15,667. If we add those who omitted to register, foreign guests, and the wives and families of the American doctors who came from the 48 States of the U.S.A., the population of Atlantic City must have increased temporarily by at least 30,000. This was, of course, a record meeting for the A.M.A. The British visitor was astonished and at times perhaps stunned, by the sheer impact of the size of the meeting and by the large scale of its many notable assemblies and occasions—and not least by the open-handed and open-hearted generosity with which he was welcomed both officially and privately.

The A.M.A. meeting was like a landscape painting on a large canvas. The visitor was able to see the broad sweep of American medicine, and, if the pressure of people and events prevented him from seeing all the details, what he did see satisfied him that size had not been achieved at the expense of quality. The precision of the detail was indeed remarkable, and was seen to perfection in the scientific exhibits, which used every technical device to present the results of research in such a way that the general physician could understand almost at a glance the main facts of the subject demonstrated and the conclusions to be drawn from them. The legends to the exhibits were written in large script and exact language. Diagrams, charts, graphs, maps, colour photographs, drawings, x-ray films, anatomical models, surgical instruments, and mounted specimens were all assembled in a logical sequence that made each exhibit a balanced postgraduate course. An expert on the subject exhibited was there to expound and explain and to answer the ceaseless questioning of men and women eager for information. Some of the exhibits will subsequently be shown at meetings in the different States, but the exhibitors were not perturbed by the fact that several of the exhibits, the result of many months of work, would be only temporary. Medicine changes, and rapidly, is the American theme. In no other country is technology at such an advanced stage of development, and American medicine is almost spendthrift with technological devices. This may have disadvantages. Technology may in some instances be looked upon as an end in itself. The technological approach may lead to short-lived enthusiasms, and the patient may at times be only dimly visible behind a barrage of apparatus. In Great Britain the string-and-sealing-wax

tradition makes our approach to unsolved problems more cautious—an approach that leaves ample room for reflection. It is perhaps not fanciful to see in the bustling progress of American medicine the spirit of the frontier eager to deal quietly with the enemy and impatient of obstacle—a spirit that is aggressive, invigorating, and productive of results.

Those who represented the British Medical Association at Atlantic City were immediately made to feel at home, as indeed were all the British guests. Newcomers to the U.S.A. soon realized that what they had heard of American hospitality was no myth. There were of course the formal occasions common to all such meetings, but even here the lively friendliness of Americans diverted the formal pompousness. The B.M.A. delegation was given every opportunity to see the organization of the A.M.A. from the inside. They were invited to the dinner given to the Board of Trustees to the House of Delegates and then to the House of the A.M.A. They were presented to the House of Delegates at the opening of one of its sessions and then to the debates of this assembly which correspond to the Representative Body. The B.M.A. delegates were also invited to attend a meeting of the Board of Trustees to see the change of views on medical politics.

It may be of interest to outline briefly the structure of the A.M.A. The Board of Trustees corresponds to the Council of the B.M.A. It consists of nine members, one of whom serves for a term of five years, and the others for a term of one year, he is re-elected for a further year. No one, therefore, can be a trustee for longer than two years. The Board meets four times a year and its Executive Committee meets every month. The Board gives its stewardship to the House of Delegates, numbering not more than 175 members, like our Representative Body, and the House of Delegates sets policy. The County Medical Societies, of which there are more than 2,000, is the key unit of the A.M.A. Each Society consists of its county society and its city society. The House of Delegates elects members to the House of Delegates and the House elects the Board of Trustees. The work of the A.M.A. is carried out by Standing Councils and Executive Committees appointed by the House of Delegates. The work of the Councils is done at A.M.A. Headquarters in Chicago, each Council having a representative on the staff. There are, for example, Councils on the subject of research and hospitals, on industrial health, on the subject of medicine and grouped in one division is the Council on Medicine and Chemistry, the Therapeutics, the Council on Physical Therapy, the Council on Nutrition. There are a Bureau of Investigation, a Bureau of Officers are the Editor of the *Journal of the American Medical Association* and the *Annals of the American Medical Association*.

It was at a meeting of the House of Delegates that Dr. H. G. Dun, the Chairman of the B.M.A. delegation, presented to the A.M.A. a gift to the A.M.A. of the mulberry tree that grew in Charles Dickens's home in Finsbury Square, London. The tree, in company with the

guests were honoured subsequently by being admitted as Honorary Fellows of the A M A at the opening session of the meeting on June 10, an event also noteworthy for the concert given by the Philadelphia Festival Orchestra. The last item on this programme came as a pleasing surprise, for the conductor, Alexander Hilsberg, announced that it was to be the first performance of a march dedicated to the victory at Iwo Jima and composed by the President of the A M A, Dr Edward L Bortz. Later in the meeting the guests attended the President's reception and stood in the "reception line" to shake hands with many hundreds of American doctors and their wives. Before this reception a number of the guests, including the B M A party, were admitted honorary members of the Alpha Omega Alpha Club at its annual dinner. It is not possible to record in detail everything of importance that happened. One other event should be mentioned, however, and that is the addresses given on Sunday, June 8, and broadcast to the nation, by the Rev R C Hutehison, President of Lafayette College, Easton, Pa., by Rabbi J L Liebman, of Boston, and by Monsignor F J Sheen, of Washington, D C. During the meeting the Post Office Department issued 125,000,000 centennial stamps depicting the well-known painting "The Doctor," by Sir Luke Fildes, which is in the possession of the Tate Gallery. The House of Delegates elected Dr R L Sensenich as President-Elect, and Dr H A Christian was awarded the Distinguished Service Medal of the A M A. Finally, to round off in a permanent form the first hundred years of the A M A, the W B Saunders Company published the *History of the American Medical Association, 1847 to 1947*, by Dr Morris Fishbein, Editor of the *J A M A*. This 1,226-page volume contains biographies of the Presidents of the A M A, compiled by Dr Walter L Biering, and accounts by various authors of the work of the Councils and Bureaux of the A M A and of its publications. The Centenary Meeting is over. The written word remains in this "History" as an account of faithful stewardship and as an inspiration for the future.

THE PHYSIOLOGY OF VISION

The physiology of vision is a notoriously difficult and controversial subject, which although of great theoretical interest has at present little clinical significance. The common defects of colour vision are congenital and incurable. Those who suffer from them are unfitted for certain occupations, because their inability to distinguish between red and green signals would make them a danger to the community, or because the occupation is one which demands a well-developed colour sense. Such individuals can be identified without much difficulty and must be prevented from following the few professions and occupations in which their disability would endanger others. They should also be discouraged at an early age from aspiring to become painters or from entering branches of industry in which good colour vision is necessary or desirable. Great ingenuity has been exercised in devising simple tests for the rapid detection of these defects. A valuable critical review of tests for colour deficiency has recently been

published.¹ These tests are empirical in the sense of being independent of the truth or falsity of any particular theory of colour vision. Yet, although theories of colour vision and of the nature of "colour-blindness" may be unimportant for diagnostic purposes and valueless from the point of view of treatment, we believe that they do and should interest the medical profession. It is true that the disability caused by being unable to distinguish between red, yellow, and green is no great handicap in most walks of life. It has never been suggested that an attempt to reduce its incidence by discouraging the affected from becoming parents would be justified on eugenic grounds. But Pitts estimate² that such people can distinguish less than 30 colours differing from one another in hue and saturation, whereas a normal person can distinguish 5,000, is of great general interest and is insufficiently known. It is perhaps fortunate that affected individuals are necessarily unaware how much they miss of the rich and varied world of colour. Explanation of this curious anomaly necessitates consideration of the mechanism of normal colour vision.

Exactly 140 years ago a successful London physician and versatile genius, Thomas Young, published the final form of a theory of colour vision which he had adumbrated six years before. The essence of the theory, to which the name trichromatic has since been applied, is that there are three and only three fundamental or primary colour sensations—red, green, and violet (or blue). All other colour sensations, including white and yellow, are combinations of these three in varying proportions. "This supposition," he said, "simplifies the theory of colours. It may therefore be adopted with advantage, until it be found inconsistent with any of the phenomena." No serious writer on colour, before or since, has postulated fewer than three primary sensations in normal people. The only question that arises is whether there are more than three. To explain the physiological mechanism by which these sensations might be aroused when light falls on the retina, Young in 1801 had suggested a subsidiary hypothesis that "each sensitive filament of the nerve may consist of three portions, one for each principal colour." It is desirable to bear in mind these two tentative assumptions of Young, for neither necessarily implies the other. Since the middle of the last century, when Helmholtz in Germany and Clerk Maxwell in this country called attention to Young's brilliant suggestions, almost every writer on the subject has ranged himself either as a supporter or as an opponent of the trichromatic theory. The question of the number of different retinal receptors is another, although allied, problem. The discovery of rods and cones in the retina, two histologically and functionally distinct structures, has naturally had a great influence on the development of both aspects of the theory of colour vision. It would perhaps be true to say that physicists and psychologists have tended to be more interested in the colour sensations, while physiologists and anatomists have paid more attention to the retinal receptors and their central connexions.

¹ *Report on Defective Colour Vision in Industry* by a Committee of the Colour Group of the Physical Society. 1946. 52 pp. London. See also *British Medical Journal* 1946 2 948.

² *Characteristics of Dichromatic Vision*. Med Res Cncl Sp Rep Ser No 200. 58 pp. 1935. London.

Over the last twenty years most physiologists have favoured some form of the trichromatic theory. Hecht and Roaf, for instance, elaborated theories which, while differing profoundly from one another and from the "classical" theory associated with the name of Helmholtz, were alike in being trichromatic. Three books published in English within the last twelve months give it general support. Wright's³ contains a wealth of valuable and accurate data on the luminosity of spectral colours, on the facts of colour mixture, and on the discrimination of colours. It is argued that these are all consistent with, and most simply explained in terms of, three primary colour sensations. Willmer's⁴ is more speculative and less firmly rooted in personal researches, but is stimulating and provocative. Granit's⁵ brings together under one cover his important researches on the eye by electro-physiological methods. He shows, among other things, that individual fibres of the optic nerve are connected with receptors of several different types as judged by their responses to monochromatic light falling on the retina. Many receptors are sensitive only to a narrow range of spectral colour. Yet, although there is strong evidence for seven such "modulators," they fall into three distinct groups, corresponding with blue, green, and red light.

Prof. Hartridge, elsewhere in this issue (p. 913) and in his earlier articles,⁶ has sought to extend Granit's outstanding work to the human eye by studying the sensations aroused in himself when very small images of monochromatic light were formed on his own retina. He claims to be able to confine the stimulus to single cones or to small clusters of functionally identical cones. From these and other experiments, he concludes that there are not less than seven types of retinal receptor. The difficulties of explaining some of the facts of hue discrimination, colour mixture, and colour-blindness in terms of the trichromatic theory also lead him, as they have in the past led others, to postulate more than three primary colour sensations. If his arguments should, after careful scrutiny, be generally accepted, it will mean that the trichromatic theory has served its purpose as a useful working hypothesis and must now be declared, in the words of its originator, "inconsistent with the phenomena."

TREATING THE SYMPTOMS OF DEPRESSION

We have all experienced disturbances of affect, but with good fortune they are so short-lived and so mild that when the cause has passed our normal tranquillity returns without the help of treatment. As Stockings points out elsewhere in this issue (p. 918) the more severe disorders of mood make up a large part of general practice. The depressed and anxious patient, who may or may not have organic symptoms or signs, is so well known that he needs no description here. Whatever the exact pattern of the disturbance of feeling-tone that the patient has, there always exists the problem of how much of the disturbance is the result of difficulties the sufferer has encountered in his daily living and how much is the result of physical and perhaps constitutional changes within him. There was a

tendency once to refer to exogenous and endogenous depressions, but these terms lost favour when it was believed that in many instances the illness was compounded of endogenous and exogenous causes. The term "reactive depression" is still used, and some maintain that in any persistent disorder of affect—whether a depression or an anxiety state—the causes have inevitably arisen in the circumstances of the subject's life. There may be precipitating environmental causes but the predisposing causes are environmental too. Others recognize a precipitating cause or set of causes in such a case but maintain that the predisposition to the disorder was mainly inborn, and refer to evidence in the patient's family history and in his reactions to previous life situations to support this view. The recent dramatic results which have followed electric convulsion therapy in depressive illnesses, and particularly in involutional depressions, suggest that in these cases at any rate the illness has persisted as a result of a physical disorder.

In recent weeks and again in this issue (p. 921) our correspondence columns have shown among our readers some lack of unanimity on this theme. Stockings has no hesitation in referring to all these affective disorders as "the syndrome of thalamic dysfunction" and he believes that the illness is in fact the result of a disturbance in the behaviour of neurones in the thalamus and basal ganglia. He does not say. Although there are many who would not follow him all the way in such a direction, many would agree with his statement that in many cases of moderate and depression psychotherapy may be prolonged and even prolonged ineffective. Because of this we should seek for a treatment which will alleviate the distressing symptoms to the patient and the discouraged practitioner. It is favourable on a new and time-tested basis, namely, hexyl, pyrexyl or parhexyl. This has been reported upon by Adams in 1946, called to our attention which is taken because of the possibility of a side-effect which it induces. Synhexyl produces a state of anxiety and distress in normal people and in the case of depressed subjects found that in a group of 50 patients, 10 had no improvement and some with psychotic depression the effect was a further amelioration of the disturbance. In the case of 10 patients without similar improvement in the other 10 patients. In neurotic patients were helped more than in the case of 10. There were no immediate complications of the treatment and no sequelae. Caution is advised in the use of the drug, but since results with other drugs, such as benzodrine, are usually disappointing, it is worth further study. If it holds promise, it is to be hoped that we shall not forget the symptoms, and not causes. We do not know the cause of the pain until we know the cause of the pain.

TRIPLI CARDIAC RHYTHM

The third heart sound was first described by Osler in 1907. It is soft and low pitched, usually heard, and varies in intensity with the position of the patient. It is heard best at the apex beat, and is usually heard in the left side, especially in the supine position. It is raised by compressing the chest wall. In 1913 Osler proved that the third heart sound is associated with the lower part of the diastolic pressure. It is a phase of rapid ventricular filling. He also showed that it is a phase of rapid ventricular filling.

³ *Researches on Normal and Defective Colour Vision*. London, 1916, 387 pp.

⁴ *Retinal Structure and Colour Vision*. Cambridge, 1946, 231 pp.

⁵ *Sensory Mechanisms of the Retina*. London, 1947, 412 pp.

⁶ *British Medical Journal* 1946, 1, 637.

⁷ *Philosophical Transactions of the Royal Society of London* Series B, 1947, 232, 519.

that the sound was caused by the vibration of the ventricular walls set up by their sudden distension at this time.³ This explanation is now generally accepted. According to Orlans and Braun-Menendez⁴ the third heart sound begins 0.11 to 0.14 seconds after the commencement of the second heart sound. Margolies and Wolferth⁵ pointed out that this is distinctly later than the opening of the mitral valve, which coincides with the top of the V wave of the phlebogram.

Nothing is gained by calling a third heart sound "triple heart rhythm, type I a." Evans⁶ and other authors agree that the sound is very common in childhood, but not in infants, and becomes more and more infrequent with advancing age. O'Meara describes in an article published in this issue (p. 922) how he heard the third heart sound in 54 to 71% of 745 young men aged 17-20, and 35-49% of 255 men aged 21-30. His ability to detect the sound improved with experience. Its presence in the older groups is interesting (15.5% in 103 men aged 41-50, 5.7% in 70 men aged 51-60), particularly since Evans stated that a third heart sound is not heard in normal subjects over 40. Thayer⁷ reported a similar relationship to age. His figures for the second, third, fourth, and fifth decades were 84%, 60%, 42%, and 14% respectively.

The normal third heart sound may be confused with protodiastolic gallop, with the short diastolic murmur of active rheumatic carditis, with summation gallop, and with the opening snap of mitral stenosis. Protodiastolic gallop occurs when the third sound develops or reappears as a result of left ventricular failure. The murmur of active carditis should be distinguished with ordinary care. Summation gallop disappears when the heart is slowed. The opening snap of mitral stenosis is heard earlier and is more easily confused with a widely split second sound. The diastolic murmur of mitral stenosis is determined by the rapid ventricular filling phase, and may directly follow the opening snap or may be heard a little later.

SEVERE ERYTHEMA MULTIFORME

In 1860 Hebra⁸ separated from the collection of ill-defined erythematous eruptions described by Willan and others a group which he regarded as a clinical entity of obscure aetiology and called erythema exudativum multiforme. The eruption commonly affects the extremities and is characterized by erythema with which may be associated congestion, oedema and purpura, and sometimes vesication or bullous formation. The lesions are nummular, often target-like, and though Hebra did not mention the fact mucous membranes may be involved, especially in the vesico-bullous type of eruption. The incidence of such lesions is not less than 25% and is put by some authors as high as 60%, occasionally the lesions of mucous membrane are profuse and severe. Recurrence at variable intervals over the course of years is another common feature of the disease, and rarely the recurrences may be so frequent as to make the affliction a continuous one. The first attack of erythema exudativum multiforme is often associated with a fever, suggesting, perhaps, an upper respiratory tract infection, but subsequent attacks may be without such an onset. Toxic eruptions resembling the classical picture occur with other specific infective diseases and sometimes as an expression of sensitization to drugs.

Osler⁹ was impressed by the severity of visceral lesions sometimes accompanying the exudative erythema, especially the gastro-intestinal renal, and mucosal haemorrhages, and in reviewing a series of sixty-one cases from the literature, including six of his own, he found that thirteen patients had died from the disease. Under various names cases resembling the severe mucosal form of erythema exudativum multiforme have been reported whose notable features were severe eye complications from a purulent conjunctivitis, pneumonia of a non-bacterial type, and sometimes death. In all these cases there was a sudden onset, with serious constitutional symptoms, grave sequelae, and seemingly little tendency to recur. Rendu,¹⁰ using the term "ectodermose érosive pluriorificielle," regarded the group as a separate entity, while Stevens and Johnson¹¹ described the condition as a new disease hazardous to life and vision. Low and Davies¹² used Baader's¹³ term "dermato-stomatitis," and Dowling¹⁴ reported a series under the title of "a pemphigus-like eruption."

Stanyon and Warner,¹⁵ in a paper on the "mucosal respiratory syndrome," reported a non-bacterial pneumonia in fourteen out of seventeen cases of erythema multiforme, with two deaths. They emphasized the mononuclear character of the infiltration, animal investigations in a search for viruses were negative. The association of pneumonia with this disease was noted in a Report¹⁶ by the Commission on Acute Respiratory Diseases (Western Reserve University), where, in six cases of severe erythema multiforme three showed a non-bacterial pneumonia. Elsewhere in this issue Sneddon (p. 925) reviews some of these reports and describes a series of six cases. He draws attention to some features which this disease has in common with glandular fever. Keil¹⁷ reviewed the subject and maintained the unity of the benign and severe forms of the disease. Because of its mode of onset cases of severe erythema multiforme are commonly admitted to fever hospitals. Costello¹⁸ in a series of 75,000 admissions to the Willard Parker Hospital for Contagious Diseases found thirty-three cases of erythema multiforme of which seven were severe, three of these patients died. In his opinion penicillin was of value in preventing grave sequelae and death in some cases.

To sum up, severe erythema multiforme particularly affects children and young adults, has a sudden febrile onset, and severely affects the buccal mucosa, with frequent spread to the bronchial tree and sometimes to the gastro-intestinal tract. Conjunctivae and genitals are commonly affected and the lesions in these sites may lead to ulceration and scarring. Death has occasionally been reported. Whether this syndrome is a separate entity cannot be determined in the absence of a recognized causative agent, but the weight of evidence suggests that both benign and severe forms of erythema exudativum multiforme constitute a single and distinct disease entity.

The Humphry Davy Rolleston Lectures will be delivered before the Royal College of Physicians of London (Pall Mall East, S.W.) on Tuesday and Thursday, July 15 and 17, at 5 p.m., by Dr P. C. P. Cloake, F.R.C.P. His subject is "The Treatment of Disseminated Sclerosis by Artificial Pyrexia and Prolonged Administration of Arsenic."

³ *Berl. klin. Wschr.* 1921 58 600

⁴ *The Heart Sounds in Normal and Pathological Conditions* 1939 London Oxford University Press

⁵ *Amer. Heart J.* 1932 7 443

⁶ *Brit. Heart J.* 1943 5 205

⁷ *Arch. Mal. Cœur* 1910 3 145

⁸ *Diseases of the Skin* Vol. 1 New Sydenham Society London 1866

⁹ *Amer. J. med. Sci.* 1895 110 629

¹⁰ *Rev. Gen. de Clin. et de Thérap.* Paris 1916 30 351

¹¹ *Amer. J. Dis. Child.* 1922 24 526

¹² *Brit. J. Derm. Syph.* 1938 50 141

¹³ *Arch. f. Dermat. u. Syph.* 1925 149 261

¹⁴ *Lancet* 1940 2 759

¹⁵ *Canad. med. Ass. J.* 1945 53 427

¹⁶ Report of the Commission on Acute Respiratory Diseases (Western Reserve University) *Arch. Intern. Med.* 1946 78 687

¹⁷ *Ann. Intern. Med.* 1940 14 449

¹⁸ *J. Invest. Derm.* 1947 8 127



The Main Entrance

THE OLD "BETHLEM" AND THE NEW SEVEN HUNDREDTH ANNIVERSARY OF FOUNDATION

Bethlem Royal Hospital, the first hospital to be established in Europe for the treatment of mental disorder, with the exception of one such asylum at Granada in Spain, is celebrating the seven hundredth anniversary of its foundation. When its history began, in 1247, it was as a priory for the sisters and brethren of the Order of the Star of Bethlehem. It is not clear from the records when it was first used for the insane. Some mention of this use is to be found at the beginning of the reign of Richard II (1377), and a Royal Commission in 1403 refers definitely to the confinement there of six persons of unsound mind (*sex homines mente capti*). This year is also the quatercentenary of the handing over of the institution by Henry VIII in 1547 (only 17 days before his death) to the City of London as a hospital for lunatics. For a few years after its transference to the City it was administered directly by the Court of Aldermen, but in 1557, along with Bridewell Royal Hospital, it was vested in the hands of a body of governors. This union was confirmed at a much later date by an Act of George III, and it continues to this day.

In the now distant past Bethlem had an unfortunate reputation for its treatment of lunatics. The contemptuous term 'Bedlam' is a corruption of its name. 'Sighing like Tom o' Bedlam,' says a character in *King Lear*—a reference to a common beggar who, because of lack of accommodation, was turned out on ticket of leave. Evelyn in his Diary 'stept into Bedlam,' where he saw several miserable creatures in chains, some of them, he added, were 'mad with making verses'. At one time Bethlem is said to have derived an income of £400 a year from the indiscriminate admission of visitors drawn by an idle and wanton curiosity, a practice stopped in 1770.

The Four Bethlems

The first Bethlem was the mediaeval foundation in Bishopsgate Without. At the close of the seventeenth century it was removed to a new site in Moorfields, where a building of some architectural merit, similar in design to the Tuileries, was put up. The third Bethlem, opened at the time when London was rejoicing over Waterloo, was built on eleven acres in St George's Fields, Southwark. This building with its copper dome, which in recent years became the Imperial War Museum, was a London landmark for more than a century. Here were transferred from Moorfields the famous two figures Raving and Melancholy, executed by Cibber, and said to have been portraits of patients in the hospital, one of them a porter to Oliver Cromwell. They evoked Wordsworth's line

"Bedlam, and those carved maniacs at the gates,
Perpetually recumbent"

Knight's *London* tells us that at the time when the hospital went across the river (1815) the patients were divided into three

categories: first the furious, mischievous and incorrigibly dirty; secondly, the ordinary and 'promoted'; and, thirdly, those advancing towards recovery.

The fourth and present Bethlem was opened in 1930 at Monks Orchard Beckenham ten miles from Charing Cross, in a wooded part of Kent. Here it has been possible to follow the plan of segregation rather than of congregation. Instead of one frowning building there is an estate with separate villas and generous gardens and the unit system enabling patients on reception to be placed with those having symptoms of a like character, replaces the heterogeneous assembly of the old days. There is accommodation for 250 patients who may be admitted on the voluntary, temporary or certified basis. Bethlem was a pioneer in voluntary reception as early as 1860 voluntary boarders were welcomed. At Monks Orchard there are a completely equipped surgical department, a pathological laboratory, units for hydrotherapy and electrotherapy, a recreation hall and workshops for arts and crafts, and the homely atmosphere of the living rooms and bedrooms.

gives point to the claim that whenever the word 'Bethlem' is now used it means 'curable'.

The Medical Hierarchy

The first physician whose name can be found associated with Bethlem is John Arundell, a medical ecclesiastic of the fifteenth century. He was physician and father confessor to Henry VI, who suffered from a mental malady for which Arundell prescribed a 'head purge' and possibly a cure and for his services—for Henry was restored to sanity—received the mastership of Bethlem. He was more priest than physician, he collected prebendal stalls in most cathedrals of England and died Bishop of Chichester.

From early in the seventeenth century the medical staff at Bethlem consisted of a non-resident physician in 'apothecary' and a visiting surgeon. The physician of course was supreme and even in the early nineteenth century there are records of the physician's leaving his instructions for the surgeon on a slate on the apothecary's door. One of the earliest physicians was Thomas Nurse, who had a large practice in Westminster in Charles II's time, and is buried in the Abbey. He was who first segregated the sexes at Bethlem. After Thomas Allen, an acquaintance of Pepys, there came Edward Tyson, scholar and philosopher, writer of some elaborate monographs on the dissection of animals. Tyson's portrait is in the Royal College of Physicians, his bust in All Hallows, Lombard Street, and his name is commemorated in Tyson House in the new Bethlem. He deserves it for with him a new era opened, though many of the old erudites remained. He paid attention to patients' dietaries, installed the first nurse, established an out-patient department and set up an after-care system. His instruction that patients should be treated 'with all the care and tenderness imaginable' was given 100 years before the chains were struck from the lunatics huddled in the Salpêtrière and 150 years before the metamorphosis of asylums for detention into hospitals for treatment really began. His successor, Richard Hile, was also a progressive man who considered company beneficial to the patients and joyfully recovered, and even a band of music contributors to the recovery.

Then came the remarkable dynasty of the Monros, one of the longest in medical history. It began in 1728 with James Monro, whom the *Dictionary of National Biography* describes as a skilful and honourable physician, though his policy of not admitting students or physicians to the practice of the hospital was the subject of criticism. He was succeeded by his son John, who instituted greater privacy and comfort for the patients and he in turn by his son Thomas who attended George III in his derangement and is said to have passed a hop pillow for the royal patient. With the retirement of the next in line, Edward Thomas Monro, in 1855, the dynasty ended, though Edward Thomas had a son Henry, not elected to the staff of the hospital, who was a noted neurologist.

Alexander Morison the first teacher of systematic psychiatry in Great Britain is another name associated with this period. Some of the humbler apothecaries were also noteworthy. One of them John Haslam, in 1789 gave the first account of dementia paralytica.

The first resident physician, as distinct from the resident apothecary, was Sir Charles Hood in 1852, he excluded criminal lunatics from Bethlem. In later years such eminent names as George Savage, Robert Percy Smith, Maurice Craig, Henry Rymer and many others have been associated with the institution. In 1914 the new designation of physician superintendent was made and a panel of consultants appointed. The long reign of J. G. Porter Phillips as physician superintendent will be fresh in the recollection. The present medical staff consists of the physician superintendent (Dr John G. Hamilton) senior and junior assistant physicians, a temporary assistant medical officer, a pathologist, the director of the psychological laboratory and a dental surgeon with a consulting panel of seven. The nursing staff comprises on the female side matron, deputy matron, seven sisters and deputy sister, 26 nurses and 18 part-timers, and, on the male side, chief and deputy chief and 28 male nurses. There are occupational therapy and physiotherapy officers.

For many years students were not admitted to Bethlem. The innovation was stoutly opposed until almost the end of the Monro era. In 1844 two students, one from St Bartholomew's and the other from St Thomas's, began their clinical studies at a fee of twenty guineas each, and some twenty years later the governors permitted the appointment of two resident pupils. To-day two house physicians in addition to clinical assistants form part of the medical staff. Classes of undergraduates and postgraduates from many hospitals and clinics have taken courses.

During the war a good deal of damage was sustained by the hospital. Much of it has been made good, though a wing of one of the houses will have to be rebuilt. The new Bethlem has been fortunate in its association with the City of London. Its president and great benefactor for many years was the late Lord Wakefield, one time Lord Mayor, after whom a unit is named. On his death in 1940 Queen Mary, who had taken a deep interest in the hospital for many years, became president, and it is hoped that Her Majesty will be present at the septucentenary celebrations, which are being held this week-end.

THE PROBLEM OF PHTHISIS

B.M.A. LECTURE TO ABERDEEN DIVISION

Dr R. R. Trail who is the medical director of Papworth Village Settlement gave a lecture recently to the Aberdeen Division of the British Medical Association in which he discussed a number of facts and problems concerning phthisis.

He spoke first of the placidity with which the community accepted the incidence of tuberculosis. "If we have two cases of anterior poliomyelitis or six cases of typhoid, newspaper headlines equal those given to a world crisis. No one, however, cringes from the house-tops the grim fact that Great Britain in 1945 had 22,945 deaths from phthisis, 206,939 cases under observation (an increase of 48,720 since 1939), and 50,482 new cases on the register. How many more should have been notified it is difficult to estimate. We know from the results of mass radiography surveys that there are at least a continuing 15,000 unsuspected but active cases in the supposedly healthy population for the age group 17 to 24. We gain nothing by hiding from the public and from ourselves that the incidence of active disease increases steadily after the age of 35, and that very large numbers of sufferers over the age of 30 are never diagnosed or if diagnosed are certainly not notified. There must be at least 150,000 men and women with positive sputum who are outside the sheltered conditions which could provide for their own safety and for the safety of their contacts in the home and in the community.

The Cost of It

The cost of schemes administered by counties and county boroughs in England and Wales for dealing with tubercu-

losis was nearly £4,000,000 in 1937-8, last year it was over £5,000,000. The bill for mass radiography was £200,000, family and maintenance allowances for tuberculous persons cost a further million, and tuberculous incapacity must account for at least one fifth of the £25,000,000 spent in sickness and disablement benefits. To this must be added some part of the £23,000,000 paid to widows and orphans by the Ministry of Pensions and some £2,000,000 in fees to insurance practitioners for attendance on the tuberculous sick in their own homes. The country as a whole was spending not less than £12,000,000 a year on this disease.

And what was the return for this expenditure? Some declared that sanatorium treatment was unnecessary, as large numbers of patients recovered without its aid, and useless as its end results showed it to be but a half-way house to death. Such statements ignored known facts. Sanatorium provision was a good middle part of treatment, badly let down by faulty supports at both ends, thanks in part to the strange lines on which tuberculosis services had developed. The tuberculosis officer had been encouraged to use his appointment as a stepping stone to that of medical officer of health. Outside the Lancashire, Welsh, National, and Middlesex and Surrey county schemes he had had little opportunity to rise in his own sphere. It should be made possible for every tuberculosis officer to interchange with residents in sanatoriums and village settlements and to rise to the position of physician consultant for his own or another regional scheme. After mentioning figures suggesting the value of sanatorium treatment, he said that while there was no room for complacency there was equally no justification for making a scapegoat of the modern sanatorium, which was, at least in the mechanical sense, completely successful within the limits imposed on it.

Mass Radiography

To the present state of affairs, in which 80% of sanatorium admissions were in stage B2 or B3, some would say that the answer was in mass radiography. Mass radiography was certainly the first step towards the discovery of an unsuspected but established lesion, but it was a long term policy in more senses than one. It was only in its beginnings there were far too few units. Again, if mass radiography was to act as a preventive measure by segregating or controlling previously unknown sources of massive infection, it required beds immediately following diagnosis or intensive work by expanded dispensary staffs, with visits to the patient's home. Without these provisions mass radiography, while spectacular was entirely useless.

Unfortunately the introduction of mass radiography has coincided with a decline in the number of institutional beds and the closing of some chest surgery units owing to lack of staff. People had been frightened instead of educated, given wrong ideas about infectivity, and had not had it impressed upon them that the well run sanatorium was the only place where they could avoid massive infection. The sanatorium had always two separate duties—a duty to the community in prevention through segregation, and a duty to the individual sufferer.

'Are we really cruel if, in our present desperate state, we refuse admission to all but those fit to benefit? All advanced cases were once early cases. The dying case occupies a bed for the same length of time as it takes to bring about arrest in three early cases (restored working capacity in two moderately advanced cases). Moreover, the prognosis of the adolescent and young adult case is unpredictable; it almost always requires active therapy. It is an ultimate contradiction to weed out sources of massive infection by mass radiography and to continue a system which replaces them.'

Psychological Considerations

One of the most striking things to emerge from a careful study of the statistics of mass radiography, Dr Trail continued, was the age group incidence of active disease—the high peaks in groups 17-24 and 35-39. In both groups many fresh lesions were found with no evidence of previous lung involvement. The story in the early group was in a significant proportion of cases of psychological difficulties, such as love affairs, family antagonisms, starting work on a distasteful job, and

on, in the later group the trouble was more physical and economic than psychological in its beginnings—the fatigue of long journeys to and from work, with strap-hanging and the like, worries over building society payments and children's education, fears for security in middle and old age. He ventured the view that the fact that many of the world's greatest poets had suffered from the disease was not due to any stimulus given by tuberculosis to poetic power, but rather in part to frustration and a disappointment with the response to their visions.

The neuro psychiatrist, the psychologist, and the social worker might give real help when called in by the medical superintendent, but the theory of some neuro psychiatrists that pulmonary tuberculosis was an 'escape mechanism' was to be contested. 'One easy error we must avoid, it lies in reading the mental reactions to any chronic illness as those of tuberculosis in particular, and in confusing them with the psychological stresses that preceded breakdown.' All chronic illness brought a sense of frustration, in phthisis this was especially marked. He considered that the best friend of the patient and of the medical superintendent was the understanding minister of religion. When the disciplines of religion in self-examination and self-control are added to those of medicine in the humane application of sanatorium treatment our patients have the opportunity to lose that sense of emptiness which makes meal times the outstanding events of the day and symptoms the main topic of conversation.

Social Factors Favouring Tuberculosis

Social factors which favoured tuberculosis were poverty, because it meant insufficient food and clothing and a meagre standard of living generally, the effect of war on civilians, with black-out and overcrowding and various deprivations, and slum conditions generally. A satellite town scheme would be welcomed by every thinking man and particularly by the medical profession. Social security offered insurance against breakdown, the fit were required to make bigger contributions towards the maintenance of the unfit, and some of the repercussions were already seen. To pay for these schemes taxes would have to be maintained on the 'necessary luxuries' of life such as tobacco and entertainment, so that real wages must go down. Such an effect might well keep up the incidence of phthisis, and this led Dr Trail into a discussion on the question of man power and the betterment of what had been called the 'climate of work' in order to assist production.

On his discharge from the sanatorium the patient was given well-meant advice, but the advice presupposed economic security, complete internal equilibrium, and a static order of life. The economic difficulties which drove the patient to continue working until his disease was advanced, and which worried him during his treatment, would not disappear on his return from the sanatorium, when he might find himself shunned by his neighbours and regarded doubtfully by his employer. His way was likely to be harder than that of the transgressor. To re-establish the status of the tuberculous implied psychological, physical, economic, and social restoration. Such a comprehensive scheme should be the ideal for the tuberculosis service of any region. For two groups in particular more must be done than was possible under present schemes—namely, those who were so interpreted as to be totally unfit for any work, although able to take restricted exercises, and the chronic type (the large majority) who could with safety to themselves be trained to work in sheltered conditions for six to eight hours a day. The former should be pensioned, for the latter the most acceptable condition was the village settlement.

The Village Settlement

In discussing the part played by the village settlement, supplying both rehabilitation and remunerative work for persons in this second group Dr Trail entered upon a detailed description of the Papworth settlement in Cambridgeshire. He mentioned that in 1946 Papworth had a turnover of £415,000 with a profit of £18,000. Here the patients regained their self-respect through work which enabled them to support them-

selves and their dependants, and returned to community and family life. None of the children born at Papworth who had reached adolescence and young adult life had so far developed phthisis and 70 of them served in H.M. Forces during the war. The late Mr Neville Chamberlain, when Minister of Health, said that Papworth pointed the way to the mitigation or solution of a very grave problem, but few local authorities had taken his advice to repeat the experiment.

'The village settlement is, I believe' said Dr Trail in concluding his lecture 'the only possible present answer to the problem of phthisis. It will be many years before we see the age of prevention with ideal garden cities where our people educated in the laws of health, are satisfied and happy because they have both economic security and a good climate of work.' This does not excuse us from our present duty to the tuberculous, which lies in supplementing their physical treatment with real rehabilitation using their untapped powers of production, giving them a chance to maintain their morale and self respect, and saving their families to be the future teachers of our faith.

To the authorities who said that the expense of a Papworth was too great he pointed out that any new settlement must grow, as Papworth did, round its sanatorium and first workshop. Even at present costs a settlement for 30 patients comprising the necessary land, 10 cottages for married colonists, a hostel for 20 single settlers, and a factory with a capacity for 60 workers could be established for £50,000 and be self-supporting in its industries within ten years of its establishment.

SUPERANNUATION IN THE NATIONAL HEALTH SERVICE

DRAFT REGULATIONS

The draft of the regulations governing superannuation in the National Health Service which the Minister of Health proposes to make subject to the approval of both Houses of Parliament has now been published. The whole subject matter of these regulations has been under discussion between officers of the Ministry and a subcommittee of the Negotiating Committee since the comprehensive discussions with the profession began. Although as a result of the representations by this subcommittee, there have been very substantial improvements in the details of the proposed scheme neither the Negotiating Committee nor the profession are in any way committed to these proposals. Nor indeed will there be any commitment to any part of the Government's proposals under the National Health Service Act until the profession as a whole is apprised of all the details including the Minister's replies to its representations and until through its own machinery the views of the profession have been ascertained.

The work undertaken by the subcommittee on superannuation has been to secure improvement in the terms offered without prejudicing in any way the decision which has yet to be reached by the profession. The Minister having decided to issue such regulations covering all branches of the Service institutional and non institutional medical and non medical the role of the subcommittee was to discuss without commitment. The Negotiating Committee will consider the report of the Superannuation Subcommittee simultaneously with and in the light of the reports of the other subcommittees which were set up for the purpose of the comprehensive discussions with the Ministry on the Act and the Regulations. Reference is made to these subcommittees in our leading article of June 14 (p. 853). The main features of the draft regulations as they apply to doctors, are here summarized.

Two Schemes

The proposals fall roughly into two schemes.

I.—*The Central Health Services Scheme* which will apply to (a) practitioners employed by regional hospital boards, boards of governors of teaching hospitals, and by other bodies constituted under the Act except local health authorities. (b) salaried practitioners and their assistants on the lists of executive councils and part time specialists who are not devoting substantially the whole

¹ Draft Rules and Orders, 1947. National Health Service. H.M.S.O. 1s. 6d. net.

of their time to specialist services under the Act (Those specialists who are substantially whole time in the Service will be included in category (a) above)

II—The Local Health Services Scheme, which will include the medical officers employed by local health authorities. These practitioners will be subject to the Local Government Superannuation Act 1937 but the benefits of that scheme (or of a local Act scheme where it applies) will be replaced by the benefits of the Central Health Services Scheme with an option for existing officers to remain subject to their present superannuation scheme

The inclusion for the first time in statutory superannuation arrangements of medical and dental practitioners in general practice has necessitated special provision in the draft regulations for this branch of practice. So far as medical practitioners are concerned the broad concept of category I (a) is the whole time or mainly whole time officer on a salaried basis, whose pension will be assessed on average remuneration during the last three years service. General practitioners and others in category I (b) will have their pension assessed, in general, on the remuneration over all the years of service.

These draft regulations comprise a formidable and abstruse document of some 88 closely printed pages, and in the space available it will be possible to deal with only the main provisions in general terms.

Contributions

The new scheme is on a contributory basis, the contributions payable by the practitioner and by the employing authority being 6% and 8%, respectively, of his remuneration. A principal on the list of an executive council will be required to pay the employers contribution in respect of an assistant in his employ.

A practitioner leaving the Service, whether by voluntary resignation or otherwise (except in cases of fraud or misconduct related to his duties), and who is not entitled to pension or allowance will have his contributions refunded with compound interest at 2½% per annum.

Benefits

(i) Practitioners employed by regional and teaching hospital boards—Category I (a)

PENSION for each year of contributing service 1/80th of average remuneration (maximum pension 40/80ths)

RETIRING ALLOWANCE for each year of contributing service 3/80ths of average remuneration—subject to reduction to 1/80th for each year in the case of a married man to provide for widow's pension (maximum retiring allowance 120/80ths)

AVERAGE REMUNERATION for this purpose is the annual average of the remuneration for the last three years service with the employing authority

(ii) Practitioners on executive council lists and part time specialists—Category I (b)

PENSION for each year of contributing service 1½% of the remuneration for that year (if more than 40 years contributing service, only the last 40 years will be reckonable)

RETIRING ALLOWANCE for each year of contributing service 4½% of the remuneration for that year, with limitation to last 40 years as for pension, subject to reduction to 1½% in the case of a married man to provide for widow's pension

Mixed Service—Where a practitioner in public general practice is simultaneously employed as an officer of an employing authority in some other capacity—e.g., as an officer of a regional hospital board—his remuneration in respect of his 'non G.P.' service will count as general practice remuneration for the purposes of pensions and allowances

Where a general practitioner has previously been an officer—for example of a regional hospital board—and his service in that capacity does not exceed 10 years remuneration in respect of that service will count as general practice remuneration for pensions and allowances purposes

Where the reverse applies and an officer of a regional hospital board has had previous contributing service as a general practitioner, his pension will be made up of two parts, one in respect of the general practitioner service on the basis of 1½% of each years remuneration, and the other in respect of the salaried service on the basis of 80ths of his average remuneration assessed on the last three years salaried service. The retiring allowance will also be made up of two parts the calculations being made as set out under (i) and (ii) above

(iii) Widow's Pension

There will be payable to a practitioner's widow one third of the pension he would have received had he retired from the Service at the date of death or one-third of the pension he was receiving if he was a pensioner when he died. The widow's pension will cease if she remarries or cohabits with a man as his wife

(iv) Incapacity Pension

A practitioner who has completed ten years service and whose employment ceases by reason of permanent ill health or infirmity of mind or body will be entitled to a pension. Where, on incapacity, service is over five years but less than the ten years required for an incapacity pension, a short service gratuity will be payable by the Minister

(v) Other Allowances

There is also provision for death gratuity and injury allowance, where injury resulting in permanent incapacity has been sustained on duty, of "such amount as the Minister considers reasonable, not exceeding two thirds of his average remuneration, having regard to all the circumstances of the case"

Qualifying Periods

The benefits of the scheme are all dependent upon the completion of prescribed qualifying periods of service. These are (a) for pension—10 years' service on or after age 60 (55 for mental health officers), (b) for retiring allowance—5 years service on or after age 60, (c) for widow's pension—10 years service, (d) for death gratuity—5 years service, (e) for incapacity pension—10 years service, (f) for short service gratuity—5 years' service

Retirement and Re employment

"Pensionable age" in relation to a practitioner on the list of an executive council is the age of 65 years or "such later age as the Minister may in any particular case allow," and in relation to other practitioners is 65 years of age (60 for mental health officers). In both cases there is an option to retire at 60 (55 for mental health officers), provided 10 years service has been completed

Practitioners on the lists of executive councils who continue in the Service between the ages of 65 and 70 will be entitled to receive both full pension and full earnings. Those who continue in public practice beyond age 70, however, will receive either the pension to which they are entitled or their average or final remuneration, whichever is the greater

Other practitioners (i.e., those not in category I (b)) who are re employed in the public service after attaining pensionable age will be subject to the general principle governing this situation—the remuneration and pension taken together will be limited to the average or annual remuneration received before the pension became payable

Practitioners with Existing Insurance Commitments

A general practitioner, an assistant, or a part-time specialist who is in category I (b) who has already committed himself to a policy of insurance with any of the Life Assurance Companies, and who joins the Service on the appointed day, may opt out of the superannuation scheme. Application for exclusion from the regulations must be made to the executive council within three months of the appointed day and will be subject to the Minister's approval. Where approval is given the Minister, subject to certain safeguards to be prescribed, will pay to the practitioner the employer's contribution of 8% of his remuneration to enable the existing insurance commitment to be maintained

Transfer and Interchangeability

The scheme provides a considerable measure of interchangeability between the various parts of the health services and other services which are subject to statutory superannuation schemes, including the Civil Service and the Local Government Service. There is no provision, however, for a medical officer who transfers from the Local Government Service to University Service

Any questions arising out of the regulations will be determined by the Minister

Nova et Vetera

LITERARY SURGEONS

In a recent oration delivered before the Hunterian Society Mr Zachary Cope discussed the association of surgeons with literature. It was not remarkable, he said, that few surgeons in the early days showed literary leanings. The surgeon in Tudor times was, with few exceptions, an uneducated person working under the direction of a physician, as a rule an ecclesiastic. Even when the scope of surgery increased the man who performed mutilating operations on fully conscious patients was scarcely likely to be of the contemplative, poetical, or imaginative type in whom literary sympathies were to be expected, and later still, with the coming of anaesthesia and antiseptics, though a vast field was opened up in surgery and many brilliant men were attracted, they had little leisure to cultivate other pursuits.

The first name mentioned by Mr Cope was William Clowes (1540-1604), surgeon to St Bartholomew's, who gave a rhyming introduction to his *Proved Practise for all young Chirurgions* and the same propensity for rhyming was found in John Woodall's *Surgeon's Mate* (1639). Two Continental military surgeons, Ambroise Paré (1510-90) and Larrey (1766-1842), wrote absorbing accounts of their journeyings and adventures on military campaigns. Larrey's description of Napoleon's entry into Moscow and the retreat had thrills to satisfy the greediest appetite. The first president of the Hunterian Society, Sir William Blizard (1743-1835), was a prolific writer in rhyme or blank verse, and Sir Norman Moore declared that his rhymes would have qualified him to appear in Pope's *Dunciad*. Another surgical versifier of the period was William Wadd (1776-1829), who wrote certain rather trivial and unoriginal books. James Hinton (1822-75) wrote philosophical books, and of him Thackeray said, "Whatever else he can do, this man can write." Volkmann, the German surgeon in the Franco-Prussian War, was a writer of delightful fairy stories, some of them composed outside Paris during the siege. An English surgeon of the same period, Sir Henry Thompson (1820-1904), in addition to exhibiting on twelve occasions in the Royal Academy, wrote two novels, one of them having for its startling theme the recognition by a medical student of his aunt's face in a dissecting-room subject. Perhaps Thompson's most remarkable achievement was his publication at the age of 82 of an elementary handbook on the nature, use, and management of the motor-car.

More modern personalities were Frederick Treves (1853-1923) and Stephen Paget (1855-1926). Treves had an attractive literary style and his *Other Side of the Lantern* was still a best seller. Paget wrote a series of biographies and several books of essays, "quotable for hours". Mr Cope specially recommended his *Confessio Medici*, and in that book the essays headed "The Spirit of Practice" and "Wreaths and Crosses". Two other surgeons, still more lately gone from us, are D Arcy Power and Wilfred Trotter. D Arcy Power furnished 184 medical memoirs to the *Dictionary of National Biography* and was for a time president of the Bibliographical Society and of the Pepys Society. Wilfred Trotter was a philosophical writer with a great influence on his contemporaries, and his slender volume of essays, collected and published posthumously, was packed with clear thought and memorable for many felicitously expressed and stimulating sentences. Another surgeon who wrote essays full of good sense, kindness, considerable learning, and respect for the best kind of tradition was Harvey Cushing.

Mr Cope then mentioned a number of living surgeons, first of all the doyen James Johnston Abraham, who early in his career gained a literary reputation by the publication of *The Surgeon's Log* for a new edition of which there had been a call almost every year since its publication. His biography of Lettson, his novel *The Night Nurse* and his light essays under the title *Ninety nine Wimpole Street* revealed his versatility. Geoffrey Keynes was distinguished as a literary critic, an editor of standard works, and a bibliographer. Kenneth Walker was a versatile writer whose earliest book was written for children, and whose autobiography, *I Talk of Dreams*

stood in many respects alone in autobiographical literature. Finally there were the philosophical books of K W Monserrat, the fine poetry and witty causerie of Oliver St John Gogarty, Chevalier Jackson's extraordinarily interesting autobiography, Scott Stevenson's vivid pen-portrait of Morell Mackenzie, W E Tanner's faithful account of his teacher Arbuthnot Lane, and James Berry's historical resurrection of his distinguished ancestor. The profession of surgery had produced especially during the last hundred years, a number of cultured men of high and in some cases outstanding literary ability—essayists, biographers, descriptive writers, novelists, philosophers, minor poets, and at least one famous bibliographer.

Preparations and Appliances

A TAPER TYPE INFLATOR FOR ANALSTHETIC MASKS

Dr A OWEN-FLOOD Hornsey, London, N 8, writes

I have never been on good terms with the conventional inflatable anæsthetic mask. It is definitely—and especially when made of synthetic rubber—bad value becoming useless after a short period. Its long vermiform appendage of rubber, through the lumen of which one blows lustily to inflate the cushion, inserting with haste an ill fitting bone bung, deteriorates rapidly and renders an otherwise serviceable mask unreliable and prone to leak, usually at awkward moments—when giving oxygen under pressure in cases of asphyxia.

The taper-type valve illustrated here is firmly seated into the body of the cushion. With the taper pin lifted from the valve seating by unscrewing the milled head (a few turns anti clockwise) the mask is readily inflated by means of a 20 ml syringe, the nozzle of which fits snugly into a slot in the milled head. The mask, part of which appears in the photograph, has been in continuous use in my out-patient department for the past twelve months. It has given excellent service,

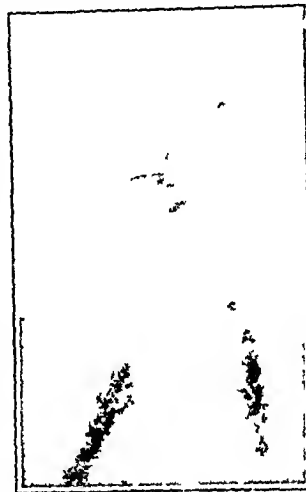


FIG 1—Taper valve, mounted

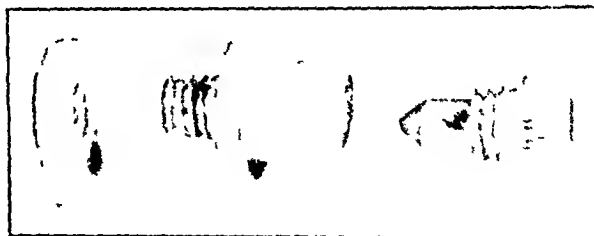


FIG 2—Taper valve, exploded x4

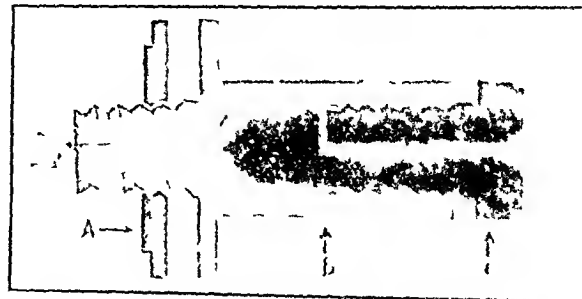


FIG 3—Taper valve inflator (not to scale). A—Taper washer, B—Valve seating, C—Inflator control knob

needing inflation on only two occasions. It is still in excellent condition. Any instrument makers interested in this device can have full blueprints from me.

Reports of Societies

SYMPATHECTOMY

At a meeting of the Section of Anatomy and Physiology of the Royal Academy of Medicine in Ireland on March 21, with Prof O'Connor in the chair, Dr V E C HAMILTON read a paper by Prof H Barcroft and himself entitled 'The Results of Sympathectomy'.

There had been three main phases in the evolution of operations for the sympathetic denervation of the upper extremity: periarterial sympathectomy, cervico dorsal ganglionectomy and the preganglionic operations of Telford and Smithwick. Methods of investigating sympathetic activity included sweating reactions, the psychogalvanic reflex, and skin resistance measurements dependent on reflex sudomotor activity, photo electric plethysmography and venous occlusion plethysmography dependent on reflex blood vessel responses, and skin temperature measurements, which were dependent on both reflex vasomotor and reflex sudomotor activity. Venous occlusion plethysmography was preferred as the post operative test to determine whether any sympathetic activity remained.

Hand blood flows were measured using the venous occlusion plethysmograph in 28 limbs sympathectomized by the Smithwick operation. Reflex vasodilatation was tested for by two methods: (a) feet heating, and (b) anaesthetization of the radial, ulnar and median nerves in the arm, which temporarily interrupted also the sympathetic nerves to the hand. The results obtained by these two methods were invariably in agreement. Sixteen sympathectomized hands showed complete absence of vasomotor control at the time of testing, 12 hands showed the presence of a slight degree of vasomotor control much less than that possessed by normal hands. A possible explanation of the 12 partial failures was that a partial regeneration of sympathetic pathways had occurred. From the clinical aspect the results were very good, only one patient considering that operation was not worth while. Complete relief of vasospastic symptoms occurred in 16 hands though attacks of the Raynaud phenomenon had been frequent before operation. In 10 hands attacks had been less severe and/or less frequent, in 2 hands as frequent and as severe and in no case had attacks been more frequent or more severe after operation.

Some Difficulties

Mr P FITZGERALD said that the difficulty of performing an efficient dorsal sympathectomy, due to the inaccessibility of the chain, almost certainly accounted for some unsatisfactory results, while others were probably due to anatomical variations. Regenerations were also likely, since the gap between the segmental supply and the postganglionic fibres was small in this region. Major relapses were probably due to faulty operative technique while minor relapses could be due either to regeneration or to persistence of unusual pathways. The most marked feature in all cases from the clinical point of view appeared to be the relief of pain, which in serious cases might be distressing. The pain pathways might possibly be mediated through the sympathetic nervous system.

THE PNEUMOCONIOSES

At a meeting of the Section of Medicine of the Royal Society of Medicine on May 27 Dr MAURICE DAVIDSON presiding, a discussion was held on pneumoconiosis.

Dr E R A MEREWETHER said that the 500 deaths which still occurred every year due to pneumoconiosis were a challenge to medical men and to all responsible for the control of this disease. Pneumoconiosis, according to the Workmen's Compensation Act 1943, Sect 1 (2) meant fibrosis of the lungs due to silica dust, asbestos dust or other dusts and included the condition known as dust reticulation, but many medical men as well as laymen took a less precise view and argued that it included any infection of the lungs produced by dust. The meaning must be made plain when using the word particularly in the medical certificate or radiological report, or difficulties and disappointments would arise if possi-

bilities of compensation were discussed when none existed. Using the term "pneumoconiosis" in its legal meaning he was led to the question of diagnostic criteria. Here reliance must be placed upon the nature of the occupation and the radiological picture. The results of the clinical and the radiographic examination might be of doubtful significance, but the occupation, if thoroughly investigated might carry conclusive weight in conjunction with the other examinations.

The question of radiographic appearances needed reassessment. Consideration must be given not only to the purely radiological technique, but to the determination of the limit of normality—the differentiation between abnormal markings indicating the presence of dust but with no disease present, and those indicating the presence of dust together with disease. Fifteen years ago the radiological appearances of asbestosis were considered by leading radiologists as coming within normal limits, but now a stage had been reached in which they were involved in more difficult matters of interpretation of dusts which merely produced shadows without disablement or disease and those which had a more sinister significance. In the past radiography had been emphasized chiefly as an aid to diagnosis, now it had to be developed as an aid to the assessment of disablement and a guide to prognosis. Both these aspects had lately increased in importance because of increased compensation, the rehabilitation measures set up under the Disabled Persons Act, and the provision of employment for pneumoconiotics.

A great deal more knowledge was needed concerning incidence rates in occupations, because these would provide an index to the efficiency of preventive measures. Both the risk of silicosis and its severity when it occurred varied very much in different occupations. Much was said of its incidence in coal miners, but from a rough calculation it appeared that the mortality from the disease among sand blasters was greatly in excess of that among coal miners. More data were also required on the effects of massive exposure to the commoner dusts.

Dr CHARLES FLETCHER described an investigation he had carried out in South Wales into cases of men who had been certified as suffering from pneumoconiosis during the last twelve years, 60% of them were under the age of 50. The number of certifications was 15,000. Why had this situation developed? One factor had been the ignorance of medical men, who had assumed the condition to be bronchitis and not silicosis and had not taken steps to prevent it. On x-ray examination of some of these cases it was found that simple reticulation, or the diffuse lung disease, tended to remain stationary, though there were cases in which coalescing shadows went on developing relentlessly. These were cases which had left the pit after the first x-ray examination, so that the progress was not caused by continued exposure to the dust. The progress was nearly always associated with a high sedimentation rate, which suggested that an infection might be responsible. Only 3.5% of the cases with massive shadows showed a positive sputum, when there was a positive sputum the prognosis was poor. Surveys of various kinds were still to be made, together with therapeutic trials.

Subclinical Silicosis

Prof MATTHEW STEWART spoke on the question of subclinical silicosis. It was not sufficiently realized how effectively a healthy man could get rid of the dust. Cases were encountered in which there was a large accumulation of dust in the trachea and in the bronchial and hilar glands, and yet there was very little evidence of silicotic disease. In one series of cases the silicosis occurred only in the lymphatic glands. The difference between the morbid anatomy of silicosis and of asbestosis was interesting. Why should asbestosis be so diffuse as compared with silicosis? Why should it be so marked at the lobes and at the base of the lungs? The theory he had formed was that it was a question of the chemical action of the two dusts. The dust in silicosis was very fine, with little rounded particles of regular shape whereas the asbestos dust was fibrous and could not be inhaled directly into the lungs in the same way as silicosis dust, the mode of entry being by gravitation.

In some further discussion Dr BROWN of Newcastle suggested the existence of a large undiscovered field of this disease in North east England. Dr HORACE JOULES

suggested that, in view of the frequency with which Welsh miners came to London and became milk roundsmen, mass radiography for all milk roundsmen should be introduced. Dr JACOBS said that there had been too much complacency in the medical profession with regard to the presence of large amounts of dust in the lung. Dr PHILIP ELLMAN referred to the early development of symptoms in asbestosis as compared with silicosis. Several cases he had encountered had developed within from one to three years. The seasonal incidence was noteworthy, during the winter months tenacious sputum containing asbestos bodies was found.

Dr MEREWETHER pointed out that the powers under the new Act were very wide, but the Minister must be satisfied before he could prescribe anything in any occupational disease, and this meant the collection of data.

STATISTICS IN PSYCHIATRY

At a meeting of the Section of Psychiatry of the Royal Society of Medicine on June 10 Dr L. S. PENROSE, Galton Professor of Eugenics, University College, London, and lately Director of Psychiatric Research, Ontario, gave a paper on the importance of statistics in psychiatry. The simple accumulation of accurate figures concerning the ages of patients and their length of stay in hospital, said Prof. Penrose, was of great value in understanding the scope of psychiatric problems. It was surprising how little use had been made in the scientific study of psychiatry of the simple actuarial material relating to mental illness. Reports of the Board of Control forty or fifty years ago were full of interesting information about the ages of patients admitted to institutions, but presumably this was thought valueless and had been dropped.

The elementary accountability of numbers of patients under hospital care or under treatment at clinics was of great sociological as well as clinical interest. It was common knowledge that only a small proportion of mentally ill or defective persons in a community were actually certified, the proportion depending upon the degree of development of the mental health services. On comparing statistics of all countries from which figures were available, he had come to the conclusion that the amount of attention paid to mental health was inversely proportional to the amount of serious crime. Very roughly, two beds in a mental hospital made one prison cell unnecessary. As prisons cost twice as much as mental hospitals for each inmate, there was approximate economic equivalence, but the social advantage was presumably with the hospital beds. In mental deficiency much could be learned if the age group and intelligence distribution of institutional cases were known. At a guess probably one third of all idiots were under institutional care, one sixth of all imbeciles, but only one-twentieth of all feeble minded, and of borderline cases only a small fraction. Some very marked selective mechanism determined just which cases should be cared for and which left in the community. Families in poor circumstances contributed an undue proportion of institutional cases. Patients with behaviour disorders added to defect were also concentrated in the institutional group.

Among the mentally ill one deduction from statistical data was that the longer a patient stayed in hospital the more likely was he to be a schizophrenic even if that was not the original diagnosis. Schizophrenia, like mental defect, was more severe in males than in females as shown by its earlier onset in the male sex. With affective psychoses the relationship was probably reversed: the female cases, at least those of early onset, being more abundant.

The use of statistics in estimating the effects of toxins, drugs, or remedies had reached a considerable level of accuracy in animal experiments but in medical practice the problem of finding adequate control populations often prevented reliable conclusions. It was possible with good statistical records to find out the chances that a patient first admitted at any given age would be found on the books of a mental hospital at any subsequent point of time. Tables which he prepared in Ontario indicated clearly that fairly good results were obtained after three years by shock therapy in psychosis of late onset, but no appreciable effect was obtained by all the vast amount of work (insulin and convulsion therapy) done on cases of early onset, the majority of which were diagnosed as schizophrenia. He

was aware that many careful observers considered the results unsound and too pessimistic, but he was inclined to think they gave a very fair picture.

Biometric Techniques

Prof. Penrose then turned to an elaborate discussion of biometric techniques. Knowledge of ordinary statistical practice, he said, was very helpful in guarding against elementary errors and in establishing significance or otherwise of metrical deviations from the normal found in mentally ill subjects. Some difficulties arose because the range of variation might be much more marked in abnormal than in normal groups. The increased variance between groups of abnormal subjects as compared with normals was well known. Furthermore, abnormal reactions in themselves might be characterized by either too much or too little variety (i.e. scatter or stereotypy). He described the advantages of the discriminative approach between normal and abnormal reaction as compared with the much more fashionable typological approach. From the point of view of research it was always advisable to proceed from the known to the unknown and thus starting with known differences—as for example between the sexes, between normals and neurotics, or between different types of diseases—the discriminating qualities extracted from these known types could be applied to unknown conditions.

In discussing different types of tests and their outcome he mentioned one result which was suggestive and rather surprising—namely, that male schizophrenics unquestionably tended to give the feminine type of profile or pattern. It appeared also that female schizophrenics were on the average super-female and not, as might have been supposed on the basis of certain other work, intersexual. It seemed that schizophrenics were fundamentally too feminine, or, looked at in another way, many cases of relatively early onset had an intersexual, and those of late onset a supersexual tendency.

In conclusion Prof. Penrose spoke briefly on the elucidation of the genetic background of psychiatric phenomena. Diseases due to rare recessive genes could be detected by finding an increased consanguinity rate in the parents. Among mentally defective patients the incidence of consanguinity in parents was particularly illuminating and indicated that some types of cerebral palsy and microcephaly were due to single recessive genes. The problems of defining clinical entities were better solved by familial investigations than by factor analysis in random samples because only by familial study could factors due to genes be identified. Moreover, combined clinical and genetical observations could reveal the existence of new clinical entities. If the psychoses were in fact made up of a set of separate illnesses each purely genetically determined, there should be no more overlap in families than that due to random expectation. Actually manic depressive and schizophrenic types did overlap in family histories rather more than would be expected if they were quite separate genetical entities.

TREATMENT OF TUBERCULOSIS

A clinical meeting of the Medical Society of the I.C.C. Service was held at Colindale Hospital on June 5. Mr. CILLIAN in opening a discussion on tuberculous empyema pointed out that in the days before penicillin, if such an empyema were secondarily infected a thoracoplasty, though a risky procedure, had often to be carried out. Now repeated aspiration and instillation of penicillin frequently resulted in clearing up the secondary infection completely, with great improvement to the health of the patient, thus minimizing the risk of thoracoplasty if surgical operation were necessary at all. It was important to aspirate high up in the rilla in order to avoid formation of a sinus. Dr. W. F. RICHARDS remarked that there was a danger in continuing the treatment with penicillin and aspiration in mixed infections for too long as many of these cases had a bronchopleural fistula.

Mr. E. T. BAILEY said that the treatment of bony lesions had to be dependent on the general condition of the patient and advised removal of sequestra as soon as the condition of the patient permitted. In order to lighten the work of the nurses in the orthopaedic wards he had adapted the Hex Gloves specially bed for treating cases of spinal and sternal tuberculosis. The

had not found it very satisfactory for female patients owing to the difficulty of micturition. Mr JAMES CARVER said that he had shown several cases of tuberculous epididymitis on whom he had done an epididymectomy, demonstrating that it was possible to get excellent healing and very seldom necessary to remove the testis at all. The psychical trauma resulting from removal of the testis was such that every effort should be made to avoid it. If the testis were involved slightly it might be curetted and the cavity treated with pure carbolic. There was no danger in cystoscopy in these cases nor in retrograde pyelography if necessary in renal tuberculosis.

Dr HURFORD said that before the war he had done a five year follow up on 85 cases of thoracoplasty and found 65% well and working. The best results were achieved by combined operations and sanatorium treatment both before and after the surgical intervention. Dr SMITH pleaded for the use of the laryngeal swab on patients who were apparently sputum negative. In a series of 100 such cases 42 had positive laryngeal swabs. Dr SNELL stressed the importance of bed rest. He had had very good results from strict bed rest even for a year. The difficulty of carrying out bed rest strictly was much lessened if it was accepted as part of the routine of the hospital.

Correspondence

Physical Therapy of Mental Disorder

SIR—There has been so much irrational talk in this controversy that perhaps one may attempt to clarify a few points logically. In the first place a mental illness must either be organic or non organic or a mixture of the two. We will disregard the last as it would only confuse matters. By organic we mean cases due to syphilis, alcohol, trauma, vitamin B deficiency, etc. By non organic cases of depression, mania, paranoia, schizophrenia, and the neuroses. Organic cases obviously cannot benefit by electrical treatment or leucotomy. To turn to the non organic cases. The causes of these are still obscure but an important aetiological factor is an abnormal life situation. This must be tackled. If psychotherapy is applied without this the aetiological factor continues to work and negatives all the results. The question arises, are there really any "non organic" cases? This is a most difficult question to answer but possibly there are not. But here we are still hindered by the nineteenth century notion that the mind is a function of the brain, whereas in reality it is related to the entire body.

The statement is often made that ECT is painless, that it results in immediate unconsciousness. This I am quite sure is not the case. That the experience cannot always be remembered is I believe, due to very strong unconscious repression, but it is none the less real, or else how can it be explained that nearly all patients have an intense and growing dislike of the treatment, so that I have known patients who have had to be dragged to the place of execution by four or five nurses? It is also known from cardiazol treatment, where the interval between the moment of insult and the subsequent fit is longer, that terrible experiences were undergone. One of the results of a whole series of powerful inhibitions accompanied by organic losses of memory is to render the case inaccessible to psychotherapy.

The misleading argument is often produced that if the patient is not submitted to these violent procedures he will become a 'chronic mental hospital patient'. We shall have to examine the implications of this expression. The chronic mental patient is a product of the present type of mental hospital. The sort of treatment meted out in these "prison barracks" is often sufficient to drive a perfectly balanced person insane. To take a minor example a patient who is apt to be rather mischievous was treated by the male nurses by forcibly replacing him on a chair every time he attempted to rise from it. When I first saw this patient this had been going on for about ten years. Is it surprising that he was demented? And far worse things than this occur. Psychiatry has to become a social science and develop a social conscience, and this in more ways than one. In every case of a non-organic psychosis or psychoneurosis there is the family of the patient to consider. If this is not taken into account treatment may very easily be applied to the wrong person.

To take two examples coming to out patient clinics. A boy of 17 was brought to this clinic by his father because he thought he took too much interest in the other sex. The father was the most extraordinary prudish old woman of a man I have ever seen, the boy, we agree, was quite normal. Now are we going to take the boy into a mental hospital and give him a course of electrical treatment? He probably will develop schizophrenic symptoms in the next few years living with such a father, and prophylaxis might be considered better than cure.

Another case—a woman of 30 who showed symptoms of withdrawal of interest in life. She was slightly mentally deficient, and her mother had literally never let her go out of her sight, even into the next room. She was quite lost and terribly upset when the psychiatrist wanted to see her without her mother. I have chosen cases where the family factor is obvious, but I believe it is present in all non organic cases, although it may be most subtly hidden and disguised by the relatives.

At present I have a female patient whose personality has been totally suppressed by her mother—a most dominating personality who uses subtle weapons of "ill health" and "affection" in order to maintain her hold on the family. This patient would probably be labelled as a case of depression and treated by the enthusiasts as a very suitable case for ECT. She would appear to improve and return to her mother, who would gain an even stronger hold by suitable references to her "disgrace" in being taken into a mental hospital. After a time all the symptoms would return. A further course of ECT would be required, and so it goes on until a day would come when the parents would be summoned to the medical superintendent's office and solemnly informed that unless a leucotomy was performed their daughter would become a chronic incurable inmate. They would agree to the operation, and she would be returned to them in a semi infantile condition. The mother is delighted—the daughter cannot possibly leave home now. She will need all her loving attention for the rest of her life. Such things, really happen, I could multiply them indefinitely from my own experience.

The great majority of such psychoses start in adolescence, usually at the age when the young man or woman should leave home and become independent. If we can rescue him from his parents and transfer him to a happy and healthy social circle we can always cure him with the aid of psychotherapy and re education. The great need is for hostels for such cases run by the right sort of people who can create a happy social environment and who have had suitable psychological training. That is one reason why psychiatry must become a social science. It is a tragedy that those who sincerely desire to help the mentally afflicted should be attempting to do this by converting the curable non organic case into an incurable organic one for anybody who has had several courses of ECT or a leucotomy is actually a case of traumatic psychosis. It may be easier to handle such a traumatic case than to deal with a complex life situation with difficult psychological factors, but this sort of traumatic case is really incurable, and they are mounting up. An enormous amount of unnecessary mental and physical distress is being created by the popularity of these methods—their quick showy results which are not cures at all. Future generations of doctors will be as much appalled by them as we are now by the former treatment of cholera by blood letting and purging.

To sum up (1) The mental hospitals need to be pulled down and replaced by social centres, hostels, and a boarding out system for all but the most acute cases. The co operation of factories run for disabled persons can be of the greatest value. (2) Acute cases should be treated by rational physical therapy, not brain damage, in a general hospital. (3) The total life situation of the patient must be tackled, otherwise psychotherapy may be ineffective. (4) There is need for research in psychosomatic medicine. (5) Improved general education of psychiatrists so that they can see through the fallacy of converting every case of doubtful aetiology into a traumatic psychosis by means of ECT or leucotomy—I am etc.

London NW 11

T GLADSTONE

SIR—The controversy regarding the merits of psychological and shock treatment seems to be the result of confusion. Dr D W Winnicott (May 17, p 688) upholds psychotherapy and condemns shock treatment. Naturally he does so, since his time is devoted to the treatment of neurosis, and presumably he sees few if any psychotics. Psychotherapy is the treatment of choice for neurosis and in experienced hands produces excellent results, so he sees no good in electrical or other methods of cure. Similarly all the irate psychiatrists who written such virulent letters against Dr Winnicott are those who treat psychotics. Now admittedly psychotherapy is a satisfactory weapon against the psychoses, and in proper

the shock type (ECT or insulin) of therapy does produce results whether Dr Winnicott wishes to believe it or not.

My personal complaint is that this schism tends to split psychiatry into two camps. Surely the proper training should consist in a basis of psychotherapy for the neuroses and a knowledge of electrical and insulin treatment for those who need it. Unfortunately there are many who, in their ignorance, have come to despise psychotherapy and delight in their shining machines and glittering syringes. In the same way the more conservative of the older psychiatrists refuse to countenance the occasion for good in the new ways and curse the young for whoring after strange gods. It seems to me that the simple secret of cure is the ability to diagnose the psychiatric condition and the broad mindedness to use the right method, whether shock or psychological. Such success as has come my way has come from this.

Now may I offer a criticism of those who use shock treatments? First, they do not cure such illnesses as homosexuality, fetishisms, hysteria and simple neuroses yet I have seen them uselessly applied. Secondly, only this week a woman came to me who feared to have ECT because she had been hustled into a side room all ready for the machine as soon as the preceding patient had been whipped off. Unfortunately she heard the epileptic cry, and this unearthly sound haunted her so that she feared to have further shocks. I have seen similar patients. It is a piece of unnecessary cruelty to allow such a thing to happen whether we believe that mental illness is the result of a 'subacutely or chronically diseased physical organ called cerebrum' or not. Lastly, may I suggest that leucotomy should be reserved as a forlorn hope for those who have failed to respond to ECT, insulin and perhaps prolonged narcosis? It has a significant death rate, and severe injury to the personality may result even if no intellectual damage does result.

Let it be thought that I am hostile to organic forms of treatment may I record a case which passed through my hands many years ago and which suggests that there may be undreamed of forms of treatment? This was a middle-aged woman with mitral disease. She was so grossly hallucinated that she kept the ward echoing with her shouts of abuse. Her days were hell and her nights a torment. Then one day she developed an infarct in the left side of her brain with a resulting right hemiplegia and motor aphasia. The "voices" stopped instantly as if disconnected. When she was recovered enough to be able to express herself she said that it had been truly magical. Perhaps one day a surgeon will be able to repeat such magic at will—but we shall still need psychotherapists for the neurotics—I am, etc.

London W 1

CLIFFORD ALLEN

SIR—Psychiatrists in general and all those interested in the empirical aspect of psychiatric research, particularly on the therapeutic side, will view with some misgiving the prominence afforded to the criticisms of the physical treatments of mental disease outlined by Dr D W Winnicott (May 17, p 688). If my memory is correct, Dr Winnicott has already voiced similar criticisms in the correspondence section of the *British Medical Journal* where viewpoints do not lose their purely personal touch. When, however, these personal opinions are promoted to the importance of a special article, they tend to assume the imprimatur of authority and are consequently liable to be accepted as unimpeachable expert opinion based on extended and specialized experience. They must, on this interpretation, create widespread misconception among non-psychiatric medical colleagues particularly when they are of an exclusively destructive nature as in this case.

Dr Winnicott's opinions, apparently given originally to the medical section of the British Psychological Society would appear to constitute, in a rather defensive fashion, the viewpoint and attitude of the purely psychological school of thought towards mental disease, as represented actively by the psychoanalysts. To the latter any encroachment, with a tendency to monopolopoly, by the physical therapists must appear in the light of rank heresy and be denounced as "empirical magic". Every experienced psychiatrist admits the necessity of recognizing both psychological and physical factors in mental disease and wisely combines both in his therapeutic approach. The American authority, Dr A P Noyes emphasizes this point in his *Modern Clinical Psychiatry* as follows

"No one formulation, whether it be chemical, physiological, neurological or psychological, can explain all the phenomena observed in those personality disorders that we call mental disease. We must remember that much of our talk about the unconscious, about organic lesions and about disturbed chemistry is as yet hypothetical. In psychiatry we deal with the socially conditioned biopsychic life of the individual, and the biopsychic life, it is obvious is subject to an incalculable variety of influences."

ECT, which has been mainly attacked by Dr Winnicott and rather flippantly, on the grounds that psychiatrists do not use it on themselves may not in many cases, effect a cure *per se* and is generally followed up with a combination of psychotherapy and occupational therapy, as here in Killarney Mental Hospital. All three create a reinforcing effect in the therapeutic adjustment of both the psychic and physical elements of the disorder under treatment. In actual fact, ECT effects a very high percentage of recoveries in the true uncomplicated depressive psychoses particularly the involutional types. The high percentage rate of recovery is such that the criticism of Dr Winnicott even though admittedly based on "personal prejudice" will not cause any undue anxiety among practising psychiatrists. Further the efficacy of ECT in the case of all confusional psychoses of toxic origin whether puerperal or otherwise, is of such a nature as to be regarded as specific.

Dr Winnicott's reference to "organized paranoia" would suggest on his part, some confusion in nomenclature as well as practice. Quite obviously, from his ensuing remarks, he is confusing the paranoia with the paranoid form of schizophrenia, and his suggestion of the indiscriminate use of ECT for this latter disease is entirely contrary to recent practice. It is now generally admitted that unmodified ECT for any form of schizophrenia does not effect a cure even in the acute cases. This is our experience in this hospital though there have been very encouraging results in the administration of ECT following thyroxine premedication in acute and recent cases. In one such case, where a full course of deep insulin therapy had been a failure, there was a very successful result in the modified form of ECT described.

All treatments, whether physical or psychological, will be judged on the following considerations: (a) good results achieved, (b) the permanency of these results, and (c) absence of injurious effects whether immediate or residual. (a) The results in the conditions already outlined cannot be questioned on any extended experience. (b) Present experience goes to show that there is a very high degree of permanency in the results achieved for the conditions mentioned above. Even in the very small number of receding cases hospitalization is reduced to a very considerable extent as against control cases. (c) There are no immediate ill-effects that would contraindicate ECT, and the alleged brain damage has not been borne out in the vast number of cases that have been submitted for the treatment. It is on these three grounds that ECT has been accepted as a very definite therapeutic advance in psychiatry, even Dr Winnicott admits rather pointlessly, "I have no hope that these arguments will make any sudden difference to the now established practice of psychiatry."

There are many other points in Dr Winnicott's article as absurd as they are flippant that do not merit recognition much less contradiction. There is however, reference to mental hospital management in the penultimate paragraph of his article which is entirely contrary to fact. Probably in no form of nursing are the qualities of forbearance, patience and understanding so necessary and still so generally exercised as in psychiatry and to suggest that it is permeated with hatred and cruelty exists a very objectionable reflection on modern mental nursing. This unfounded charge is no less absurd than the "sympathetic" consideration expressed for the doctors and nurses whose protection from developing "emotional instability" in the course of their work may be seriously threatened by the "abolition of shock therapy". Does there exist a rational being who is convinced of either the validity or the sanity of such trivial nonsense? Dr Winnicott apparently thinks there does—I am, etc.

Killarney Eire

EDMON N M O'SULLIVAN

Tuberculosis and Diabetes Mellitus

SIR—I should like to associate myself with Dr Wilfrid Oakley's plea (May 31, p 780) for sanatoria where efficient management of diabetes could be given to diabetics being treated for pulmonary tuberculosis. The tuberculous diabetic does not often receive adequate treatment for both his diseases and it is therefore not surprising that many of these patients die badly. It is essential that both diseases receive proper consideration, and until special centres are created to ensure this

correct management of both maladies the results will not give hope and encouragement to sufferers or their medical advisers.

The tuberculosis service in this country may have reached as high a peak of perfection as it has ever attained since its inauguration but this will hardly avail the diabetic unless his metabolic disturbance be at the same time under expert supervision. Experience has shown that good treatment of the pulmonary disease with inadequate supervision of the diabetes is as harmful as poor treatment of the phthisis with proper control of the diabetes. It goes without saying that bad treatment of both conditions is inevitably disastrous. The truth is that in many instances the tuberculous diabetic is uncared for according to the best medical standards, and the evil effects of this are brought to our notice in the published results of treatment.

At the few clinics where adequate control of both diseases has been enforced from the beginning the results have indicated that the outlook for the diabetic who develops phthisis hardly differs from that of the non diabetic. Figures published from sanatoria in the past have led to false conclusions as to the seriousness of the combination of these two diseases, the bad results obtained were probably due to inadequate control of both conditions according to modern therapeutic standards. Unfortunately this fact has not been fully realized, with the result that the tuberculous diabetic has acquired a stigma of hopelessness based on mismanagement of his diseases.

Publication of the new version of Section I of the Appendix to Memorandum 37/T (Revised), which has been accepted by the Ministry of Health (Supplement May 31, p 111), raises important considerations concerning the tuberculous diabetic. In the section on the classification of patients suffering from tuberculosis, it is stated that "all cases with grave complications, whether they are tuberculous or not should be classified in this group [group B3] (e.g. diabetes, tuberculosis of intestine or larynx)". My first objection to this new classification is that it places the diabetic whose disease is complicated by a small pulmonary lesion in the same category as the patient with advanced bilateral fibro-cavernous disease. Secondly, the presence of diabetes is looked upon in the same light as tuberculous enteritis or laryngitis. Here, surely, a gross injustice is done to the diabetic. Whereas the onset of tuberculous enteritis in most cases heralds a fatal issue, the outlook for the tuberculous diabetic, as emphasized already, is never as serious as this unless by virtue of the extent of his pulmonary disease. The combination of diabetes and tuberculosis should never be regarded as the equivalent of hopeless and irrecoverable disease.

Apart from the objections on medical grounds to placing tuberculous diabetics in the class B3 one can imagine many other disadvantages that such a patient may suffer owing to his consideration in this group. B3 cases have always been regarded as suffering from advanced pulmonary disease, so that there has been no urgency in considering their admission to sanatoria for treatment. They may be left at home, if conditions allow, or they may be admitted to homes or hospitals for advanced cases. It would be most unfortunate if tuberculosis officers should be led, after reading the new classification, to treat their tuberculous diabetics in a like manner. The development of phthisis as a complication of diabetes should be looked upon as a medical emergency, requiring prompt treatment for both conditions. An unnecessarily long wait for admission can only mean advance of the pulmonary disease together with inadequate control of the diabetes and a poor outlook for the patient, accordingly such patients warrant priority on the waiting lists. Finally are the benefits of the maintenance grants from the Treasury (Memo 266/T) to be withheld from tuberculous diabetics under the new scheme of classification?

The diabetic surely has to suffer enough already on account of his unfortunate affliction without having additional difficulties put in his way which are based merely on prejudice and receive no support from properly instituted clinical studies. It is to be most earnestly hoped that further consideration may be given to the amended Section I wherein diabetics are included in class B3 and that special units will soon be established for the treatment of tuberculous diabetics—I am, etc.,

M. Idstone Kent

GEORGE R. W. N. LUNTZ

Classification of Tuberculous Patients

SIR—Dr H. E. Stevens's letter (May 31, p 782) draws attention to a deficiency in the new classification of tuberculosis terms recently adopted by the Ministry of Health. The object of adopting the new classification is not stated but presumably it is mainly to secure increased accuracy of returns through clarification of the headings used in compiling them. My own belief

is that this object will not be attained by the present proposals, and if other tuberculosis workers feel the same they might consider whether it is worth their while to ask for a re-examination of the scheme now put forward.

The following are some of the grounds on which I base my opinion.

(1) The replacement of the self explanatory terms "minus" and "plus" by A and B is to me a retrograde step, and is bound to lead to mistakes in classification owing to the absence of any apparent relation of the letters A and B with either positive or negative cases.

(2) The definitions of respiratory and non respiratory tuberculosis are not free from criticism. One expects these definitions to be helpful to the extent that few, if any, occasions will arise when it will be impossible to classify a patient by their use. But such occasions are bound to happen when no provision is made in the definitions for including conditions other than those specified—for example, endo bronchial tuberculosis. The difficulty would be overcome by substituting the words 'a respiratory case includes' for the words 'a respiratory case should be'.

(3) A 'combined' case—e.g., with pulmonary and glandular tuberculosis—is classified as a pulmonary case, as at present. But if such a patient is found to have tubercle bacilli in his excised glands he will be classified as B, giving the impression that he is infectious in the same degree as a patient who is discharging tubercle bacilli in his sputum. The definition of an infectious pulmonary case is incomplete, like the general definition of a pulmonary case. The finding of tubercle bacilli should be more definitely related to the pulmonary lesion by specifying the situations where the bacilli will be regarded as evidence of their pulmonary origin.

(4) The definition of a class B case suffers from the further defect that it makes no provision for reclassifying a recovered case who comes on the dispensary register again after a period of years. According to the literal application of the wording a person who had tuberculous cervical glands in childhood with tubercle bacilli in the pus from the glands, and who comes on the register with any tuberculous condition 20 years later, is to be called a B case. For the purposes of compiling uniform statistics this procedure may be very desirable but the statistics themselves can hardly be helpful. I submit that a definition of a "return" or "restored" case is required, and that the classification of such a case should be based on the current findings and not on the bacteriological results obtained many years previously.

(5) The subsections of paragraph III of the memorandum are inconsistent. Subsection (2) states that respiratory A's and B's should be subdivided, subsection (3) states that they should be further subdivided. Yet there is only one basis of subdivision described—viz., into groups 1, 2, and 3. The meaning is clear enough, but the wording is confusing.

(6) The definition of "quiescent" does not make any allowance for variations in bacteriological control by different observers. Some will rely on repeated slide examinations, some will prefer culture or inoculation methods. But, according to the definition, unless three consecutive monthly slides are negative, the case does not fulfil the criteria required for quiescence. Moreover the definition does not take account of the fact that a patient may not be able to produce sputum when required at monthly intervals, and it seems clear that it cannot be strictly observed as it stands at present.

(7) The classification 'arrested' does not seem to serve any useful purpose. In practice it is never used to describe any patient, and rather than set down details for its interpretation I consider it should be abolished.

(8) Does the definition of a "recovered" case apply only to pulmonary patients? If it is intended to apply to non pulmonary patients also, then it should be stated, as at present a non pulmonary case can be written off as "recovered" after three years.

(9) Regarding the definition of "active case," I consider it unfortunate that, by implication, all patients not positive within the preceding three months may be taken to be classifiable as not active—i.e., quiescent. I am sure this is not the intention but the wording is not so helpful as it might be.

(10) The use of the word "stationary" to denote a case in which the patient remains *in statu quo* appears unscientific unnecessary for if a patient was "quiescent" at the



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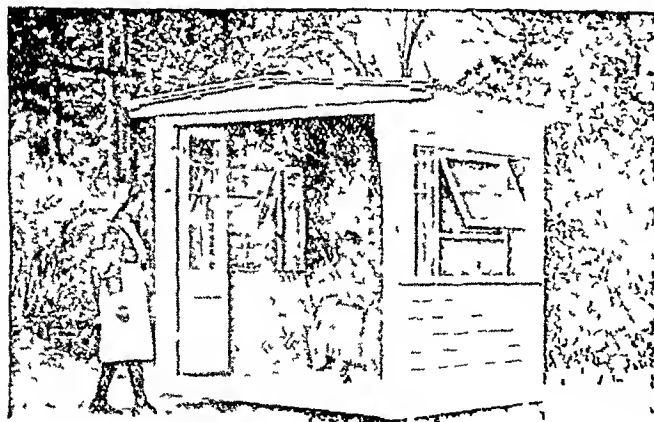
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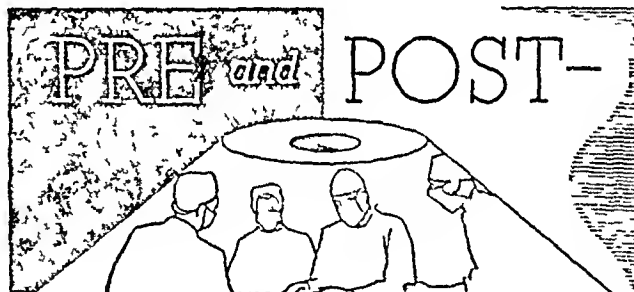
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etc.

of the "stationary" period, he may continue to be described as quiescent rather than as stationary.

(11) Among the definitions not mentioned is the Ministry's own term "inactive" as used in the classification of mass radiography findings. I think it a pity that the opportunity has not been taken to make clear the implications of the use of this term.

(12) The inclusion of directions for the medical assessment of patients suffering from pleurisy has the appearance of an intrusion in a document dealing with the classification of patients suffering from tuberculosis. I consider that the direction to regard pleurisy as tuberculous unless proved otherwise is inconsistent with the facts (a) that less than half of the patients who suffer from pleural effusion ultimately develop pulmonary tuberculosis, and (b) that pleural effusion is frequently part of a primary tuberculous process. The requirement that cases of pleural effusion should be regarded, and presumably notified as tuberculous will have repercussions in the matter of the notification of primary tuberculosis in general.

(13) The new Non-Respiratory classification will not show the part affected. The old classification was in four groups: (1) bones and joints, (2) abdominal, (3) other organs, (4) peripheral glands. It is desirable that the subdivisions of the old classification be incorporated in the new groupings.

(14) If the old method of classification is to be amended, let us make sure it is soundly based, because it will involve the reclassification of all the cases on the dispensary registers so as to afford comparison with previous years.

In issuing their memorandum the Ministry have no doubt acted on the advice of the Joint Tuberculosis Council, but it is regrettable that no opportunity was given to tuberculosis workers in general to express an opinion before the recommendations were forwarded to the Ministry—I am, etc.,

F C S BRADBURY

Central Consultant Tuberculosis Officer

Preston

Artificial Insemination

SIR—There can be few subjects which call forth more emotional (as opposed to intellectual) judgments than AID. The letters from Dr Eustace Chesser (May 24, p. 738) and Dr Farquhar Murray (June 7, p. 826) are cases in point. The latter is so carried away by his disgust of the whole procedure that he does not present the facts quite as they are. The only donors I have ever met are unselfish and intelligent men who do not sell or barter their spermatozoa but who agree to give them, as they would blood for transfusion to help those in need—i.e., equally unselfish and intelligent couples who, because of the husband's complete sterility, have been deprived of begetting, bearing, and rearing the children they earnestly desire, more often than not through no fault of their own. Dr Chesser, on his part, paints a somewhat lurid picture of the formidable hazards surrounding those rash enough to indulge in AID. He says he has abandoned the practice but omits the facts and figures that induced him to do so. For example he does not tell us how many cases he has dealt with by AID, nor how old the resulting children are, neither does he give any indication as to what proportion of his cases has ended in psychological disaster; he seems to infer that there are few, if any, good results. Possibly facts and figures are lacking and he has arrived at his conclusions on theoretical considerations only. His letter would have carried more conviction had he also painted the other half of the picture, which undoubtedly exists.

The marriage in danger of being wrecked by the smouldering resentment of the maternally inclined woman against her sterile mate and the profound sense of failure and regret which must be felt by any but the most insensitive husband—in my experience this is the situation which, unless resolved, besets two people with "formidable hazards." There are of course a number of ways out, and it lies within the doctor's sphere to try honestly and without prejudice or emotional bias to help such couples, should they consult him, to find their particular solution. The possibilities are to be sufficient unto themselves and to sublimate in various directions, to part and start afresh, to adopt, or, finally, to secure a child or children by AID. A small proportion may after careful thought choose this last; the husband conscious of his wife's strong desire to bear a child and preferring to fend for one that is at least hers rather than

one that comes of neither of them. His sense of inferiority and of guilt tends to remain while the cradle is empty and is not, in my experience, replaced by jealousy of the child but by the great tenderness towards it and towards a wife who has, in the sense that matters to him, kept faith, while she in her turn feels a lasting gratitude towards her husband for his generosity in allowing AID. So far I have not met the unhappy situation Dr Chesser so vividly depicts, quite possibly I have not dealt with so many cases as he has and my experience of the outcome of AID is therefore more limited than his. His warning will ensure a still more careful selection of cases. Finally I would suggest that it is early days to pass sweeping judgments in either direction. It is well to bear in mind that the demand for AID, no less than for control of fertility, has come from the lay public. It is of prime importance that doctors should think about and weigh these things in the light of their special knowledge and experience, setting aside in so far as they can or at any rate recognizing, their own particular emotional bias in the matter—I am, etc.,

Credition Devon

MARGARET HADLEY JACKSON

Acid Drinks and Sulphonamide Therapy

SIR—It is pertinent to ask the advocates of freely drinking of the fruit juice beverages by what processes the vegetable acids or their salts, citrates, etc., come to be passed off in urine so as not to increase its acidity. The acid part gets oxidized and the other parts also get oxidized, CO_2 and KHO or H_2O being end results. The amount of oxygen required to achieve this end is not negligible. The citric acid molecule for its change must have added to it 9 molecules of oxygen, its molecular weight, given as 210.1 requires of oxygen 9×16 , or 144. Where and how is the citrate to get it?

The bodily state in each case must be considered in regard to this important matter. It is of course the doctor's privilege to deal with this. The sulphonamides themselves do make some demands upon the respiratory functions, all of whose details including of course the RBC's may be affected and in many cases the disease may be one directly affecting respiration. My colleagues in the eye specialty need not be told that prolonged or drastic degradation of oxygen supply and possibly the presentation of un- or imperfectly de-toxicated products is of importance to the retina and the lens. Others should be told.

The drinking of large quantities of water may be rather relished as an uncommon item, and if taken cold or even chilled or iced may, if thought advisable, send more of it to the kidney rather than the skin or lung for elimination. A lump of sugar in it used to be liked and would be welcome as a reward. Lemon and orange juice drinks are taken far too little diluted in many cases, and it might be wise to prescribe the actual dilution considered safe as well as the total daily allowance. In the sick there are limits to the capacity for dealing with excess in H_2O and CO_2 , methemoglobin and the discolor products and those due to our drugs. The wisdom of the ancients is still apropos: *Est modus in rebus! sunt certi denique fines Quos ultra curaque nequit consistere rectum*—I am, etc.

Glasgow

ED J PRIMROSE

Nicotinic Acid Tolerance Test

SIR—I read Drs P Ellinger and S W Hardwick's excellent paper (May 17, p. 672) and Capt A Erdős's letter (June 7, p. 822) with great interest. Both contributions suggest the intimate relationship of the functional state of the liver parenchyma to nicotinic acid metabolism, a problem elucidated mainly through the systematic work of Ellinger and collaborators in recent years. At the beginning of the war I had the opportunity of studying the physiology of the small intestine. I was able to submit evidence for the assumption that the gradient of absorption in the small intestine is to a great extent maintained by the catalysts of the intracellular respiratory enzyme systems. It is known that at least 3 water-soluble vitamins—thiamine, riboflavin, and nicotinic acid—are closely related to these catalysts and it could be tentatively suggested that a deficiency in these vitamins and a liver "dysfunction" may be instrumental in the production of the sprue syndrome (Leitner, 1942). During subsequent years injections of crude liver extract (containing most of these enzymes) became a routine in the treatment of sprue.

Cap' Erdős's interesting experience that acute spruce symptoms were provoked by giving 1,800 mg nicotinic acid daily for 5 days and that the symptoms were quickly cleared up by subsequent massive doses of riboflavin is a case in point. It also presents an interesting example of an imbalance of the vitamin B equilibrium. During recent years attention has been directed repeatedly to the importance of the interrelationship among the various factors of the B group of vitamins. It could be demonstrated that subclinical latent deficiencies might become manifest after giving large doses of one single crystalline vitamin of the group (Richards 1945, Leiter, 1945, 1946, 1947). Another interesting feature of Cap' Erdős's case is that spruce could be produced experimentally by disturbing the vitamin B equilibrium—a fact which to my knowledge has not been reported before. For this reason it would be of great interest to have a more detailed description of the symptoms in his case.

Although a considerable number of minor symptoms due to the imbalance of vitamin B factors are frequently encountered major disturbances appear to be comparatively rare. I should therefore be greatly interested to learn of any such cases—I am etc

London W 1

Z A LEITNER

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Folic Acid

SIR—Dr J G A McSorley (June 14, p 863) evidently misunderstood my letter in the *Journal* of May 24 (p 740). I stated that folic acid 10 mg daily, was given plus a maintenance dose of liver weekly. Although intensive liver therapy was given for three weeks previously, the nervous disability was but slightly improved. After a few days of the combined treatment a marked and steady improvement followed. This improvement has been maintained and is progressing. The patient, a joiner, is able to walk a considerable distance without even the aid of a stick and work for several hours at his bench.

The spastic type of subacute combined degeneration of the cord has, I think, always been regarded as the least responsive to any form of treatment. It was the disappointment following liver therapy alone that made me try folic acid in addition and the result has more than justified the action—I am etc,

Birkenhead

CECIL L FORDE

Hypereosinophil Phase in Allergy

SIR—In my first communication (June 7, p 823) it was shown how blood hypereosinophilia proved to be one of the leading signs, pointing to allergy as a possible causative factor in a case of pruritus and a condition so far not considered as connected with allergy. Scepticism was expressed against this idea when a repeated blood count showed normal figures of 2% eosinophils. The 'allergist' is well aware of quick and transient organic changes in allergic conditions. Swellings, catarrhal signs, local and blood hypereosinophilia come and go as quickly as spasms and are also caused by the parasympathetic irritation which is at the root of allergic signs and symptoms, due to an almost inexhaustible variation of causative factors.

Seen in this light the positive findings appear of diagnostic value whereas the negative are inconclusive, similar to a negative W.R. in syphilis.

Blood hypereosinophilia occurs in experimental anaphylactic shock as an expression of the parasympathetic irritation, together with the other signs of it. Clinically it is known to occur in allergy particularly in bronchial asthma, in parasitic infections such as worms in certain fevers during the "crisis" at the moment before immunity and recovery is setting in—e.g. in Weil's disease (infective spirochaetal jaundice) in scarlet fever and in such conditions as Loeffler's syndrome all now well connected with allergic reaction. Apart from this it is observed in Hodgkin's disease a condition of unknown origin and pathogenesis. Otherwise response to foreign protein is a common factor, and in my opinion the probable cause of hypereosinophilia.

Authors agree that blood hypereosinophilia of 5% or more occurs in 35.55% of the allergic patients. More recently it has become a clinical custom in U.S.A. allergy clinics to do three weekly differential blood counts and to use the average figure obtained as expression of the eosinophil count. I am, however, of the opinion that this is not a suitable method and that any observation of a hypereosinophil blood phase is the characteristic allergic response to parasympathetic irritation which we wish to take into account for our diagnostic considerations in allergic conditions, however transient it may be. Ups and downs in the figures may prove to be of prognostic value or may be due to the effect of therapy but that has still to be established.

Among 100 L.C.C. hospital patients with bronchial asthma examined during a given period I obtained 0.4% of eosinophils (normal figures) in 44% of the patients hypereosinophilia of 5% or more in 56% of them. The blood films were examined in the group laboratories. Among 100 private patients with bronchial asthma examined lately and also chosen at random normal eosinophil counts of 0.4% were observed in only 37% and hypereosinophilia of 5% or more in 63% of the patients. The blood films were examined by myself. The suspicion that this was due to a personal bias of the examiner, was removed when an analysis of the counts revealed that the difference was due to a higher figure of patients with a hypereosinophilia of over 20% eosinophils. Changing figures in the same patient had been observed frequently before in reports and by myself during the course of observation.

Eosinophils per cent	In 100 L.C.C. Hospital Patients	In 100 Private Patients	Average in 200 Private and Hospital Patients
0-4%	In 44%	In 37%	In 40.5%
5-9%	In 36%	In 37%	In 36.5%
10-20%	In 18%	In 19%	In 18.5%
Over 20%	In 2%	In 7%	In 4.5%

All this suggested that the hospital patients, who had been under treatment before I saw them and had mostly been given adrenaline, did not show the high eosinophil counts so frequently because their parasympathetic irritation had been diminished by treatment and the "hypereosinophil blood phase" had been diminished or had disappeared for that reason. A clinical experiment proved this view to be correct. A boy came under private observation with bronchial asthma. A blood film was taken and 7 min (0.45 ml) of adrenaline solution 1:1000 was injected subcutaneously. Ten minutes later another blood film was taken and both were sent to a laboratory. The first blood film before adrenaline showed 13%, the second one after adrenaline 9%, of eosinophils. The asthma attack had subsided, but rhonchi were still present when the second film was taken. In another boy of 14 years with asthma the same experiment showed 9.5% before and 1% of eosinophils after injection of 7 min of adrenaline, when asthma attack and rhonchi had subsided.

The "hypereosinophil blood phase" seems therefore to be the characteristic reaction to "allergic" irritation and to disappear with it. It is of diagnostic value, and preferable to an average estimate of three weekly repeated eosinophil blood counts—I am, etc,

London W 1

E M FRAENKEL

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Oxygen Poisoning in Man

SIR—I feel I must answer certain points raised in Sir Leonard Hill's letter (June 21, p 900). I would like to make it clear that, so far as I was concerned, the Admiralty provided the experimental facilities. The financial and other arrangements were not my affair, nor were they made known to me. Even if I had been aware of these arrangements I would not have presumed to acknowledge or discuss such matters, but would have left this to the proper levels. This is an elementary Service procedure which most people will appreciate on personal experience. I am sure that Sir Robert Davis head of a highly progressive and successful industrial concern

ion, has no wish to be represented as a misunderstood back-room genius. He has financed and encouraged an enormous amount of research by eminent physiologists in the past, and the majority of their findings have been published in the appropriate journals. I myself was working under the Admiralty and I make no apologies for my acknowledgements.

With regard to technical points raised:

(1) Mixture breathing apparatus was not employed by midgeet submarine divers, human torpedoes, divers, or frogmen. The types of mixture breathing apparatus used by the 'human mine-sweepers' was a counter-lung apparatus and an entirely new departure. It was developed by the Admiralty Experimental Diving Unit with the invaluable aid of Prof J B S Haldane and Dr H Haldane, who also carried out a large series of experiments.

(2) The details of the attack on the Tirpitz in Sir Leonard's letter are grossly inaccurate. The Admiralty, so far as I know, have not yet released the full technical account.

(3) When oxygen is breathed in a submerged decompression chamber, it is "in the dry," and therefore no symptoms would be expected in the times employed.

(4) When Sir Leonard read my reports to the Admiralty he should have noted that a full series of *mouthpiece and alveolar samples* was carried out and that no accumulation of CO₂ was demonstrated. The editorial pencil removed this detail from the article in this *Journal* owing to space difficulty. I cannot seriously entertain the suggestion that the operational and experimental mouthpiece divers of the recent war were not experienced or stable, nor that their breathing was apprehensive or abnormal.

(5) Behnke's article in which he advances his theory of nitrogen intoxication is to be found in the bibliography of my article. He does not contradict Behnke's postulate, but offers an explanation of its mechanism on theoretical grounds. This remains to be proved or disproved.

Lastly, I would like to emphasize that my admiration of Sir Robert Davis and his organization remains unchanged and that I would greatly regret any friction which might have arisen as a result of Sir Leonard's letter—I am, etc.,

London EC 1

K W DONALD

Leprosy and its Problems

SIR—In the leading article on leprosy (June 7, p 813) you state that of the 2,000,000 lepers in the world 97.5% are Indian or African. The remaining 2.5% is made to cover the lepers in China, Japan, Korea, and the Philippine Islands, to say nothing of the large number in South America.

My own observations, recorded in my book on leprosy in China, put the figure in that country alone at 1,000,000, and I am now convinced that this is an under- rather than an over-estimate. I am afraid that the problem is a good deal larger than you allow for, and as the bulk of the victims in China are of the lowest economic level, the difficulty of supplying the new drugs for treatment is almost insuperable—I am, etc.,

Bedford

JAMES L MAXWELL

Penicillin for Osteomyelitis in Childhood

SIR—We welcome the confirmation (June 21, p 900) from the Royal Hospital for Sick Children, Glasgow, of our experience that excellent results can be obtained in osteomyelitis of children by penicillin plus minimal surgery. This is also in line with the work of Prof Ian Aird, and we believe that workers in another great children's hospital, that of Newcastle, have had similar results. We should be grateful for information from there and elsewhere.

In reply to three points they raise: (1) We did not use incision and primary suture ourselves, but would be very interested in what they consider the indications for it as opposed to aspiration. (2) We think the bone marrow should be left alone. We regard osteomyelitis as being like a cellulitis that is best left untouched in the early stages rather than a condition in which pus under pressure urgently requires relief, as in mastoiditis. (3) They suggest that we should not record cases which we believe to be aborted osteomyelitis. But surely this group is the most important of all, as a perfectly efficient medical profession would see that every case fell into it, instead of diagnosing most of them in the stage of invasion as "rheumatism." Also we would hardly class an abscess, whether originating in the soft tissues or not, as an aborted case.

The letter from Mr J Trueta and Dr M Agerholm (June 21, p 899) is in a different category, and we can hardly accept it

as a genuine attempt to increase medical knowledge. Nearly all medical papers, especially those written by several authors, contain obvious slips, and ours is no exception. In the summary it was said that "surgical treatment was confined to aspiration" without the note needed to bring this into line with the paper proper and the table that this did not apply to five cases rather different from the rest. Those accustomed to medical reading overlook such things, just as in the ordinary way we should not bother to comment on the fact that Mr Trueta, in quoting our figures, substitutes 3 for 31 cases, under two years for under one year, 7% for 10% positive blood cultures, and twelve times for ten times the normal resistance to penicillin. Such minor errors have no effect on the argument.

The next point is more serious. Our paper attempts to summarize a mass of cases, many of the utmost complexity. Months of struggle or long pathological reports have been compressed into a couple of words. We would welcome analysis, and questions on the series if the spirit of them were that of medicine rather than law or politics. But let us analyse the analysis.

(1) It cannot have escaped Mr Trueta's notice that, of the five cases in which surgery other than needling was used, two were infections from intramedullary drips. He must know that in these there would be a skin wound and a superficial cellulitis to start with. They are not, as we point out, really the same as the ordinary haematogenous osteomyelitis at all. Two others were abscesses of the palate, as unsuitable for the primary suture he advocates as for our aspiration. In the fifth one we admit we ought to have explained that the bone was drilled by a junior under a mistaken impression of relapse after three weeks' penicillin treatment, without any effect except an apparent lengthening of the period of healing. The marrow was sterile at operation.

(2) They state some cases "have had considerable bone damage—one after 11 aspirations." This must refer to case 8, in which our statement that there was "much bone destruction and sequestration" obviously refers to the original condition, as it is followed by the words "Now sequestrum not evident. Regeneration." It is difficult to class this as a slip.

(3) They write, giving the suggestion of quoting us: "Complete recovery" includes "erosion of the head of the humerus, now delay in epiphyseal development." We never used the words "complete recovery" but "complete restoration of function," which is something quite different. The word "now" makes it clear that the erosion of the head of the humerus was the original condition, which could not possibly result in anything but some delay in epiphyseal development.

(4) They translate our statement that "movement was encouraged" into an advocacy of weight-bearing on bones that may not be able to stand it. To weight a homily against this rash practice they refer to the fracture in case 14 without mentioning that the patient was nine months old, and the fracture occurred before treatment started.

(5) They exclude two of our cases with one aspiration and negative local cultures, since they "presume" no pus was obtained. Yet pus was aspirated some days after penicillin treatment was commenced.

(6) They explain at length why aspiration should not work, without mentioning the undoubted fact that we and others have found that it does.

(7) They ignore the fact that in fourteen of our cases we have been able to dispense with surgery altogether.

(8) They refuse to consider the cases of osteomyelitis which we think the most serious—those in which the bone infection communicates with a joint—as osteomyelitis at all. Their pathology, according to which the infection invades the marrow from the joint instead of vice versa, would eliminate from the argument cases in which incision is notoriously unsatisfactory. We do not consider it true.

(9) On the subject of blood infections they remark that our cases had positive cultures far too long. We do not know exactly when the blood cultures became sterile, as we regarded it as unjustifiable to pester desperately ill children to find this out. But the remarkable thing is that Mr Trueta and Dr Agerholm "have not tested many cases" themselves and say vaguely that the "second culture has been sterile" without saying when this second culture was taken. As to the differences between our percentages of positive cultures and theirs, the one of us who has made a long study of this subject is convinced that the difficulties of avoiding staphylococcal contamination from the skin are much greater than is generally realized. He believes it is quite futile to compare series of these cases unless the technique is extremely accurate and exactly the same for both.

(10) On dosage they must have looked up our references and consequently know that our scale has been worked out by one of us at the request of the Medical Research Council in 1944 in the days of shortage of penicillin. We have subsequently found that though stepping up the dose improves laboratory tests it does not

imp o e clinical results and we consider duration of treatment far more important than high concentration of penicillin. What better test could this dosage have stood than this series of unselected cases over a period of three years? Yet they can say that they wonder how much has penicillin really affected this series? Our only reply to this is that the surgeons concerned wish to disclaim the implied but unmerited compliment.

Finally let us say that our paper was written as the record of an imperfect but we thought interesting and encouraging piece of work. We did not wish to criticize the work of others nor to lay down principles of treatment, considering our experience far too small. But it is implied all through the letter of Trueta and Agerholm that we should have done better to have used the methods of incision and primary suture they recommend. Very well then, how and why? It seems to us that if we had done so all our cases would have had major operations, which some of them would have stood very badly. They would have large scars, many involving joints. Their joints would be stiffer and their muscles more wasted. On the analogy of Mr Trueta's published cases, several of them would have discharging sinuses. What exactly has he got to urge on the other side?

We regret that in the absence of Mr T Twistington Higgins we have not been able to consult him on this letter, but we feel he would agree in essence with it—We are, etc

DENIS BROWNE
MARTIN BODIAN

London WC1

Intestinal Fusospirochaetosis Simulating Cholera

SIR—Menon in 1945 reported four cases of diarrhoea and severe pain in the abdomen, associated with the presence in the faeces of large numbers of *Treponema vincenti* and *Fusiformis fusiformis*. The following case report is of interest as it showed signs and symptoms suggestive of cholera, associated with intestinal fusospirochaetosis and responding to arsenical treatment.

CASE REPORT

A Hindu male railway porter aged 30 years was admitted to Lawley Hospital, Coonoor, on March 15, 1946, at 5.45 p.m. as a case of suspected cholera. The history given was that since 3 a.m. that day he had vomited several times and had a number of loose watery motions. He was admitted moribund, in a state of collapse. The pulse was imperceptible. The patient was very restless due to muscular cramps of great severity and was in a state of acute dehydration. He had not passed any urine since morning. On admission he was given adrenaline 1 ml and atropine 1/100 gr (0.65 mg) subcutaneously, hypertonic saline 500 ml intravenously, and essential oil mixture with kaolin.

March 15, 1946, 8 p.m. Condition slightly better, pulse perceptible. March 16, 8 a.m. Very restless pulse failing. Hypertonic saline with glucose, 500 ml IV, adrenaline and atropine repeated. 10 a.m. Still very weak, drowsy, not passed urine. Hypertonic saline 500 ml IV repeated, essential oil mixture repeated. 6 p.m. Condition poor, pulse 132, not passed urine for last 38 hours. Hypertonic saline 500 ml repeated.

Laboratory report on faeces. Microscopically, marked cellular exudate present. *E. histolytica* vegetative or encysted forms, Charcot Leyden crystals and ova of intestinal parasites not found. Large numbers of *Treponema vincenti* and a few *Giardia intestinalis* vegetative forms found. Culture *Vibrio cholerae* and intestinal pathogens not isolated.

In view of the successful therapeutic results previously obtained by ilic use of arsenical preparations in similar cases a dose of NAB 0.3 g was given intravenously at 6 p.m. with the following result. March 17. Condition much better, passed urine after 48 hours anuria, pulse 78. Put on stovarsol, one tablet twice daily. Discharged cured on March 26.

Inquiries regarding previous history elicited the information that the patient had recurrent attacks of diarrhoea though never of such severity during the previous two years. When seen eight months after this attack the patient reported that he had had no subsequent attacks and had been carrying on his normal work as a railway porter.

Points of unusual interest in this case are the severity of the symptoms, the persistence of anuria despite hypertonic saline treatment and the response to a single injection of NAB.

The author is indebted to Lieut Col M L Ahuja M.D., DPH IMS Director Pasteur Institute Coonoor, for his advice and help and to Rio Shih Dr K V N Nair Civil Surgeon Coonoor for his interest and kindness in furnishing the case history and progress report of the case—I am, etc.

CHINNAI, India

I G K MENON

The Teaching of Medicine

SIR—It was with much interest that I read Dr Edwin Bramwell's able defence (May 24, p. 741) of the *Edinburgh Postgraduate Lectures in Medicine*. He rightly insists that the day of the published clinical lecture is not passed and that 'the clinical lecture affords an opportunity to express and emphasize the art as contrasted with the science, an aspect of medicine which, as many clinicians will agree, often does not receive in our teaching nowadays the attention which it demands'. It is singularly appropriate that the editorial of the May edition of the *Post Graduate Medical Journal* discusses the question of clinical teaching as follows:

The good teacher is born, not made, and however wide the opportunities in the shape of access to unlimited clinical material, however advantageous the freedom from financial embarrassment provided by the altered circumstances incidental to the new regime when once the provisions of the Act are implemented, it will always be true that the value of his teaching will depend mainly on his personality and on his power of keeping contact with his students and of anticipating their individual difficulties with a readiness to meet the pupils on their own ground. This quality has been exemplified at its best in the great teachers of the Edinburgh Schools about the middle of the last century, the period at which, perhaps it may be said that that school was at its zenith. It may be observed here that these men although not fettered by any hard and fast regulations in respect to private practice were appointed primarily to their several posts in virtue of their fitness as teachers, and that the discharge of their functions in this respect was regarded by the School and University as a first duty. It is, however, pertinent to note that those of them whose success in this academic field was outstanding appear to have enjoyed an equal reputation among their private patients as men whose practical advice was to be valued, and indeed it was for this reason that it was sought and that their success in the ordinary sense of the word was assured.

Again, in his presidential address to the Section of Medicine of the Royal Society of Medicine, Dr Maurice Davidson states that 'medicine to day is at the cross roads. Like other human activities it is being stultified by unrelated knowledge, and like our entangled civilization as a whole it is losing to some extent the power of judgment, the virtue of discernment, the faculty of ascertaining truth by comparison of facts and ideas. With the outlook that has crept insidiously into our teaching schools to day not only is there a very real danger of losing this faculty but the students are being so herded into watertight compartments by purists with little or no clinical training that they fail to appreciate that it is just that clinical research at the bedside that is the most vital part of their education. Instead of walking the wards they are apt to be found wandering vaguely amidst a maze of cells. As we look back across the years to recall some of those lesser known teachers of our student days we must be greatly impressed not merely with what they taught us, but especially with how they taught us to think and, not least, to feel. These were the men who presided at the autopsy and correlated the clinical findings with just that broad general knowledge of pathology that was necessary for the better understanding of the patient, who existed as a human being and not as a piece of mouldy cheese.

The great teaching hospitals with their mighty tradition still maintain their reputation as centres of pregraduate teaching yet, because they have succeeded in being only distinct instead of 'distinct and yet united' under the wise guidance of their own clinical directors elected by themselves, medicine has been more and more encroached upon by an academic tide which forces the student to retire from the bedside into a world of books in order to cram for examinations which are often far removed from the practical world in which he is preparing to enter. One big correcting influence here would be that his work and standing throughout his career as a clinical student should count more in the way of marks than the final examination. What a pity, too, that he is not apprenticed to a good general practitioner during some part of his clinical course.

The Goodenough report on postgraduate education makes it clear that London has failed to attract as many postgraduate medical students even from the British Commonwealth as have centres on the Continent of Europe or in the United States of America. The main cause it says, "As Sir William Osler pointed out as long ago as 1911, has been lack of organization and cohesion. The facilities are there, men of outstanding distinction in their various subjects are there but the organization

has remained deficient despite the special efforts made to improve it during the period between the two wars." Actually, any lack of organization which exists clearly results from the lack of cohesion, which in turn depends upon too much of the petty parochialism that pervades the medical world throughout the country to day. One of the best ways of overcoming this would be to have an interchange of teachers from the various medical schools in the British Isles, and later (as has already been instituted in other scholastic circles) from the United States of America as well. The stimulating effect of this contact would be remarkable in itself and not least a broader and more fraternal concept of medicine would be engendered.

Though the statement that the really great clinical teacher must be born is doubtless true, the production of the average good clinical teacher is the all-important aim in preparing the foundation for this work. Not only must he be chosen from that point of view, but the special system of education which is now being adopted should include a broad cultural training, and this is most important, for it takes much more than a good mechanic to make a good physician—I am, etc.,

Bristol

FREDERICK SUTTON

Planning for Health

SIR—May I strongly support Dr Learoyd's protest (June 7 p 827) against the anonymity of planners in general and of those in Norfolk in particular? I myself took boys of the 1st Litcham Scout Troop camping on his Diglea Camp at Snettisham Beach before the war, and to suggest that anybody's health could be injured by camping there is so ridiculous as to border on the suspicious. It must be one of the healthiest sites in the country.

I have ascertained that the planning officers' bombastic sentence quoted by Dr Learoyd—a sentence of death to many a summer holiday—emanated from the County Offices, Norwich, and it is therefore pertinent to ask whether the county M.O.H. or any of his staff took part in suppressing this well-established camp on health grounds. If so, did they act on hearsay and local reports of non-medical men, or did they actually visit the site? If the latter, what was the date of visit, where can one see a copy of their report, what was the camping experience of the M.O. concerned, and who pulled his leg and misinformed him that the land was liable to flood? If this sounds like a questionnaire, may one not put the boot on the other leg for once?—I am, etc.,

E Dereham Norfolk

ERIC PUDDY

Medicine in the United States

SIR—I have just had the opportunity of visiting some medical and endocrine centres in the U.S.A., and venture to record very briefly a few outstanding impressions. Interest in the welfare of, and friendship for, Great Britain is enormous. Everywhere I went, and especially at the Annual Meeting of the Association for the Study of Internal Secretions, the cordiality, warmth of greeting, and reception were only interpretable on the basis of an individual being privileged to act as a channel of communication for Anglo-American friendship.

In my own field of endocrinology the United States constitute a vast field of amazingly fertile activity, and the current investigations are of great interest and originality. At the Massachusetts General Hospital and the Memorial Hospital, New York, I saw several cases of thyrotoxicosis treated by radioactive iodine given in a single dose by mouth. The eight-day isotope is now used and comes by air from a central station at Tennessee. The results are conclusively successful in exophthalmic goitre and in toxic adenoma, although the large nodular goitres with pressure symptoms are still thought more suitable for surgery. In simple thyrotoxicosis the goitre ceases to be palpable, and there is considerable shrinking of a toxic adenomatous goitre. Results in malignant thyrotoxic goitres are less satisfactory, as in some cases both the primary growth and the metastases may fail to "take up" the radioactive iodine. It is unlikely that the method will be generally used for some years as the possible development of late effects from radioactive substances is not yet ascertained. As yet no evidence of such untoward effects—e.g., induced malignancy—is forthcoming.

In general, hospitals of the big cities tend to be very large and imposing, and, as many have been built within the last thirty years, they contain exceptionally adequate laboratory and research accommodation. Even so, in some cases the latter is not sufficient to meet the progressive encroachment of the basic and ancillary sciences on medicine. One of the most attractive and efficient units I met with, however, is the Peter Bent Brigham Hospital, of Boston, with only 250 beds.

A welcome feature, by no means unknown in this country, is the close association between physicians, surgeons, clinical pathologists, morbid anatomists, and radiologists. Sometimes collaborative sessions were organized on a weekly or bi-weekly basis, or a clinician would start off his rounds in a room adjacent to the post-mortem room, where pathological specimens from the previous day's surgical operations or from necropsies, if any, could be inspected under comparatively aesthetic conditions, and representatives of investigatory departments attended in suitable cases by arrangement. As an example of the ready availability of biochemical information I would point out that a reliable flame photometer permitted assays of sodium and potassium concentrations in serum and urine within a few minutes.

It should be pointed out, however, that in spite of the exploitation of all modern ancillary methods nowhere have I seen a greater awareness of the psychosomatic approach, or more kindness, sympathy, and individual attention and understanding than that received by the patients in even the largest of the American hospitals I visited—I am, etc.,

London W 1

S. L. SIMPSON

* On radio-iodine some points made by Prof Robley D Evans, of the Massachusetts Institute of Technology, in his lecture at the Royal Institution, were summarized in a recent annotation (June 21, p 894)—Ed. B.M.J.

State Medical Services

SIR—Without wishing to enter the lists either *pro* or *contra* State medical services, surely to attribute "a growing and already appreciable dearth of specialists" in New Zealand to the ten-year existence of a partial State medical service leaves out of consideration the effect of the war on the desire and opportunity for such training. A very considerable proportion of the younger men must have been in the Armed Services for a considerable proportion of the ten-year period and hence in large measure have been prevented from taking training that would qualify them as specialists. Furthermore, I believe I am correct in assuming that a large proportion of New Zealanders who do take higher qualifications do so in the U.K., and conditions existing from 1939 down to the present time were and still are such as to discourage private travel, to say the least. Another point, mentioned by Mr Porritt (*St Mary's Hospital Gazette*, 1947, 53, 54), but not by Sir Ernest Graham Little (May 3, p 611) is the "immediate financial lure to the newly qualified." This is indeed a point as the specialists are out of the State Medical Service and must presumably depend on fees. If they were in the Service at a higher rate of remuneration than G.P.s, the assured higher financial rewards would operate as an incentive to qualification as specialists. At the moment all that can logically be inferred is that New Zealand practitioners prefer an assured income in the State Medical Service to the uncertain income of private practice as specialists. This surely is of itself no condemnation of a State medical service.

Here in Canada, in Saskatchewan, we too have a partial State Medical Service. I understand there are many imperfections in that service. However, one point worthy of note is that there is a provision for regular postgraduate courses of study for those in the Service to enable them to become more proficient and to qualify as specialists if they so desire. Some not all specialists are in the scheme, which has only been in operation a short time. Here in Ontario the present trend is a little different. In a recent plebiscite of the medical practitioners of Ontario specialist and otherwise over 70% declared themselves in favour of prepaid medical and surgical care and the Ontario Medical Association, which conducted the plebiscite is taking an active interest in getting the scheme going although it is not itself operating it. I am not of course confusing prepaid medical care with a State medical service, which are totally different things.

With Mr Porritt's other conclusions I have no issue to take but except them is observed facts also the inference that they are due to the existence of a State medical service. I also of course accept as a fact his statement that there is a growing and appreciable dearth of specialists but not his nor Sir Ernest's inferences from that fact—I am etc,

Aldershot

S J NAVIN

International System of Weights and Measures

SIR—Dr J M Hamill (May 17 p 693) points out some obscurity in my previous letter (May 3, p 613) may I attempt to clarify this? The criterion of significance that I intended to apply was that the number produced by the measurement should differ observably according to whether the unit used was the cm³ or the ml. In normal laboratory practice the difference between cm³ and ml is so slight that it is quite submerged under the normal errors of measurement.

Dr Hamill says, The description of units of measurement should depend upon the units actually used. But it is in practice frequently impossible to decide uniquely what units have been used. The unit to be attached must then depend on other considerations.

The practical processes of measurement differ radically for most quantities (the principal exceptions are mass and length, and the best examples the electromagnetic quantities) from that used in the definition. The fundamental definition often stipulates complicated processes which are impossible to perform accurately without elaborate precautions. Therefore actual measurements are made with reference to substandards or calibrated instruments. The former are either quite arbitrary or depend on a particular quality of a particular substance. All are ultimately measured at infrequent intervals by reference to the absolute definitions. It must be admitted, if practical metrology is to be possible, that a comparison with a substandard is a good measurement in terms of any unit in terms of which the substandard is known to the required accuracy.

Some of the substandards are officially recognized (examples of such are the "international ohm" and the "litre"). There is therefore the choice of more than one unit for the quantity. The substandard may either be considered as a mere stage towards the fundamental unit, or as a unit in its own right. Thus, though the immediate measurement of a volume may be a volume-volume comparison and be expressed in litres, it may, if desired immediately be converted to and quoted as cm³ or gallons on multiplication by the appropriate factors. Volume is by no means the only example of this ambiguity, and all others must be treated similarly, or individual treatment justified. Dr Hamill has not attempted the latter, nor adopted the former—I am, etc,

Dorking Surrey

HARRY V STOKES ROE

Services Medical Examinations

SIR—I note that the Minister of Defence stated in the House of Commons on June 4 (Medical Notes in Parliament June 14, p 868) that miniature radiography of the chest was carried out, in the Navy, when a person was entered or as soon as practicable afterwards. A-ray of course detects many lesions that cannot be identified without its aid. All of the cases will have been examined prior to entry by National Service Medical Boards and accepted. They will therefore have an unassailable claim for pension. It appears to me that a great deal of public money would be saved by conducting the essential mass radiography prior to entry—I am etc,

London NW1

H SEARLE BAKER

Infectious Ectromelia in Wild Mice

SIR—I note that in the annotation headed 'Vaccinia and Ectromelia' (May 24 p 729) you state. It is unfortunate that little or no evidence is available as to the natural occurrence of ectromelia in wild mice or other rodents. May I draw your attention to a communication by Dr R Whitehead and myself published in the *Journal of Pathology and Bacteriology* 1933 37 253 and entitled 'Outbreaks of Infectious Ectromelia in Laboratory and Wild Mice'—I am etc

Cambridge

C A MCGAUGHEY

POINTS FROM LETTERS

Land of Excuses

DR BRUCE WILLIAMSON (San Marino, California) writes. I received my M.D. here in California and later took the Edinburgh Triple Board and the conjoint D.P.M. I practised near London from 1937 to 1941, at which time I was embodied into the Army, serving five years. With the background of this experience, taken together with first hand knowledge of medical education and practice in the States I might perhaps be forgiven for certain criticisms. Healthwise, England is a land of excuses for the backward conditions that prevail, excuses that never quite convince. The disparity between the skill of the physician on the one hand and the primitive sanitation and poor nutrition on the other ever presents an unhappy paradox of failure on the part of the profession to accomplish its purpose. It would appear that the public has sensed its want and, like the Athenian democracy it is, is about to treat itself to the health for all schemes now purveyed by the Socialists. There would never have been serious support for the root and branch transformations upon which the Minister is now bent had there remained any material confidence in existing means for promoting the nation's health. In their defence the doctors could not point with any pride to comparative excellence of sanitation, nutrition, health education programmes, and the like. They blithely relegated such responsibility to the public health men, towards whom their attitude is competitive rather than co-operative. It is unbelievable how completely the conscience of physicians is allayed by the offices of that minute priesthood, the medical officers of health. If the new Minister now afflicts them, let them realize that never a robust but rather a decayed, national health supplied him the power he wields.

Tobacco

DR A G PANNET (London, S.E.6) writes. For over twenty years I have smoked tobacco purely for enjoyment without ever having regard to its therapeutic value. This unconscious drug taking has so warped my judgment that I now value tobacco more than silver and pay, out of my taxed income to a Government apparently reluctant to receive it, an impost of some 3s 5d per ounce for the privilege of continuing my enjoyment—or should it be indulging my vice? I am sorry to learn that, on matters concerning tobacco, tobacco smokers are exceedingly untruthful, but your correspondent could, by taking a little trouble and examining the figures intelligently, verify from published figures that he was grossly in error in stating that one third of the American loan is being spent on tobacco. In fact our expenditure on American tobacco for home consumption in the first year of the American loan will represent less than 7% of our total drawings on the loan.

A "Medical Certificate"

DR JAMES O'GRADY (Swinton, Manchester) writes. Dr E Rowland Williams (May 31, p 785) refers to an objectionable form of "medical certificate" which is demanded by some insurance companies in connexion with claims under their "sickness and accident" policies. He rightly states that furnishing a reply to all the questions many of which have no bearing on the patient's actual illness, gives the company a free report on the patient as a "life." May I suggest a simple remedy? All the questions which have no real bearing on the illness for which the patient is claiming compensation should be answered, very simply, "not relevant." At the same time the patient should be advised to threaten legal proceedings against the company if the legitimate claim is not met.

Pruritus Ani as an Allergic Condition

DR G L DAVIES (Hove, Sussex) writes. Is it not possible that the clue to the pruritus of Dr E M Fraenkel's patient (June 7, p 823) is contained in the words "The skin proved to be allergic to skin disinfectants"? Some makers of toilet paper make much ado of the fact that their toilet paper contains some kind of disinfectant. One imagines that the frequent application of such toilet paper to a more or less perpetually moist area such as the perianal region would be enough, in certain predisposed people to set up a troublesome pruritus.

The "Pemmican" in China

Surgeon Lieutenant J M CLIFF (Hong Kong) writes. We all appreciated your efforts during the fuel crisis, which showed enterprise that is sorely lacking in other spheres of life at home. The first number of the Pemmican *BMJ* reached me in North China about ten days after it had left London.

Medical Library

Prof F C PYBUS (Newcastle upon Tyne) writes. I would like to assure my friends, including the writer of the sympathetic note under "Nova et Vetera" in your issue of May 31 (p 768), that my collection is intact and that the Sothebys' sale was of duplicates etc.

Obituary

LEONARD FINDLAY, MD, FRCP

Dr Leonard Findlay died at the age of 69 at his home in Surrey on June 14, and by his death British paediatrics has lost one of its outstanding physicians and a pioneer in the modern methods of investigation into the diseases of children.

Born and educated in Glasgow, Dr Findlay came of a family which had contributed much to the cultural life of his native city. He graduated in 1900 and proceeded MD four years later. Early in his career he became specially interested in paediatrics and soon came to devote his whole time to this special branch of medicine. He was admitted a Fellow of the Royal Faculty of Physicians and Surgeons of Glasgow in 1914. In 1919 he was appointed to the newly created lectureship in medical diseases of infancy and childhood at Glasgow University, and in 1924, when the Samson Gemmell Chair of medical paediatrics was established, he was the first to occupy it. In 1930 he resigned in order to carry on a consulting practice in London. He then became physician to the department of children's diseases at Radcliffe Infirmary, Oxford, and to the Princess Elizabeth of York Hospital for Children. He was elected FRCP in 1936.

Dr Findlay was an eminent clinician trained in the old school, where one's powers of observation were regarded as of more importance than a newfangled test. Yet there was no one more ready to adopt recent advances than he, and he remained until his retirement an exponent of modern medicine. His contributions to medical knowledge were important and numerous and gained for him an international reputation. In association with the late Prof P. Noel Paton he published an extensive series of articles on tetania parathyreopriva and also a special report for the Medical Research Council on poverty, nutrition, and growth. It is for his writing on rickets, however, that he will be best remembered, and although, as it turned out, his theory was not substantiated, he deserves credit for having stimulated an interest in a disease which has now all but disappeared from our large cities. He published books on congenital syphilis and rheumatic infections in childhood, and re-wrote John Thomson's *Textbook on Diseases of Children*.

Dr Findlay was a past president of the British Paediatric Association, an honorary fellow of the Medical Society, Budapest, and a corresponding member of the Paris Society of Paediatrics. He was an honorary member of the American Paediatrics Society and a director of the Child Welfare League of Red Cross Societies at Geneva. He had been a member of the British Medical Association for forty years and was president of the paediatrics section at the annual meeting in 1924. As a teacher and colleague, he was most stimulating. Students owe much to his wisdom in establishing paediatrics in the University of Glasgow as a compulsory course and laying the foundation for its wider appreciation as an integral part of the training of doctors. In the wards he was always full of enthusiasm and ready to impart his knowledge to the juniors. He dearly loved an argument, and often, it seemed to some of us, was not particular on which side he argued. Nevertheless, his facts were well marshalled and especially at the bedside his knowledge and wisdom stood out.

We regret the passing of this engaging personality, and those who knew him best will always remember him as a kindly sympathetic man at heart and be grateful for the help and stimulation he gave us. To Mrs Findlay and his two daughters we extend our sympathy.

CECIL WALL, DM, FRCP

Dr Cecil Wall, consulting physician to the London Hospital and to the Brompton Hospital, and a distinguished medical historian, died at his home in London at the age of 77 on June 19.

Reginald Cecil Bligh Wall came of a medical family. His grandfather was Dr A. B. Wall and his father was in practice in Bayswater. His mother was the daughter of James Luke, PRCS, FRS. Educated at Bradfield College, at Queens

College, Oxford, where he was Fitzgerald Exhibitioner, and at the London Hospital, he graduated B.M., B.Ch. in 1898, proceeding D.M. in 1902. During his Oxford days he distinguished himself as a rifle shot, winning the National Rifle Association's bronze medal in 1891. He held resident posts at the London Hospital, and acted for a few years as physician to the Eastern Dispensary and the Poplar Hospital. He was then elected to the honorary staff of his old hospital and to that of the Brompton Hospital for Consumption and Diseases of the Chest. He was elected FRCP in 1908, and by this time had established himself as a consultant and a teacher. He became a member of the board of the faculty of medicine and of the board of advanced medical studies of London University. He was also on the board of the Oxford medical faculty and dean of the Brompton Hospital Medical School. An examiner in medicine at Oxford and in London, he was Bradshaw Lecturer in 1920 at the Royal College of Physicians and gave the Schorstein Memorial Lecture at the London Hospital in 1928. His Thomas Vicary Lectures at the Royal College of Surgeons in 1935 formed the basis of his *History of the Surgeons Company*. Published in 1937, this book dealt with the history of the Company from 1745 to 1800. The subject had been covered previously in Sir D'Arcy Power's 1886 edition of *South's Craft of Surgery*, but Dr Cecil Wall brought to light a great deal of additional material from the manuscript minute and account books of the Company. His purely medical writings are less well known and were mainly on diseases of the chest and on chorea. He was a member of council of the National Association for the Prevention of Tuberculosis and a trustee and member of council of his old school, Bradfield College.

Cecil Wall became the official archivist to the Society of Apothecaries after he had passed the Master's chair in 1932-3, as his father had done before him. Here again he devoted much of his time to the study of the Society's original records. In 1932 he published his account of "The London Apothecaries' their Society and their Hall," which formed part of his wider studies of the relations between barbers, surgeons, apothecaries, and physicians, and the systems of licensing in the eighteenth and nineteenth centuries. Some of the results of these researches were summarized in his Fitzpatrick Lectures in 1944. He was the first historian to give a full account of the Lambeth degrees in medicine and here, as in his other work, all his findings were based on study of contemporary manuscripts in the possession of the Royal Colleges and the Society of Apothecaries.

Dr Cecil Wall had been a member of the British Medical Association for some thirty-five years. He was vice-president of the section of tuberculosis at the annual meeting in 1928 and he served later on the committee on the relation of alcohol to road accidents. He represented the Society of Apothecaries on the General Medical Council from 1932 to 1940. He married Dorothy, the daughter of H. Innes Frigg and had one son and two daughters.

F. HOWARD HUMPHRIS, FRCPED

Dr Francis Howard Humphris, the radiologist, died at Bath on June 17 at the age of 81.

Frank Humphris was born at Croydon in 1866 and educated at Highgate School. He was a student at Edinburgh University and at University College Hospital. He took the conjoint diploma in 1895, and for the next three years he worked as a tutor at Brussels University, where he proceeded M.D. In 1900 he was elected a Fellow of the Royal College of Physicians of Edinburgh, and for ten years he was in practice in Honolulu. At this time he became president of the Hawaiian Territorial Medical Society. Returning to London in 1908, he was for six months clinical assistant in the x-ray and electrotherapeutic department of the West London Hospital. He served in the R.A.M.C. with the rank of major in the first world war and was mentioned in dispatches. Towards the end of the war he was with the Egyptian Expeditionary Force reorganizing the radiotherapy departments of military hospitals in that theatre. In 1920 Dr Humphris took the Cambridge diploma in medical radiology and electrology, and he was on the consulting staff of the East and West Molesley and Hampton Court Cottages.

Hospital. He did a great deal of work for the St John's Clinic and Institute of Physical Medicine and was a Commander of the Order of St John of Jerusalem. He was on the staff of Christ's Hospital and was the author of three books on electrotherapy.

Dr Humphris had been a member of the British Medical Association for over fifty years. He was a representative at annual representative meetings on no fewer than ten occasions, and he was at one time chairman of the Westminster and Holborn Division. He had been president of the Irish Medical Graduates Association, and he was also president of the Brussels Medical Graduates Association. A past-president of the Hunterian Society, he was also a member of the Roentgen Society and of the West London Medico-Chirurgical Society.

L. K. writes: This is just a personal appreciation of the man and his charm. Frank Humphris went through life with a constant smile on his face, which smile he was willing to share with all his many and varied friends. He vividly and buoyantly often expressed, and gallantly acknowledged, his gratitude to life itself. I possessed for years his friendship, and I found his personality irresistible. As a host he was second to none—his great delight in life was 'throwing a party'. His concoctions—he called them cocktails—served in enormous glasses, were ever puzzling in their make up, with spices from the plains of Arabia, curious and exotic fruits from the shores of Honolulu, all mingled with unheard-of liqueurs. They were baffling in character, they were potent beyond words. As a chef, too, there was nothing to teach him. He delighted to help a lame dog over a stile, and in his hey day he helped many, and gave generously. As a raconteur, he was hard to beat, at his clubs and elsewhere, and he was a good mixer. He certainly was born to smile at life, and to move light-footed towards the twilight. *Heureux qui comme Ulysse a fait un beau voyage*.

Dr CHARLES WITTS, who died at the age of 62 on April 11, was educated at Hereford High School and received his professional training at Guy's Hospital. He held a number of hospital appointments in London until the outbreak of the first world war. As a captain, R.A.M.C., attached to the H.L.I., he served in France, was awarded the M.C. and was taken prisoner in the early months of 1918. He settled in practice in Edgbaston, Birmingham, and from 1939 he served on a medical board for national service and on the pensions board. A man of considerable clinical skill of sound judgment, and of terse wit, he was popular among his colleagues both at the medical boards and in the district.

Dr WALTER HENRY BRAZIL died on May 3 at his home in Coventry. Dr Brazil was born at Chorley, Lancashire, and was educated at Preston Grammar School and at Owens College, Manchester. He took the B.Sc. there and graduated M.B. in 1889, proceeding M.D. two years later. He then undertook a long voyage to Japan before starting in general practice in Bolton, where he worked for some years before moving to Coventry. He had been a house surgeon at the Manchester Royal Infirmary, and resident medical officer at St Mary's Hospital, Manchester, and it was during this period that he contributed a first short article to our columns in 1889. Dr Brazil was one of the best known practitioners in Coventry, and apart from his work his principal interests were in music, antiques, and the construction of model boats. He had been a member of the B.M.A. since 1890, and was chairman of the Coventry Division in 1927-8.

Dr JOHN SNALLEY DOCKRAY died at Bournemouth on May 27, aged 76 years. He graduated B.Sc. in 1890 and took the degree of M.B., Ch.B. with first-class honours at Manchester in 1897, proceeding M.D. a year later. He then joined an old-established practice in Bishop's Stortford, Hertfordshire, and continued his work there until 1926, when he was succeeded by his son, Dr J. Vernon Dockray. His outstanding ability and strong personality, combined with a handsome and dignified mien, led to the building up of a large general practice which soon included many local appointments among them that of physician to Bishop's Stortford Hospital. He was a member of the British Medical Association for twenty-five years and was acting honorary secretary of the Hertfordshire Branch in 1930 and president in 1931-2. He was the representative at the A.R.M. each year from 1929 to 1935. Dr Dockray was one of the original members of the Hertfordshire Insurance Committee on which he served for twenty-five years

and acted as chairman for a period of four years. In addition, he was a member of the Urban District Council from 1904 to 1937 and again from 1940 to 1944. He was also for several years a member of the Hertfordshire County Council and a county magistrate, and he took an active part in furthering the interests of the local Conservative Association. On his retirement from active practice he lived in Bishop's Stortford and latterly in Bournemouth. He is survived by his wife, who nursed him devotedly during a steady deterioration in health, and by his son who is now in practice at Stradbroke after a long period of war service.

Medico-Legal

THE LIMITS OF DENTAL PRACTICE

[FROM OUR MEDICO-LEGAL CORRESPONDENT]

Dentistry, unlike medicine, is restricted to registered practitioners. The Dentists Act, 1921, section 1, prohibits the performance of any such operation and the giving of any such treatment, advice, or attendance as is usually performed or given by dentists, and also lays down that any person who performs any operation, or gives any treatment, advice, or attendance in connexion with the fitting, insertion, or fixing of artificial teeth is deemed to practise dentistry. A shop assistant, a dental mechanic who was not on the Dentists Register, told a customer that her teeth were all the same size and looked too artificial and could be improved. She suggested that the customer should exchange the teeth, and offered to supply six plastic teeth for three guineas and gold filling for other teeth to take away the artificial look. The Dental Board prosecuted her for unlawfully practising dentistry and her employers for aiding and abetting her. The Southport justices found that she had not practised dentistry, and the Board appealed to the High Court.¹

The Board admitted that a dental mechanic may, without committing any offence, repair a denture which is brought to him. Lord Goddard, Lord Chief Justice, said that it obviously followed that he may make a repair which involves replacement of teeth affixed to the denture. There is no reference to a 'denture' in the section. He could not think that because a dental mechanic said to a customer that her looks could be improved if her teeth were not all the same size and offered not to make a denture, not to interfere with the existing denture but to replace teeth on the denture with others of a different colour or size, the mechanic was infringing the section. Mr Justice Atkinson recalled a case² in which an unregistered person had made and fitted a set of teeth and sued for their value, the court had held that for an infringement of the law as it then was the operation, attendance, or advice must be directed to the condition of the mouth and to the treatment of the living person, the law was not broken by something done upon a set of false teeth. Since that decision the definition of the offence had been enlarged, but the meaning of 'operation' and 'advice' had not been extended. If Parliament had intended to make it an offence to work on an existing denture it would have put appropriate words in the Act. The word 'in connexion with the fitting, insertion, or fixing of artificial teeth' meant the doing of these things in connexion with the mouth itself. Merely altering an existing denture was not covered by the section. Whether advice was given was a question of fact in each case. The shop assistant had merely suggested that there should be an alteration in the denture and there was evidence to justify the conclusion of the magistrates that she had not given advice. Mr Justice Oliver, agreeing, said that he would have come to a different conclusion if the magistrates had found that any part of the fitting to the patient's mouth was to be affected by the advice given, but they had not.

The line limiting dental practice therefore seems to lie at the limit of the patient's person. Presumably an action which requires the patient for its performance is dental practice, but one which merely requires the denture is not.

¹ *Twyford v Puntchart* (1947) 1 All E.R. 773
² *Hennan v Duckworth* (1904) 90 L.T. 546

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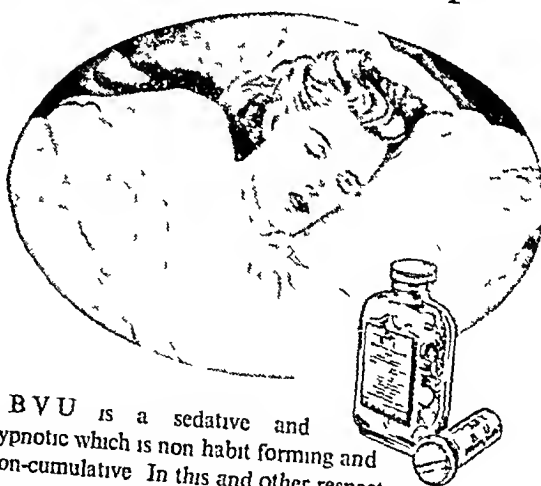


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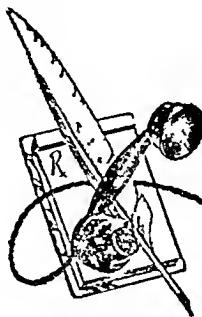
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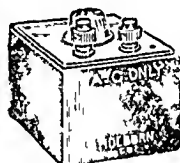
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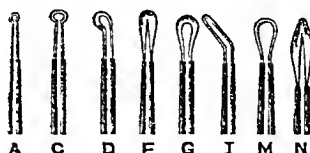


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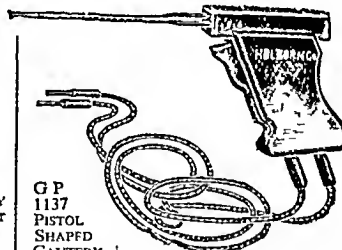
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Medical Notes in Parliament

PENICILLIN BILL

The Penicillin Bill was considered in Committee in the House of Commons on June 18. On Clause 1 Mr JOHN EDWARDS, Parliamentary Secretary to the Ministry of Health, moved to insert a proviso intended to meet the criticism that undesirable nursing homes not carried on under professional supervision might administer the substances or preparations to which the Bill applied. Answering Mr R S Hudson, Mr Edwards said he understood that direction meant instructions usually given in writing but which might also be given by word of mouth. The amendment was agreed to.

Mr DEREK WALKER-SMITH moved to leave out paragraph (f) of Clause 1, which provided that penicillin would be available to any Minister of the Crown or Government Department. Mr EDWARDS resisted the proposal, and it was defeated by 146 to 42. The House then agreed to an amendment indicating in what circumstances the substances or preparations covered by the Bill might be dispensed more than once or more than three months after the date on which the prescription was signed. It brought the provisions for prescriptions covered by the Bill into line with those for poisons under the Poisons Rules.

On the motion that the Clause as amended stand part of the Bill, Lord HINCHINGBROOKE said housewives under the Bill were denied the opportunity of going to a chemist's shop and securing penicillin as a right, yet a Minister of the Crown had that right.

Sir HARTLEY SHAWCROSS said that where the phrase 'Minister of the Crown' was used in the Bill what was intended was a Minister of the Crown not acting privately but for the Crown, as head of his department. Mr Linstead asked whether the Attorney General could name any Minister whose need of penicillin for the purposes of his department would not be met by the words 'Government Department' alone? The Clause as amended was then ordered to stand part of the Bill.

"Secret Remedies"

On Clause 2 Mr CHRISTOPHER SHAWCROSS moved to insert the words "medicinal substances" and thereby to enlarge the control given to the Minister of Health beyond the present range of antimicrobial organic substances produced by living organisms. He said control should extend to such other medicinal substances as the Minister after consultation with the Medical Advisory Council might prescribe. The Minister should be given control over all other medicinal substances which might be exploited in the way penicillin would be exploited if it was not controlled. Although he had said on Second Reading that the patent medicine industry was probably the largest and most harmful and certainly the most shameful, racket ever organized by private enterprise, that remark was not meant to be a criticism of all patent medicines. What he attacked were the quack remedies like iodine belts and penicillin lipsticks. He hoped the Minister would make a statement on the Report Stage or later to show whether he would take control of a major evil which had never properly been dealt with by Parliament for the last thirty years. He recalled the famous *Secret Remedies* published by the British Medical Association. More recently in Lancashire, a county where this racket was rife, Prof. Henry Cohen had in public speeches and writings campaigned against this devastating evil. Still more recently a report drawn up by the Pharmaceutical Society had been presented to the Minister of Health by Mr Linstead and was under consideration. Although the report as a whole was confidential extracts had been published by the Pharmaceutical Society and showed that this was a topic which should be dealt with urgently.

Mr J EDWARDS said there were still widespread abuses connected with proprietary remedies which ought to be checked, but those substances were in a different category than the ones which the Bill sought to control. The substances covered by the Bill might give rise to serious danger to the general public if maladministered whereas undesirable proprietary remedies were not dangerous to the public at large. While Mr Bevan was favourably disposed to further legislation dealing with proprietary remedies there was no prospect of early action on this point. Mr Edwards then moved to insert a proviso that where the regulations prescribed a substance produced by living organisms they might include any substance of identical or similar chemical properties which was not produced by living organisms. The amendment was accepted and the Clause as amended was ordered to stand part of the Bill.

On Clause 4 Mr R S HUDSON pointed out that the Bill said penicillin had the meaning assigned to it by the regulations for

the time being in force under the Therapeutic Substances Act, 1925. He asked why penicillin should not be defined in the Bill itself.

Mr EDWARDS admitted that he could not produce the definition at present in use. Definition by reference to another Act was a routine practice in the definition of substances and was also used in order that it could be altered as scientific knowledge on the substance changed. The words in the Bill contained a mechanism by which these therapeutic substances could be redefined. After further discussion Mr Edwards read the definition made in accordance with the Act of 1925.

"Any anti-infective acid produced by *Penicillium notatum* whether obtained from *Penicillium notatum* or not, any salt or derivative of any such acid and any solution containing any such acid, salt, or derivative, being an acid, salt, or derivative, or a solution thereof, prepared for parenteral injection."

The Committee then agreed to the amendment proposed by Mr Edwards, and Clause 4 as thus amended was ordered to stand part.

Clause 5 (Application to Northern Ireland) was also ordered to stand part with an amendment proposed by Mr Edwards which provides that the Ministry of Home Affairs for Northern Ireland shall have power to enforce the Act and for that purpose to employ the inspectors under the Pharmacy and Poisons Act, 1925. Clause 6 was ordered to stand part of the Bill without amendment and the House agreed to a new Clause empowering the Pharmaceutical Society of Great Britain to enforce the provisions of the Bill and for that purpose to employ their inspectors. Mr Linstead pointed out that in Scotland the actual prosecution would be by the Procurator Fiscal although the inspectors could obtain evidence.

After further discussion the Bill was reported as amended. A motion to adjourn the debate was defeated and Mr Edwards moved the Third Reading. This was agreed to.

Universities and Colleges

UNIVERSITY OF OXFORD

In a Congregation held on May 1 the following degrees were confirmed:

B.M.—E. G. Walsh N. V. B. Marsden R. E. A. Hansen J. F. W. Redwood
*C. E. M. Wenyon *G. B. Rooke *C. G. Elliott *Rachel F. Shackleton
*In absence

In a Congregation held on June 7 the degree of D.M. was conferred on Margaret M. Pickles.

R. V. Coxon, M.D., has been appointed Betty Brookes Research Fellow for a period of three years from Oct. 1.

UNIVERSITY OF CAMBRIDGE

The following candidates have been approved at the examination indicated:

FINAL M.B.—Part I (Surgery, Midwifery and Gynaecology) J. H. Angel
A. Brook M. A. J. Browne D. S. Craig R. Cremona A. F. Crick J. H. Cule
M. de B. Dalry J. G. Goodhart N. R. Greville E. H. Griffiths J. Haimovich
N. H. Harris J. G. Harrison D. R. Harrocks E. H. Hemsley F. G. Herman
O. E. F. Hodgson G. C. Hoffman P. S. Hollings K. D. Hopkirk S. H. F.
Howard D. J. Howell P. E. Hughesdon J. H. Inskip J. A. C. James A. H.
Jones B. T. Kieft R. V. Knight M. H. Lessof L. Linder J. A. McDonald
L. E. McGee T. R. Maurice T. H. Morgan G. C. Myddleton H. R. Odium
B. G. Parsons Smith F. G. Patrick I. C. Peebles G. S. Plaut J. Presti R. C.
Read C. S. C. Roberts L. C. Robson P. H. A. Sneath F. C. Stallybrass R. A.
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F. G. Tomlins J. D. G. Turner J. A. Tuiton J. H. B. Urmsion S. M. Vine
D. H. H. Walford, D. Walker B. M. Watney A. R. H. Worssam, P. M. Yeoman.
Women: B. Jones A. E. Perkins

UNIVERSITY OF DURHAM

KING'S COLLEGE, NEWCASTLE UPON TYNE

E. G. Saint, M.B., B.S., has been appointed full time research assistant in clinical medicine in the Nuffield Department of Industrial Health.

UNIVERSITY OF LEEDS

At a meeting of the Council of the University, held on June 18, J. D. Pickup, M.B., Ch.B., was appointed Tutor and Registrar in Paediatrics.

UNIVERSITY OF SHEFFIELD

At a meeting of the University Council held on June 20 E. C. Allibone, M.D., M.R.C.P., was appointed Honorary Lecturer in Child Health.

The Council received the resignation of Dr W. D. Wallace of the post of assistant tutor in medicine and lecturer in medicine to dental students.

No 23

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended June 7

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year for (a) England and Wales (London included) (b) London (administrative county) (c) Scotland (d) Eire (e) Northern Ireland

Figures of Births and Deaths recorded under each infectious disease are for (a) The 126 great towns in England and Wales (including London) (b) London (administrative county) (c) The 16 principal towns in Scotland (d) The 13 principal towns in Eire (e) The 10 principal towns in Northern Ireland

A dash — denotes no cases a blank space denotes disease not notifiable or no return available

Disease	1947					1946 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever Deaths	63	8	21	3	2	4	2	21	1	—
Diphtheria Deaths	196	22	46	18	7	30	16	85	27	15
Dysentery Deaths	53	14	40	—	—	149	17	36	—	—
Encephalitis lethargica, acute Deaths	4	—	1	—	—	2	—	2	1	—
Erysipelas Deaths	—	—	24	10	2	—	—	29	9	2
Infective enteritis or diarrhoea under 2 years Deaths	71	9	15	18	3	49	1	8	27	2
Measles* Deaths	13 535	681	145	132	17	3 896	1073	652	48	12
Ophthalmia neonatorum Deaths	75	1	21	1	—	60	5	8	1	—
Paratyphoid fever Deaths	16	1	(B)	—	—	2	1	2	(B)	—
Pneumonia influenza Deaths (from influenza)†	467	32	5	6	10	546	28	11	10	5
Pneumonia primary Deaths	2	1	—	1	—	3	1	1	2	—
Polio-encephalitis acute Deaths	43	—	221	21	8	28	161	35	8	7
Polio-myelitis acute Deaths	22	3	—	7	—	9	—	1	3	—
Puerperal fever Deaths	—	2	8	—	—	2	32	—	—	—
Puerperal pyrexia‡ Deaths	128	4	10	—	—	134	13	17	—	—
Relapsing fever Deaths	—	—	—	—	—	—	—	—	—	—
Scarlet fever Deaths	730	74	126	22	31	987	84	164	23	24
Smallpox Deaths	7	—	—	—	—	3	—	—	—	—
Typhoid fever Deaths	2	1	—	—	—	4	—	3	8	1
Typhus fever Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough* Deaths	2 050	231	145	46	16	1 749	162	81	45	44
Deaths (0-1 year) Infant mortality rate (per 1 000 live births)	473	67	75	38	15	322	41	46	30	17
Deaths (excluding still births) Annual death rate (per 1 000 persons living)	4 707	851	595	189	112	4 116	570	534	178	126
Live births Annual rate per 1 000 persons living	9 613	1404	1178	462	323	7 994	1155	980	449	257
Stillbirths Rate per 1 000 total births (including stillborn)	235	31	36	—	—	236	26	38	—	—

* Measles and whooping-cough are not notifiable in Scotland and the returns are therefore an approximation only

† Includes primary form for England and Wales London (administrative county) and Northern Ireland

‡ Includes puerperal fever for England and Wales and Eire

EPIDEMIOLOGICAL NOTES

Paratyphoid Outbreak

There has been a small outbreak of paratyphoid B infection in the mining village of High Spenn Durham. The first case was reported to the medical officer of health of Blythdon U.D. on June 5. This was a boy of 14 with a clinical picture of continued pyrexia, delirium, and some neck rigidity. There have since been 8 cases of proved paratyphoid B infection (4 in infants). The date of onset of the disease was probably between May 28 and June 1. Search for a source of infection showed milk to be the link connecting these cases. Specimens of faeces were taken from (a) All contacts, (b) family of a milk distributor, (c) family of a milk producer, (d) all workers (male and female) on the farm, (e) family of an ice cream merchant. Samples of milk, water, and ice cream were also examined. All these specimens proved negative with the exception of that from the milk producer's mother. She had been found to be a carrier in 1932.

Investigation showed the probable route of infection to be the towels with which the cooler and churns had been wiped. Steps have been taken to sterilize the dairy and all utensils, and the old lady has been barred from living on the farm. Organisms from the carrier and from the cases are of the same phage type.

An interesting point, not yet fully investigated is that a few cases which occurred in Gateshead earlier in the year were found to be of the same type, and apparently some of this farmer's milk went to a pasteurizing plant in Gateshead from which the cases had obtained their milk supply.

Smallpox

No further cases have been detected at Burnsley C.B. and Wakefield C.B. since the last removals on June 4, and the period of surveillance of contacts has now expired. It would be premature, however, to assume that the outbreaks in these districts have terminated.

The only focus of smallpox known to be active is at Bilston U.D., Staffs, and here the position is less satisfactory. A new generation of cases appeared on June 17, and since then 8 patients have been admitted to the smallpox hospital. The diagnosis is at present doubtful in 6 of these, and the unquestionable cases come from a single household not previously affected, nor under surveillance. Two other patients have been admitted to the Bilston Smallpox Hospital from Willenhall U.D. and Dudley C.B. respectively. If the diagnosis is confirmed the source of infection in the former is known to have been at Bilston but the appearance of the disease at Dudley cannot at present be explained.

Polio-myelitis

There were 31 notifications of polio-myelitis in the week ending June 14 in England and Wales. This is higher than usual for the time of year, and an upward trend is expected. Prevalence has been unusually low since 1938, and, generally speaking, notifications have not risen above 30 a week nor has a significant rise appeared until the end of July. Possibly the exceptionally warm weather at the end of May has had something to do with the present increase.

There have been 9 cases in Barrow in Furness and other cases in Bedfordshire, Worcestershire, and South London. As is usual, any direct connexion between cases has been the exception rather than the rule. About 15% of the cases are adults. Clinically there is considerable variation in severity and cases of respiratory paralysis requiring treatment in an iron lung have occurred. At Barrow-in-Furness 2 pregnant women are involved, and 3 of the patients showed persistent meningeal signs as an outstanding feature.

Discussion of Table

In England and Wales further falls were recorded in the notifications of scarlet fever 156 and acute pneumonia 45. An increased incidence was recorded for measles 1,221 and whooping-cough 393.

The largest increases in the notifications of measles were in Essex 245, Lincolnshire 178, London 136 and Gloucestershire 129. The largest falls were Glamorganshire 113 and Somersetshire 86. Although the number of cases of measles fell in Glamorganshire, a rise of 168 was recorded for the remainder of Wales.

The only significant changes in the local trends of whooping-cough were increases in Lancashire 64 and Surrey 60. Small decreases in the incidence of scarlet fever were recorded in most areas of the country, the largest fall was Lancashire 35. The

chief feature of the returns for diphtheria was a decrease of 11 in Durham

Notifications of paratyphoid were the largest for six months, and the 16 cases were distributed over ten counties. The only large centre of dysentery was London, with 14 cases. The distribution of the 7 cases of smallpox was Yorkshire West Riding Barnsley C B 2, Wakefield C B 1, Staffordshire, Bilston M B 4

In Scotland an increased incidence was recorded for acute primary pneumonia 50 and dysentery 21, while a decrease was reported for measles 32, cerebrospinal fever 25, and scarlet fever 21. The rise in the incidence of pneumonia was fairly widespread, in Glasgow the increase was 35. The largest increase in cases of dysentery was Edinburgh 11.

In Fire the only fluctuations of note in the returns were an increase in the incidence of measles 22 and a decrease in the notifications of diarrhoea and enteritis 15. Both these alterations in trend were mainly due to the experience of Dublin C B.

In Northern Ireland infectious diseases were less prevalent and small decreases were recorded for most diseases.

Quarterly Returns for Scotland

The birth rate during the March quarter was 24.1 per 1,000. This is the largest rate for any quarter during recent years and was 6.4 above the average of the five preceding first quarters. Infant mortality was 63 per 1,000 registered live births and was 13 below the average for the corresponding quarters of 1942-6. Stillbirths were equivalent to a rate of 32 per 1,000 total births. The general death rate was 17.2 per 1,000, which was 0.9 above the rate for the first quarter of 1946 and 1.4 above the five years' average. The death rate from all forms of tuberculosis was 91 per 100,000, that from respiratory tuberculosis was 73, these rates were 9 and 7, respectively, above the rates for the March quarter of 1946 and 4 and 6 above the five years' average.

Week Ending June 14

Notifications of infectious diseases in England and Wales during the week included scarlet fever 833, whooping-cough 2,062, diphtheria 195, measles 10,796, acute pneumonia 380, cerebrospinal fever 49, acute poliomyelitis 31, dysentery 48, paratyphoid 12, typhoid 4. No case of smallpox was notified.

Medical News

School and Life

The Report of the Central Advisory Council for Education has been issued as a pamphlet with photographic illustrations entitled *School and Life* (H.M.S.O. 2s 6d). Discussing the school medical service the report suggests for its improvement that, owing to the present shortage of medical personnel available, the medical examinations should be raised in quality rather than in quantity. It advocates more comprehensive supervision of school children, including consultation between doctors and parents and teachers, together with better access to and keeping of medical records. Accommodation for medical inspection in schools should be improved, as well as facilities for treatment in hospitals and clinics. Commenting on the need for what it calls a positive approach to health, the report quotes a young engineer as saying that "the greatest need of all is not greater medical service but better health services in the form of wholesale extension of school playing fields, swimming pools, fresh milk, fruit, meals, etc." and adds that special training of doctors, nurses, and teachers is essential. It emphasizes elsewhere the need for suitable buildings, play grounds, and meals, referring to Mr Churchill's observation, "We shape our buildings, and afterwards our buildings shape us."

Harveian Society

The Harveian Society of London held the first Buckton Browne dinner since 1939 in the Royal College of Surgeons on Thursday, June 19. The President of the Society, Dr Maedonald Critchley, received the many distinguished guests. Admiral of the Fleet Sir James F. Somerville proposed the toast of 'The Harveian Society of London' and the President replied briefly. The toast of the guests was proposed by Sir Cecil Wakely, and Lord Moran and Sir John Anderson replied.

Haematological Research

Oxford University has accepted a grant of £50,000 from the Nuffield Foundation, to be paid over a period of ten years, to maintain a haematological research unit at the Medical School.

Society of Medical Officers of Health

At the annual luncheon of the Society of Medical Officers of Health on Friday, June 20, Sir Allen Daley, the President, proposed the toast of the guests. His speech, which was well received, was described by Mr Aneurin Bevan, who replied, as "barbed by knowledge and delivered with intention." Mr Bevan said that his present discussions with the representatives of the medical profession were being conducted in "a diminuendo of acrimony." He thought that in the future medical officers of health would form important links between the regional boards, the health committees, and the executive councils. Replying to the Minister, Sir Allen Daley made two points. He suggested that perhaps the time had come when the Society of Medical Officers of Health might be promoted to that select group blessed with the "Royal" designation. He also pointed out that any expansion of the work of medical officers of health would depend on up to date knowledge of morbidity in all diseases and not only in connexion with notifiable diseases.

Royal Sanitary Institute Prizes

The Royal College of Physicians has given the first of the Memorial Travelling Scholarships to the British Empire Nurses War Memorial Fund "as a tribute from the doctors to their colleagues the nurses." Lord Moran, President of the College, announced that the Royal College of Physicians was providing a scholarship of £350-£400 for seven years. Viscountess Mountbatten of Burma has offered a scholarship on similar terms "as a small tribute to the magnificent service rendered by nurses and midwives both in this country and throughout the Empire during the past years." The national appeal for the fund is for £250,000 to provide (after the furnishing of a nurses' war memorial chapel in Westminster Abbey) a fund for postgraduate travelling scholarships for nurses and midwives of the British Commonwealth and Empire. The nurses and midwives of the Empire have already raised £35,000 in the year since the fund was launched by the *Nursing Mirror*.

Encyclopaedia

The 1946 and 1947 volumes of the *British Encyclopaedia of Medical Practice* recording medical progress have been issued under the editorship of Lord Horder, together with the cumulative supplements for these years (Butterworth and Co. 42s for each pair of "Medical Progress" and "Supplement"). Authorities in the various branches of medical science provide critical surveys of the recent advances in Part I of the volumes of "Medical Progress," and developments in pharmacy and therapeutics are reviewed in Part II, and in Part III abstracts from the recent literature are given. The "Cumulative Supplements" summarize the recent literature to bring the main body of the work up to date.

Empire Rheumatism Council

The Scientific Advisory Committee of the Empire Rheumatism Council has appointed a subcommittee to re-start the British branch of the Ligue Internationale contre le Rheumatisme. Dr W. S. C. Copeman is chairman and national representative of the branch, Dr G. D. Kersley treasurer, and Dr Oswald Savage secretary. The European branch of the Ligue will hold a congress at Copenhagen on Sept. 3-6, under the presidency of Prof. Cai Holten, and the American Rheumatism Association will sponsor an international congress for rheumatic diseases in the U.S.A. in 1949. Those wishing to become members of the British branch of the Ligue should apply to Dr G. D. Kersley, 6, The Circus, Bath.

Hygiene Prizes

The Royal Sanitary Institute announces that prizes will be offered during 1947 for competitions on (1) practical improvement of appliances or inventions for dwelling houses, and (2) atmospheric pollution or the ventilation of buildings and its effect upon human health. For the first of these essay competitions, the John Edward Worth Prize of £40 is offered, the second competition, which gives a choice of subject this year, will be for the John S. Owens Prize of £25. The general conditions applicable to the competitions can be obtained from the secretary of the Institute, 90, Buckingham Palace Road, London, S.W.1.

British Council Bursaries

British Council bursaries have been awarded to Dr David Honore, of the surgical department, Liège University, who is studying thoracic surgery and anaesthetics at Brompton Hospital, London, for four months, and to Dr A. Ennuvier of Radiotherapie Fondation Curie, Paris, who is at the Royal Cancer Hospital, London, studying radiotherapy for six months.

Dental Caries in Sweden

The interesting fact has been established that in Sweden the incidence of dental caries decreased considerably during the war, the decline ranging about 15%. The lowest incidence has been found to occur in the provinces round Lake Mälaren, in central Sweden, where the drinking water contains fluorine.

Fellowships in Diabetes

The Diabetic Association is to support and encourage new work on diabetes by creating Lund Research Fellowships in Diabetes up to the value of £750 a year. These fellowships are named after the generous donor. The Diabetic Association has established a subcommittee of medical and scientific experts to allocate the funds in the most promising direction.

Medical Superintendents Society

The annual general meeting of the Medical Superintendents' Society was held at Birmingham on June 13, when Dr D. Campbell Suttie was installed as president. The annual dinner of the society was held the same evening with Sir William Scott Douglas, Permanent Secretary to the Ministry of Health, as the principal guest.

The Friends in China

Mobile teams of the Friends Service Unit are carrying out a successful campaign against kala-azar in Honan, China. A preliminary report on the treatment of about 3,000 patients with intravenous neostam is hopeful that the disease will shortly be brought under control.

Film on V D

The United States Public Health Service has produced a film (running time 20 minutes) on venereal disease, suitable for showing in clubs and schools, entitled *A Message to Women*. 16 mm prints in colour (price \$75) may be obtained from Precision Film Laboratories, 21 West 46th Street, New York City.

War Service

The President of the Czechoslovak Republic has conferred the decoration of the Order of the White Lion, Fourth Class, upon Dr David Robert Rigg, in recognition of services during the war.

COMING EVENTS**Cavendish Lecture**

Mr H S Souttar will deliver the Cavendish Lecture on "Physics in the Life of a Surgeon" before the West London Medical-Chirurgical Society at Kensington Town Hall on Tuesday, July 1, at 8.30 p.m.

The NAPT

The National Association for the Prevention of Tuberculosis has arranged for a conference on tuberculosis in all its aspects to be held in London on July 8-10 at the Central Hall, Westminster, S.W.1. The Duchess of Kent will open the conference. Mr Bevan will speak at the first day's meeting on the N.H.S. Act and its effect on tuberculosis control and treatment. Sessions will include discussions on sanatorium design, rehabilitation, and the psychology of tuberculosis. Problems arising in the British Commonwealth will receive particular attention, and representatives from all Dominions and Colonies have been invited. Further particulars may be obtained from the NAPT, Tavistock House North, Tavistock Square, London, W.C.1.

Microbiology

The Fourth International Congress for Microbiology will be held in Copenhagen on July 20-26, 1947, under the auspices of the International Association of Microbiologists and will be composed of the following nine sections: General Microbiology, Medical and Veterinary Bacteriology, Virus and Viral Diseases, Serology and Immunology, Variation and Mutation in Microorganisms, Plant Pathology and Mycology, Water and Soil Microbiology, Industrial Microbiology (Dairy and Food Microbiology), and Industrial Microbiology (Alcoholic and other Fermentations). Registration fee will be 30 Danish kroner which will not include the cost of a banquet ticket or a Report of the Proceedings of the Congress. Congress Office, Kommunehospitalet, Copenhagen, telegraphic address: Microbiolog, Copenhagen.

Cancer Research Congress

The fourth International Cancer Research Congress will be held at St. Louis, Missouri, U.S.A. from Sept. 2 to 7, with headquarters at Jefferson Hotel, 415 North Twelfth Street, St. Louis. The congress is sponsored by the Union Internationale Contre le Cancer and the American Association for Cancer Research, with the assistance of other organizations and individuals interested in promoting cancer research.

Society for Endocrinology

The following officers were elected at the annual general meeting of the Society for Endocrinology on May 29: Chairman of Society, Dr A. S. Parkes; Secretary, Dr S. J. Folley; Treasurer, Dr C. W. Emmens; Editor of the Society's *Proceedings*, Prof. S. Zuckerman; Members of Committee, Dr P. M. F. Bishop, Dr C. H. Gray, Mr P. C. Williams, Prof. F. G. Young.

DIARY OF SOCIETIES AND LECTURES

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields. W.C.—Thursday, July 3, 6.15 p.m. Ophthalmology Lecture by Prof. Arnold Sorsby. Measurement of the Living Eye. Friday, July 4, 6.15 p.m. Bernhard Baron Lecture by Prof. John Beattie. Physiology of the Post-operative Period.

ROYAL COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS, 58 Queen Anne Street, W.—Friday, July 4, 3 p.m. William Meredith Fletcher Shaw Memorial Lecture by Prof. F. J. Browne. Hypertension in Pregnancy, 5 p.m. Biennial Scholarship (Sterility) Lecture by Mr J. R. Stallworthy. Fact and Fantasy in the Study of Female Sterility.

ROYAL SOCIETY OF MEDICINE

Annual Meeting of the Society—Tuesday, July 1, 1.30 p.m.

APPOINTMENTS

The National Society for the Prevention of Blindness, New York, announces the appointment of Dr Franklin M. Foote, assistant professor of public health and preventive medicine at Cornell University Medical College, as executive director in succession to Mrs. Eleanor Brown Merrill, who has retired.

Mr R. Victor Howell has been appointed general secretary of the Empire Rheumatism Council in succession to Sir Frank Fox, O.B.E., who has retired. Mr Howell has also assumed office as secretary to the Heberden Society.

Dr P. S. Bell has been appointed an Official Member of the Legislative Council of the Nyasaland Protectorate.

Prof. R. C. Garry has been appointed Regius Professor of Physiology at Glasgow University to succeed Prof. E. P. Cathcart, who is retiring.

Prof. Garry won the Brunton Memorial Prize in 1922 and was later appointed lecturer in experimental physiology at Glasgow University. In 1933 he was appointed Head of the Physiology Department of the Rowett Research Institute at Aberdeen and lecturer on the physiology of nutrition at Aberdeen University. Since 1935 he has occupied the Chair of Physiology at St. Andrew's University. Prof. Garry is well known for his researches on dietetic problems; he was a member of the subcommittee on Nutrition of the Scientific Advisory Committee to the Department of Health for Scotland and he is the editor of the *British Journal of Nutrition*.

Dr R. B. Robertson, M.B.E., succeeds Dr R. Stewart Miller as Medical Director of the Mental Hospital at Asfuryeh, near Beirut.

Dr Miller, who took up his appointment in 1934, was previously at the Egyptian Government Mental Hospital at Khanka and was made Commander of the Order of the Nile for his services. Dr Robertson, who has been working recently at the East Sussex County Mental Hospital, gained a wide knowledge of the Near East during the recent war when he was at Cairo and speaks colloquial Arabic.

MIDDLESEX COUNTY COUNCIL.—The following appointments are announced at the hospitals indicated in parentheses: *Obstetrics*: Muriel Rose, M.E. (Redhill County Hospital, Epsom); A. W. Purdie, M.B. Ch.B. FRCP (North Middlesex County Hospital, Edmondeston).

NEWCASTLE UPON TYNE. ROYAL VICTORIA INFIRMARY.—The following appointments are announced: *Honorary Surgeon*: J. Brumwell, F.R.C.S. *Assistant Physicians*: H. G. Miller, M.D. and H. A. Dewar, M.D. *Assistant Surgeons*: J. D. Rose, F.R.C.S. and J. D. T. Jones, M.S. F.R.C.S. *Assistant Surgeon to Gynaecological Department*: F. Stabler, M.D. F.R.C.S. F.R.C.O. *Associate Surgeons to Gynaecological Department*: W. Hunter, M.D. and E. Way, M.R.C.S. L.R.C.P. *Assistant Surgeons to Throat, Nose and Ear Department*: J. I. M. Black, M.D. F.R.C.S. and J. L. Reid, M.B. B.Ch. *Assistant Surgeon to Ophthalmic Department*: L. H. Lake, M.B. B.S. *Associate Surgeon to Ophthalmic Department*: Margaret Ranken, M.B. B.S. *Associate Physicians to Children's Department*: E. E. Wright, M.D. C. Davison, M.D. and F. J. W. Miller, M.B. B.S. *Clinical Bacteriologists*: C. A. Green, M.D. *Head of Department of Anaesthetics*: E. A. Pask, M.B. Ch.B. *Assistant Radiologist*: B. D. Houston, M.B. B.S.

BIRTHS, MARRIAGES, AND DEATHS

The charge for an insertion under this head is 10s. 6d. for 18 words or less. Extra words 3s. 6d. for each six or less. Payment should be forwarded with the notice authenticated by the name and permanent address of the sender and should reach the Advertisement Manager not later than first post Monday morning.

BIRTHS

ANNAR.—On May 29, 1947, at Cardiff, to Dr Doreen Annar (née King, wife of Dr. Marshall Annar, a sister for John—Rosemary Doreen).
BATES.—On June 18, 1947, at Leicester, to Teddy (née Edwards), wife of D. A. Priestley Bates, a daughter.
DAVISON.—On June 20, 1947, to Ida, wife of Dr. M. H. Armstrong Davison of Newcastle upon Tyne, a daughter.
FROOFE.—On June 10, 1947, to Peggy Barrington (née Lister), the wife of Dr. Kenneth Froome of 5 Town Close Road, Norwich, a daughter.

MARRIAGES

FRASER—THWAITES.—On June 6, 1947, at Inverness, Iain Alexander Fraser, M.B. Ch.B. to Betty A. Thwaites, Q.A./R.
LAWLESS—BANNERMAN.—On June 11, 1947, in Kensington, Desmond Lawless, O.B.E. M.B. B.Ch. B.Sc. D.P.H. to Ail Bannerman, M.R.C.I.

DEATHS

BROWN.—On May 8, 1947, at 15 Shrub Avenue, Mansfield, William Hunt Brown, M.B. Ch.B. D.P.H., aged 56.
LITHELAND.—On June 16, 1947, at 19 Wimborne Road, Bournemouth, Henry Litherland, L.S.A., the beloved and devoted husband of Doris G. Litherland, M.R.C.S. L.R.C.P., aged 79 years.

Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Rh Incompatibility and Pregnancy

Q—*It could one be justified in interrupting pregnancy in the case of an Rh negative woman married to an Rh-positive man after the usual history of one normal child followed by one stillbirth or neonatal death due to erythroblastosis foetalis?*

A—It is not justifiable to interrupt a pregnancy in an Rh-negative woman merely because of the possibility of producing another child affected by haemolytic disease. If the husband is heterozygous for Rh, then the wife has an equal chance of a normal unaffected child at each subsequent pregnancy. The Rh genotype of the husband should be ascertained so far as is possible, but the exact genotype cannot always be determined from the study of his blood alone, as more than one genotype gives the same serological reactions. The correct genotype may sometimes be determined by studying, in addition to the husband's blood, that of his parents or of his children, and this may enable one to distinguish, for example, between R_1R_1 (CDe/CDe) when he is homozygous and all subsequent children will be affected, or R_1R' (CDe/Cde) where half of the children would probably be unaffected. If the woman produces children with icterus gravis or congenital anaemia there is a reasonable prospect of saving the child by immediate transfusion, especially modern replacement transfusion, but if the child is hydropic no known treatment is of any avail. The justification of early induction of labour lies in the frequency of foetal death in the last week or so of pregnancy, and is probably the correct procedure if the child is large as delay in parturition is dangerous. In such a case one might be guided by the amount of antibody in the maternal serum and whether it was of the agglutinating or blocking type, the latter being of graver prognosis. Sterilization should not be hastily undertaken, and certainly not until a detailed serological examination of the husband and wife and their family has been carried out. In the present pregnancy all preparations should be made to transfuse the baby promptly with Rh-negative blood in the hope that it may be saved by this means.

Sterilization and the Law

Q—*An epileptic girl aged 18 has been away at a special school for the last seven years. The parents now wish to have her home but hesitate because she is lacking in moral sense and has been the victim of a sexual assault. Is sterilization permissible?*

A—It is impossible to answer this question with authority. It is constantly asked, and the answer is always that the law governing the sterilization of women is obscure. The fact remains that no medical practitioner has ever been sued or prosecuted for performing sterilization of a mentally defective (or indeed of any other) woman, and the risk of legal consequences in this case is therefore slight.

Calciferol for Surgical Tuberculosis

Q—*Is the treatment of bone and gland tuberculosis by massive doses of vitamin D₂ of any value? Is there a danger of renal damage or other toxic effects from this treatment and what measures of control are advisable?*

A—The value of large doses of calciferol in osseous and glandular tuberculosis is not yet proved, but the results of this treatment have so far been encouraging. Toxicity is seen in 50% of cases, the early signs being depression, nausea, and epigastric discomfort. Renal damage does not appear to be common but it is unwise to use this treatment on completely recumbent patients. It is also dangerous in the presence of active lung disease. While under treatment with calciferol the patient should be observed closely, preferably in hospital. A watch should be kept for toxic symptoms, and the erythro-

cyte sedimentation rate and blood calcium levels should be estimated regularly. A rising sedimentation rate or a very high blood calcium are indications for stopping the treatment.

Pulmonary Stenosis

Q—*Does the dilated pulmonary artery associated with isolated pulmonary stenosis ever show well-marked pulsation?*

A—In most instances congenital pulmonary stenosis is associated with other congenital cardiac lesions, usually with a patent foramen ovale or a defective ventricular septum, or both. In only 9 out of 110 cases collected by Abbott was pulmonary stenosis an isolated finding. Examples of isolated pulmonary stenosis are too rare for a generalization to be of value, but in the cases seen by the writer there was no pulsation on clinical examination. The radiological findings on this point are inconstant.

Paraldehyde Addiction

Q—*What are the clinical features of addiction to paraldehyde? What is the prognosis and is there any treatment likely to be effective? My patient aged 75 takes 2 to 3 drachms (8 to 12 g) of paraldehyde at night. She complains of inability to sleep without the drug, drenching sweats, chronic conjunctivitis with photophobia, and nasal catarrh.*

A—In the rare cases of true addiction to paraldehyde the symptoms may be indistinguishable from those of chronic alcoholism. Even delirium tremens has been reported. The prognosis of true addiction is bad, as it is for all drug addictions. In the case in point it appears that true addiction is not present, but rather a demand for a soporific. In view of the age and the small doses taken, why take steps to check the habit?

Recurrent Facial Herpes

Q—*What can be done with recurrent facial herpes in the distribution of the right maxillary division of the trigeminal nerve? My patient, a healthy woman of 34, has had an average of one to two mild attacks a year for the past fifteen years.*

A—It is of first importance to see that there is no local source of infection or irritation, such as paranasal sinusitis, dental or tonsillar sepsis, ear trouble, or an unerupted wisdom tooth. X-ray therapy locally (150 r at 80 kV at monthly intervals for three treatments) will sometimes stop recurrences. Arsenic by mouth in gradually increasing doses up to the limit of tolerance, over a period of a few weeks, may be employed. Autovaccination with fluid from the vesicles or vaccination with calf lymph has sometimes been successful, but the affection is often resistant to all measures.

Emanotherapy for Rheumatic Disorders

Q—*Is emanotherapy or spa treatment by radium emanation, for rheumatism and allied conditions an ethical line of treatment? Has it met with any marked success, and how does it differ from ordinary spa treatment? What are the risks, if any from drinking radio active water and of external applications of radio active ointment or liniments?*

A—Emanotherapy has been used in the treatment of rheumatism and allied conditions since the early days of our present civilization, albeit unwittingly, since it is only in more recent times that radio activity has been demonstrated in various spa waters. Originally the treatment consisted of baths or ingestion of spa waters, in the present century this has been extended by the use of inhalations and ointments, either of the naturally occurring radio-active water or of artificially manufactured solutions or ointments containing radium salts or radon. There is a large body of opinion which considers such treatment of value, but this is based for the most part on impressions and not supported by consistent scientific data, either by results or by rationale. Many spa waters do not contain enough radio activity to give a therapeutic effect, and further investigations are needed to establish the rationale of any effect before one may speak of low intensity radium therapy in connexion with springs with a low emanation content. The difficulties of such analysis are further complicated if the mental constitution of spa visitors is considered. The risks of the treatment at well-conducted spas are negligible. It would

take 1 500 million litres of the average spa water to reach a dangerous dose. Ointments containing radium salts may be dangerous but do not now seem to be used. Emano therapy is not included in the general regimen of treatment of rheumatic subjects in this country, spa treatment is used for the discipline incurred and for its value as a remedial agent in muscular re-education. Fitch, writing on mineral waters of the U.S.A. states that sciatica is curable by radio active treatment, if it is continued long enough, by baths and springs. Such a statement, reviewed in the light of modern pathology, leads to increased confidence in time, but not in radio activity, as a cure and such criticism is applicable to many aspects of this controversial subject.

Persistent Sinus after Resection of Rectum

Q—A woman aged 60 had an abdomino-perineal resection of the rectum for carcinoma five months ago. She has a left inguinal colostomy functioning normally. The perineal wound was treated in the usual way and the patient got up early so that the 'dead space' would be minimized by downward pressure. A narrow sinus about 4 inches (10 cm.) long persists in the rectal and anal region. The entrance is kept open with dilators and the sinus has been irrigated with saline, packed lightly with ribbon gauze and once or twice curetted but it shows no sign of healing. There is a slight mucoid discharge. What further treatment do you advise?

A—The discharge is not purulent, so it is unlikely that the cause of the persistence of the sinus is infection, the presence of mucus makes one rather suspicious of some communication either with mucous membrane or with a glandular secondary focus. The first thing to do is to demonstrate the whole extent of the track by taking a radiograph after the injection of lipiodol (or other suitable radio opaque substance) into the sinus, this might show unsuspected extension higher up the pelvis or even a fistula into the region of the posterior vaginal fornix. The next step would be to open up the sinus sufficiently to explore it with the finger so as to make sure there is no tag of silk ligature, or even a tiny strip of gauze at the bottom. If no sufficient cause be found, the local therapeutic effect of x rays might well be tried.

Bringing Up Baby

Q—To what degree is it permissible to 'thwart' a baby of 3 months? To amplify Instance 1—The child has just been fed and so far as one can tell free of further troubles. One wishes to put him down but he evidently wants company. Is one justified in putting him in his cot and establishing a rule that when he has been fed and received attention he is to be left? Will this help to eliminate conflict and make him happier—on the assumption that he will soon learn that he won't be picked up at that time of day or will his happiness be best served by according him his mother's love at his every demand? Instance 2—He wakes at 4.30 p.m. and is carried round for half an hour to amuse him. Mother then wants to put him down but he doesn't agree. Is it too early to establish discipline by putting him down even though he cries, or are his mother's protection, warmth and love to be accorded him at his every command? Perhaps my question amounts to this: Is an infant to be allowed to rule his parents?

A—The final sentence of this inquiry—Is an infant to be allowed to rule his parents?—suggests that the main problem may lie in this attitude that implies a rival status—Who shall rule? This and other phrases describing a baby of 3 months—he evidently wants company, doesn't agree [with his mother], at his every command—presuppose intellectual processes as yet undeveloped. Intellectually it is of course evident that an infant's reactions are conditioned only by his needs, which he expresses by crying, having no other language. Emotionally it is much more difficult to accept this fact, for the child's unhappiness, violently expressed, seems to his parents like a challenge though actually it is for their care that he cries. It is surely natural that since a child begins his foetal life as an extension of his father and mother after birth he still remains in their feelings as part of themselves—a biological attachment invaluable in evoking love and protection, but disturbing also when the 'demerol of infancy' becomes

involved in this identification. In this way the moral self condemnation irrationally aroused in the best of parents may become projected in their child.

In dealing with the baby who demands attention, it may help to regard the behaviour as objectively as any phenomena of disorder, to seek the cause and to treat it. It seems that there is a lack of satisfaction somewhere, and for this reason, although the baby's physical needs are well cared for, it is possible that he is conscious of over anxiety in handling or of lack of maternal warmth. Insecurity in those who look after him is quickly sensed by a baby, with consequent anxiety and distress. In this case his parents, who have taken the trouble to consult the *Journal* on his behalf, may by this token of good intent towards their child feel the confidence in themselves that they deserve.

Ingrowing Eyelash

Q—A male aged 40 has for two years had an ingrowing eyelash on the left lower lid which impinges on the eyeball and has to be plucked out. He does not wear glasses. Is there any way of preventing this eyelash from growing?

A—A single lash is best treated by electrolysis. This is likely to produce permanent epilation. A fine electrolysis needle attached to the negative pole is entered towards the root of the lash. The current used is 1 to 3 mA for twenty to thirty seconds. A bubble of white foam forms at the point of electrolysis. The procedure is best carried out after preliminary infiltration analgesia by 1 ml of 4% novocain. It is, however, possible to dispense with this.

NOTES AND COMMENTS

Ejaculatio Praecox—CONSULTANT writes: One of your recent questions (May 31, p. 794) was "What advice should be given to a healthy man, newly married, who ejaculates prematurely?" I have dealt with many of these cases and I find that in the majority of them some such advice as the following is of great assistance. What I say to the patient is something like this: "Premature ejaculation is of no consequence, you must train yourself for intercourse just as you would for any other activity. Have one intercourse early in the evening and do not worry about the premature ejaculation. Then take your wife out to dinner, the theatre, or a film and have a pleasant evening together. On returning home, you will find that a second attempt will be more successful. A third later the same night may be completely successful. This technique should be repeated twice a week, or perhaps even three times."

Birthday Honours—The names of Edwin Arthur Blok, L.R.C.P. & S.E.d., lately Assistant Director of Medical Services, Ceylon and Carol Jameson, F.R.C.S., F.A.C.S., Vice Principal, Missionary Medical College for Women, Vellore, North Arcot District, Madras, were omitted from the Birthday Honours published in the *Journal* of June 21 (p. 895). Dr Blok was appointed C.B.E. (Civil Division), and Miss Jameson was awarded the Kaiser-i-Hind Gold Medal for public services in India.

Correction—In the issue of June 14 (p. 859) the O.B.E. was incorrectly attributed to Prof. D. Murray Lyon.

INCOME TAX

Colonial Pension

H. asks whether a pension given for colonial medical service is regarded as earned or unearned income.

****** Under Sec. 14 (3) of the Income Tax Act, 1918, 'earned income' is defined as including "any income arising in respect of any pension given in respect of the past services of the individual in any office or employment of profit."

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: A110103. WESTCENT LONDON. ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Authors desiring REPRINTS should communicate with the Publishing Manager, B.M.A. House, Tavistock Square, W.C.1 on receipt of proof. Authors overseas should indicate on MSS. if reprints are required as proof are not sent abroad. ADVERTISEMENTS should be addressed to the Advertisement Manager, B.M.A. House, Tavistock Square, London, W.C.1 (hours 9 a.m. to 5 p.m.). TELEPHONE: EUSTON 2111. TELEGRAMS: B11medads. WESTCENT LONDON. MEMBERS' SUBSCRIPTIONS should be sent to the SECRETARY of the ASSOCIATION, TELEPHONE: EUSTON 2111. TELEGRAMS: M11secra. WESTCENT LONDON. B.M.A. SCOTISH OFFICE: 7 Drumsheugh Gardens, Edinburgh.

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